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Sandra Vos

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BEHIND THE LINES

The diverse faces of agriculture

While I spend my weekdays in the *Better Farming/Farms.com* office, I'm also very much involved in my family farm operation. I work on the farm in the evenings and weekends – whether it be assisting with fieldwork and barn chores or managing the business record-keeping with my sister. Our farm, as are many others in the province, is truly a family operation. Everyone contributes, regardless of age or gender.

Despite the increasing visibility of youth and women in ag through such organizations as the **Junior Farmers** and the **Ag Women's Network**, I am periodically shocked and saddened by the approach of some industry representatives to members of farm operations who do not fit the typical profiles.

Just this spring, for example, I received two rather jarring comments while in an industry meeting with my father. One of the businessmen (who has worked with our family for years) said that the most stress I must face is deciding "where my boyfriend should take me for supper." The other stopped the conversation to ask if I had any questions, as the discussion was "complex." Walking away from the meeting, I wondered: were these comments based on my gender? My relative youth? The fact that I've chosen to work both on- and off-farm?

Writer **Jeff Culp**, in our main feature, explores the challenges and opportunities for the next generation of farmers. Contributing editor **Mary Baxter** highlights the experiences of **Kate Procter**, a Huron County farmer, in our Up Close department. As our industry continues to grow and develop, I hope that everyone will become more welcoming and receptive to the diverse faces of agriculture. BF

ANDREA M. GAL

FARM WEATHER REPORT

August rain makes up for summer shortfall

stevanovicigor/iStock/Getty Images Plus

So often in life, timing is everything. This was clear with the rainfall this year. In many locations, the rainfall during August made up for the shortfall in the summer months and closed the gap on the 30-year norms. Between May 1 and publication time, for example, Peterborough received approximately 211 mm of rain, in contrast to its 30-year average of 347 mm, while Exeter received approximately 412 mm, in contrast to its 365-mm average.

The rain came too late to offer much benefit to developing corn yields; it did, however, arrive in time for soybeans. August rain makes beans. We are seeing increased pod retention and larger soybeans filling the pods. This will add to the yield potential and we may see some excellent soybean yields.

The renewed soil moisture levels will help with the planting of the winter wheat crop. Overall, we can agree the timing of rains was not ideal this growing season. But, the rain will help to recharge wells and depleted subsoil moisture. BF

Dale Cowan is a senior agronomist with AGRIS Wanstead Cooperatives. Data from WIN and the Ag Grower Daily Dashboard Program.

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Local Bounty

CELEBRATING ONTARIO AGRICULTURE WEEK

The week before Thanksgiving has a special designation for agriculture. Since 1998, it has been recognized as **Ontario Agriculture Week**, drawing special attention to the food produced and enjoyed in Ontario. This fall, October 3-9 is a great time to pause and celebrate the amazing array of local food grown in Ontario.

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- ✓ Agriculture contributes $13.7 billion to the Ontario economy every year

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Global trend masks local gains

The United Nation's global food price index dropped in July, following a period of rising numbers for the first five months of 2016. This recent drop resumes a decline that, until the early 2016 rally, had persisted for five years.

The mid-summer index was 68 points below its 2011 peak, but **University of Guelph Food Institute** director **Evan Fraser** played down Canadian implications. The index averaged 161.9 points in July, down eight per cent from June and 1.4 per cent below July of 2015, the UN's **Food and Agriculture Organization** website says. Lower cereal and vegetable oil prices outweighed dairy, meat and sugar gains.

Martin Konz/Hemera /Getty Images Plus

The index is a reliable measure of world markets, but can mask regional factors such as weather and currency values, Fraser said in an interview.

Low oil prices linked with a low Canadian dollar created food price inflation in 2015, mostly because of the volume of food that's imported, he said.

Prevailing world markets may create hardship, "especially for farmers that took on significant loans during that 2011 period," Fraser said. But current prices remain generally above the level of the past 20 years, he said.

Agriculture continues to be an area of significant growth, Fraser said. BF

Lunching lambs are labour savers

A new way for Ontario vineyards to keep their grape vines clear and clean is starting to take hold. And it's not a baaa-d idea at all.

Some vineyards in Niagara now use sheep and lambs to eat the vines' lower leaves that cover grape clusters.

Normally, growers remove the leaves by hand or with machines. "It's a slow and methodical process" that can cost $330 an acre, said **Featherstone Estate Winery** winemaker and co-owner **David Johnson**. Removing a vine's lower leaves helps prevent mould and mildew.

Courtesy Featherstone Estate Winery

Johnson first learned of the practice of using sheep to do the work during a work placement in New Zealand in 2007. Johnson says each year he seeks out a small workforce of Southdown lambs (an English breed) to tend to the vines. The lambs must be short – 22 inches to the shoulder – to ensure they only eat the lower leaves. They arrive in July and graze through mid-September. Johnson says the lambs don't touch the grapes and only eat the leaves.

"They really work in established vineyards where the plants have strength and root structure," he said.

Others, such as nearby **Tawse Winery** and **Southbrook Vineyards Inc.**, have followed suit. BF

Social (Ag)Media: Agricultural research and innovation

kates_illustrations/iStock/Getty Images Plus

According to **Agriculture and Agri-Food Canada**'s report, 2016 Overview of the Canadian Agriculture and Agri-Food System, public investments into agriculture research and innovation were projected to total $649.5 million in 2015-2016. This spending has shrunk since 2007, but, according to the Overview, "continues to exceed that of the United States," in terms of the share of gross farm receipts.

Despite the decreases in funding, a number of organizations remain actively engaged in public agricultural research and innovation. This month's installment highlights a number of relevant Twitter accounts. This list does not indicate endorsement.

@UofGuelphOAC (**Ontario Agricultural College, University of Guelph**)
The OAC Twitter account shares updates on the research conducted by its students and faculty. The university's researchers study, for example, poultry cage enrichments and invasive insect species in crops.

@AgInnovationOnt (**AgInnovation Ontario**)
AgInnovation Ontario is published by the Agri-Technology Commercialization Centre. AgInnovation recently covered **University of Waterloo**'s research into identifying fake pesticides and **Trent University**'s research into indoor grape production.

@ONAgFoodRuralRI (**Agriculture, Food and Rural** research and innovation)
The Ontario Ministry of Agriculture, Food and Rural Affairs tweets findings relevant to Ontario ag. It highlighted, for example, global research into alternative methods for sustainable livestock production.

@USDA-ARS (**U.S. Department of Agriculture Agricultural Research Service**)
If you're interested in ag research south of the border, the USDA Agricultural Research Service is a good place to start. This account's recent topics included faba beans and food labelling.

What social media accounts do you like to follow? Tweet us, post on our Facebook page or email us at letters@betterfarming.com. We always appreciate your thoughts. BF

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Healthy breathing on the farm

Rural upbringing can reduce allergies and asthma, a growing body of health research shows.

A study published Aug. 4 in the *New England Journal of Medicine* compares school-aged children among two distinct U.S. farming populations. Researchers found much lower levels of "allergic sensitization" among Amish children compared with a similar Hutterite group.

Although similar in genetic background and lifestyle, Amish and Hutterites farm differently. Amish farmers employ traditional, livestock-based practices while Hutterites use industrial methods.

Stephanie Frey/iStock /Getty Images Plus

Several studies since 1999 show protective health effects from rural living for asthma and allergies, **University of Saskatchewan** researcher **Joshua Lawson** said in an interview. Why the lifestyle produces such a benefit continues to elude researchers exploring what Lawson described as "the Hygiene Hypothesis."

Early exposure to bacteria and infection appears to increase a person's initial immune response, which in turn decreases the allergic immune response, Lawson said from Saskatoon where he works in the **Canadian Centre for Health and Safety in Agriculture**.

"Whether or not the hypothesis is true for all situations or explains all of it, there are still a lot of questions about that," he said.

Even with the rural/farm benefit, however, the incidence of asthma among rural children remains at 10 to 15 per cent, Lawson said. For those who do develop the disease, farm environments can aggravate symptoms. BF

Courtesy Tribine Industries, LLC

Revolutionizing the nature of harvest?

Farmers typically run tractors and grain carts alongside their combines to speed harvest, as combines can only hold 250 to 400 bushels of grain.

Boasting a 1,000-bushel grain bin, the Tribine Harvester eliminates the need for a grain buggy.

The combine's official debut was held at the 2016 Farm Progress Show in Iowa.

Reducing soil compaction is one of the goals behind the design of the machine, and its four tires are aligned so it only makes two tracks in a trip across the field.

According to **Tribine Industries, LLC**'s press release, the machine has "the world's largest threshing and cleaning system." The operator can unload the harvester in two minutes and can make fewer stops for fuel as the fuel tank has a 500-gallon capacity.

The machine has also been designed with an emphasis on the operator's field visibility. It features 360-degree LED lighting and a glass cab floor.

Ben Dillon, president of Tribine Industries, LLC, spent 20 years on prototypes. He tried them in his own fields in Indiana, said **Greg Terjesen**, Tribine vice president, sales and marketing.

Terjesen explained in a late summer phone call that the machines will be "sold on a first-come, first-serve basis," in time for the 2017 harvest.

In terms of international distribution, Terjesen said the western Canadian market will probably be reached first. BF

Low loonie buffers Canadian farmers from market woes

U.S. Midwest bankers predict tighter credit amid a "general, gradual decline in the farm economy," **Federal Reserve Bank of Kansas City** surveys said for the first half of 2016.

Even so, Canadian farmers remain isolated from the trend mainly because of comparative currency values, said **J.P. Gervais**, **Farm Credit Canada** chief economist, when asked about the downbeat U.S. news.

Agricultural credit conditions "continued to deteriorate," reserve bank spokesman **Nathan Kauffman** said in a mid-August report. The Kansas City region of the U.S. central bank serves seven, mainly agricultural, states.

Johnny Chih-Chung Chang/iStock/Getty Images Plus

Farm loan repayment problems doubled, Kauffman's August report said, to more than seven per cent.

Canadian farmers didn't experience the income drop recorded for U.S. farmers during 2015, Gervais said. In the United States, the California drought and structural differences in dairy weighed heavily on farm income, he said.

But the main factor creating the difference is Canada's low-value currency. It isolates Canadian farmers from international distress, Gervais said. He expected the loonie to remain about 80 cents through year-end compared to the U.S. dollar. FCC is telling its clients the threshold for concern is an 85-cent loonie. Most economists put the loonie well below that amount into 2017, Gervais said.

"It's more likely we'll see it coming down between now and the end of 2016," he said. BF

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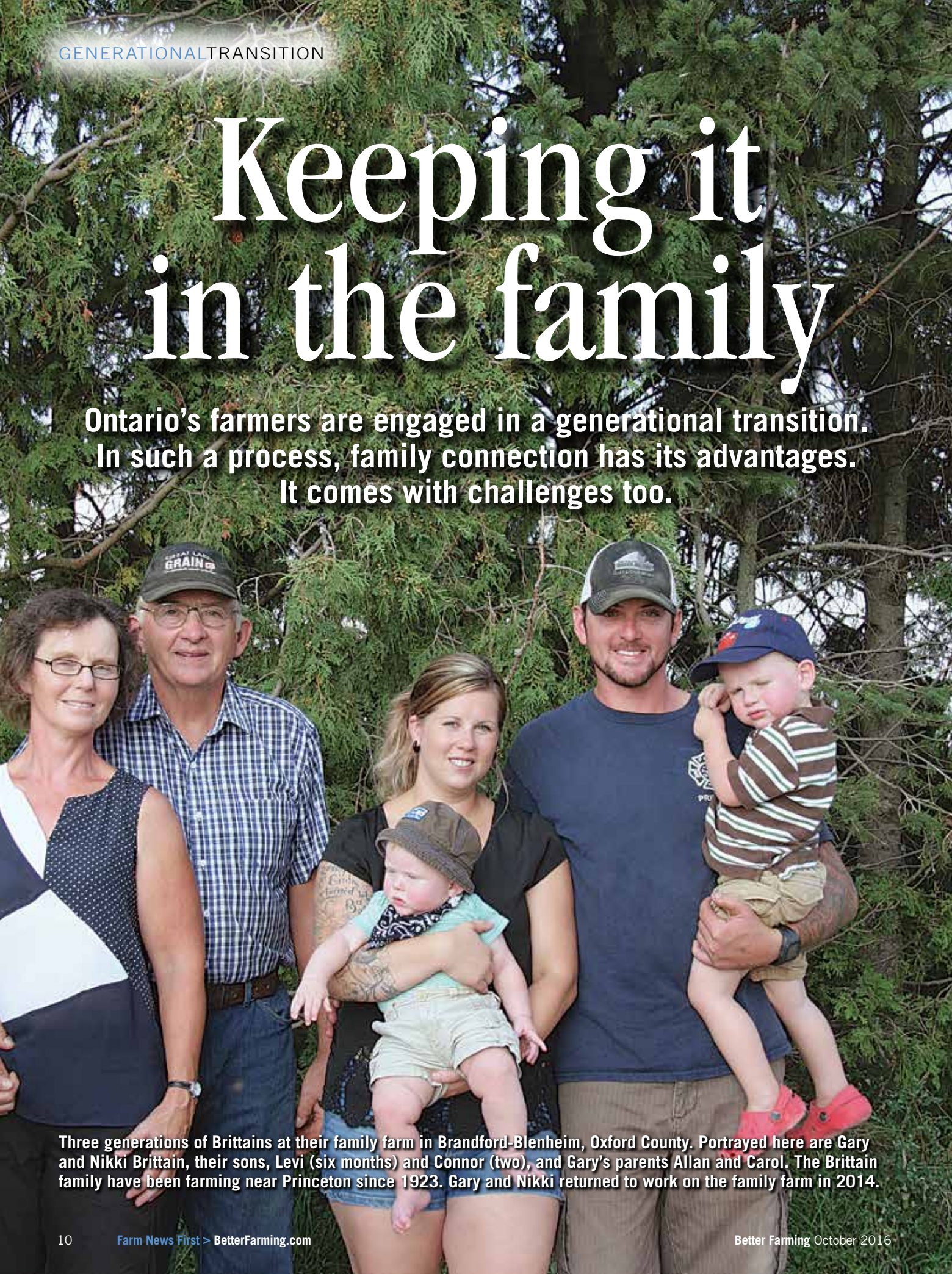
Keeping it in the family

Ontario's farmers are engaged in a generational transition. In such a process, family connection has its advantages. It comes with challenges too.



Three generations of Brittains at their family farm in Brandford-Blenheim, Oxford County. Portrayed here are Gary and Nikki Brittain, their sons, Levi (six months) and Connor (two), and Gary's parents Allan and Carol. The Brittain family have been farming near Princeton since 1923. Gary and Nikki returned to work on the family farm in 2014.

by JEFF CULP

Growing up on the family farm near Princeton and working with his dad, Gary Brittain hoped one day he would take over the family farm. His family had founded the operation on 100 acres in 1923. Over the years it had evolved into a cattle feedlot with a capacity of 270 animals and 500 acres for cash crops and corn for the feedlot.

But early on in his career it didn't look like farming was in the cards. Brittain apprenticed in metal fabrication. He got a shift work job.

Yet he couldn't shake the dream.

"It was just too much to walk away from," said Brittain, today 29 years old.

So, in 2014, Brittain returned to the farm which he now operates with his father, Allan.

The 2011 Census (2016 has not yet been published) shows 48.3 per cent of farm operators are over the age of 55. Over the next decade or so, their $134.2 billion farm assets need to be passed to a new generation.

But how will the next generation acquire these assets? And who will the next wave of operators be?

Larry Batte, an agricultural accountant at Collins Barrow KMD LLP's Stratford office, predicts they will be people like Brittain: people who have a family connection to the current generation of farm operators.

The road is practically barred to people without such a connection.

For starters, a young person isn't likely to have access to the kind of money needed to acquire all of the components needed to launch a new operation, Batte said. (The 2011 Census showed the average assets per farm in Canada exceeded $2 million).

Money is also needed for other expenses and operational costs, he added.

Even if the land is paid for, for example, there could be buildings and equipment that need to be financed or quota payments. Cash flow, the difference between how much money there is at the beginning of a financial period and at its end, becomes critical to pay down such debt. The cash flow needs to be positive, something that a well-established business may be better equipped to achieve than one just starting out.

The family advantage

Because they already hold assets, Ontario's older generation of farmers is well positioned to lend the younger farming generation a helping hand by creating ownership transitions that do not necessarily rely on a large amount of up front cash, Batte said.

That family advantage, however, creates other challenges that someone without a farm connection may not encounter.

On the Brittain's farm, for instance, both generations are active in the farm operation. So a farm that was supporting one family now supports two.

"For a young farmer, an off-farm job is a necessity," said Brittain, whose wife, Nikki, also works off-farm as a nurse. "You can't have everything tied up in one area of work."

To finance his return, Brittain realized he needed his own gig where he could set his hours and plan around the farm's busy times.

"You need something to pick up the slack," he said.

He quit his shift job and started an excavation business.

Today, the formula seems to be working. Beef prices are low this year, and a lack of rain has affected crops. But the excavation business is doing okay, he said.

One business, several to support

Eventually, the farm will have to support Gary's family, and ensure Gary's parents have enough for their retirement.

This is a scenario Lindsay Folk, director, pricing and product solutions at Farm Credit Canada, sees all the time. It is for this reason the Crown lending corporation developed financial products designed specifically with farm transition in mind. One of those products is a transition loan, which is typically used by the older generation to gradually sell the farm assets.

"You need to have a vendor who is willing to take the purchase money over time," explained Folk. "Say the purchase price is $500,000 and the vendor is willing to take $200,000 up front, and the rest over the next four years. In the first year, the purchaser only makes payments on $200,000. This creates lighter interest payments for the purchaser, and FCC guarantees the vendor that he will receive the full selling amount."

Managing payments from the farm's cash flow requires expertise, advises accountant Batte. "The rules surrounding property, succession and general business issues in agriculture are significantly different than other businesses," he said.

Setting a value on farm assets is an example. Batte said the transition price of the assets needs to be realistic according to the market, and the process of arriving at a selling price needs to be transparent to tax authorities. If the purchaser doesn't use professional expertise, he or she risks experiencing a Canada Revenue Agency reassessment of the property and possibly incurring a penalty.

Batte recommended those undergoing a transition develop a transition team. "Where everyone (in the family) is in agreement a transition team might consist of an accountant, a lawyer and a facilitator to handle family issues."

The relationship dynamic

Differing expectations among siblings, where some might want to stay involved in the farm operation but others don't, is one of the most common family issues, Batte said.

"That's why estate planning should always be part of a succession plan. The first thing we do is ensure the business remains viable, then we look

at other assets and see if we can divide them between on-farm and off-farm children in an equitable way. This (action) is sometimes very difficult."

And potentially painful, said John Fast, an author, speaker and consultant for the Centre for Family Business in Waterloo.

"It depends on when you start," he said. "It doesn't have to be painful, but if you wait too long, it could be. When the parents – let's call them the 'founders' – are in their 70s and the successors are in their 40s, there's potential for trouble. By the time you are 40, you're established and have fallen into patterns in your life. But if the founders start when they are in their 50s, that's the time to start talking about capacity and commitment."

Batte said a succession plan always starts with family dynamics. "Who will be happy or unhappy? How will my life change? Would I be giving up control?" These issues are often pushed under the surface, he said, and many give up planning until something – like ill health – forces them into it. When that happens, said Batte, assets are sold for less than they should be, and tax implications aren't fully considered.

"In order to get started, you need to have your finances and (corporate) structure in place. Then you look at cash flow," Batte said. "Your plan needs to prove to yourself that it will work. Then you have to convince a lender."

Planning and financing growth

Mary Lou McCutcheon, Royal Bank of Canada vice president of south western Ontario agriculture, noted many people think a business plan is developed primarily to satisfy financial institution requirements. "But the real value of the plan is to the owner," she said. "The plan looks at the industry, the markets and where you want to go. It's much more important for the farmer to have this plan than the bank."


Mary Lou McCutcheon

She spends a lot of time working with farmers to select the best financial products for their farm – regardless of whether they are new or established farmers.

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(intensive) business," she said.

Brittain acknowledged the expense involved for "equipment, buildings, everything."

His farm is not only in the midst of transition but also expansion – with the addition of a silo and a new barn for finishing cattle. The Brittains have accessed government funds, including Growing Forward, a federal/provincial cost-sharing program for market development, to assist in this process.

Brittain credited his mother, Carol, for obtaining the grants, and noted she handles the farm's business operations.

They've also made good use of workshops hosted by industry organizations. "Ag organizations out there will have grower information days, tours to show you all the up-and-coming technologies," Carol Brittain said. "There's always new sprayer technology to help us become more environmentally friendly."

Resolving different visions

Nikki Brittain said she believes keeping up on new technologies and new techniques will be critical to the farm's future.

"Farming has changed," she said. "And the way society views farming have changed."

Differing visions for the business present another challenge in farm transition.

"All farm families have to change the way they do things as they move

Making the leap to agriculture: one farmer's experience

Brantford area cattle farmer Sandra Vos is living proof that someone with no connection to the farm can still get into the business. Vos bought her land 15 years ago using her own savings to finance the venture.

She grew up in Toronto and was a nurse by profession. She never lived on a farm, but visited a relative's Brant County farm with her brothers when she was young.

"But being the girl, I didn't get a chance to drive the tractor," she said. "I was in the kitchen drying dishes."

A cousin acquired an 80-acre package of the farm and "asked me if I'd like to buy it. It was about five minutes from Brantford, so I said, 'yes.' That's when the learning curve started."

She said she wouldn't have been able to buy the farm today. "I bought it before the land bankers got active around Brantford. Today, farm land is $10,000 to $14,000 an acre; I paid a fifth of that."

She has 30 to 35 pasture-fed cattle and serves the direct-to-freezer market. It's a niche market, and she said such markets provide the greatest opportunity for farmers starting out.

"My target is middle-aged families," she said. "I have customers from Toronto to London, and it's all word-of-mouth. I don't sell half animals or quarters; I might sell 20 pounds in a variety of cuts, and I don't kill an animal until I have an order."

Her kids have no interest in the farm – "it's a 'Mom' thing," she said – and she shudders for young people trying to get into the business. "I'd hate to be a kid starting out in this economy."

"The capital intensity even over the past 10 years has maybe tripled," said Ken McEwan, University of Guelph Ridgetown campus director and a specialist in agriculture production economics.


Sandra Vos

Despite farming's rising costs, it continues to attract young people, many of whom don't have a family connection to the industry, McEwan said.

"Increasingly we're seeing students coming from non-rural Ontario," he said.

"It's increasingly happening because agriculture right now is a great place to be. There are more jobs than we have graduates. Let's say you're a young person from Chatham looking for employment. Agriculture is a great place to be if you want a job," he said. BF


Much was by trial and error in the early years of production for Brant County beef farmer Sandra Vos. She finishes some of the cows her herd produces but also sells some calves, noting that the farm's 80 acres limits the number of animals she can finish.

forward," said Brittain. "Things are different now than they were. I might have an idea that's different from Dad. But it's more like a partnership, and he'll usually let me go with my ideas."

Fast said the older generation's transition from parent and child relationship to partners is one of the biggest hurdles family farm transitions face.

"You've seen them (the children) in diapers. When they were 13, they started saying 'no.' When they were 18, they started saying other things. It's called 'individuation,' and it's a huge stage in life, and it's a challenge for all of us," Fast explained.

Three things successful family farm businesses should be doing

John Fast, consultant and founder of the Centre for Family Business in Waterloo, said there are differences between family-run businesses and other businesses. And there are things other businesses do that family businesses typically don't.

1. Performance reviews

"Performance reviews are rare in any family business, almost to the point of being non-existent," Fast said. But performance reviews should be used in family businesses as well. How else can there be development?

"Look at it this way. If they were out on their own, they'd have bosses and regular performance reviews, and they'd be developing," he said.

2. Personality profiles

Personality profiles are a management tool, said Fast.

"Any HR Professional worth his salt will do these," he said. And farm managers should have these in their management toolbox.

"They are the best way to identify differences and strengths and tendencies in people," he said.

Knowing whether a person is an extrovert or an introvert, for example, could change how the person should be managed.

3. Constant communication

The biggest difference between a family business and any other kind of business is the potential overlap between family challenges and business challenges. Fast points out that about half of second-generation farmers working on the family farm are dissatisfied with their job, and that's mainly due to family conflict.

"The business and family juggle for affection, love and all the warm-and-fuzzies. But you also have to make money," he said.

Communication needs to be on-going and honest. BF

"What can happen is the young people get trapped. From the founder's point of view, you want a partnership. You may continue to control the finances, but do you want to partner with a child? You've gone from wiping their butts to having them as a legitimate business partner."

Family dynamics in succession are a key part of the formal education agriculture students at the University of Guelph Ridgetown Campus can expect.

"We recognize there's a human side to it," said Ken McEwan, campus director. "Handling other siblings, for example. It's complex and many struggle with it."

As well, students in the two-year Associate Diploma in Agriculture program are given a major project in their fourth semester about building a business case for the family farm they may be going back to. "We realize that within a few years of graduating, they may be operating a farm worth tens of millions, generating one or two million in revenue per year," McEwan said.

"It offers a potentially tremendous reward to take over a viable, competitive business that you can take to the next level."

For Carol Brittain, there is another kind of reward. "We're just happy Gary had an interest in the farm to continue the family legacy," she said. BF

Solutions to the cost of quota

For many types of farming, in addition to land, buildings and equipment, there is the added price of marketing quota. The 2011 Census shows over 16,000 of Canada's 140,000 farms hold quota and, at a total value of $33 billion, transferring quota to a new generation represents potentially huge financial barriers.

"As a new farmer, the cost can be considerable," said Michael Edmonds, Chicken Farmers of Ontario director, communications and government relations. Like most marketing boards, Chicken Farmers looks for ways to ease the burden of transition.

To be part of the chicken marketing system, a farmer must own 14,000 units of quota, a value of about $1.75 million.

Chicken Farmers' new entrant program aims to offset that cost by loaning 10,000 units of quota to beginning farmers who have already purchased 4,000 units of quota. Farmers have 15 years to return the loaned quota and buy replacement quota on the open market. Chicken Farmers retires the surrendered quota.

"We're reducing barriers to entry while maintaining the integrity of the system," said Edmonds.

The marketing board's specialty breed, artisanal and family food farmer programs don't require quota. Instead, Chicken Farmers limits the number of birds allowed in each.

Under the family food farmer program, for example, farmers can raise up to 300 birds for themselves and small local markets. The artisanal program allows farmers who supply a local or regional market to raise 3,000 birds.

"These have been very effective in drawing people into the commercial side of the business," Edmonds said.

He said he is very encouraged by participation in the artisanal program and noted more than 100 farmers had enrolled in the little over a year since its introduction. He predicts some of these growers will step up to the commercial side of the business over time.

"It gives them an entrepreneurial gateway into commercial farming," he said.

Quota may be a serious initial barrier, but, "once a young farmer becomes part of the supply management system, they become part of the whole supply chain," Edmonds said. "Supply management leads to a stable market that some farmers find very attractive." BF

A meaty new direction

Diversifying into the operation of a butcher shop allowed Anna Haupt and Mark McCutcheon to support their family while maintaining their agricultural roots.

by KYLE RODRIGUEZ

Anna and Mark's children Anya (left) and Helaina brush a goat together. Anna chose to start raising goats as something she could do with the children while Mark did fieldwork. The trust built between the children and the herd is showcased during their participation in showmanship classes and competitions where judges evaluate the docility of the animal, as well as how well the children care for and control the goats. Anna says she makes sure her children are aware that the family is raising a productive herd, where each animal needs to earn its spot, and that some show animals will eventually end up as food.▼

▲ Clockwise from right are, Anna Haupt, her daughters Anya (2), Evi (8), Helaina (6), and husband Mark McCutcheon, posing for a portrait on the original Teal's property.

Founded in 1915 near Hagersville, Haldimand County, Teal's Meats has built up a loyal clientele by using the whole hog for their sausage, including prime cuts, following family recipes passed down for generations. In 2008, with retirement looming and their children pursuing other interests, Gary and Shirley Teal were approached by their neighbour's daughter and her husband to see if they were interested in selling the business.

The young couple, Anna Haupt and Mark McCutcheon, were raised on farms. Mark was faced, however, with unclear succession plans for his family's land, so the couple chose instead to learn the butcher's trade.

In doing so, they combined the revenue potential from the Teal's existing business with the productive capacity of their wider family's farm operations. Anna's parents Anita and Ferdinand Haupt raise beef. Her sisters, Greta Haupt and Niki Carpenter, and Niki's husband, Ian, run the farm across the road, which grows hay for the livestock and cash crops. Anna also raises goats. Together, the family now produces approximately 40 per cent of the company's meat.

Thus, Anna and Mark preserved and developed a local institution that has lasted over 100 years. BF

A delivery truck is parked in front of the new location of Teal's Meats near Hagersville. The 5,400 square-foot facility, which the company moved into in spring 2016, is over double the size of the old store. Married co-owners Mark McCutcheon and Anna Haupt bought the century-old business from Gary and Shirley Teal in 2009. The limited space at the old location required Teal's Meats to pay butchers to kill and process livestock. This new building includes a holding barn, kill floor, blast and aging coolers, a processing room, office and retail space. This setup allows Mark and Anna to control the entire production cycle, from raising animals to the direct retail sale of processed products. ➤

Mark breaks down the front of a beef carcass to make cuts for sale in the retail store, which operates Wednesday to Friday. With several brothers interested in taking over his father's dairy farm when he retires, Mark felt it best to set out and study to become a butcher. He says that working in cold, damp conditions, on hard concrete floors and having to regularly bring animals to their slaughter takes a toll on butchers, and their career lifespan can be limited.

Anna puts away tubs and grinding parts after cleaning them Monday morning to get ready for the coming week's batch. Green bins are used for the left side of the sow, and white tubs for the right. Green and white bins are combined in pairs before grinding to keep the fat content consistent. On Tuesdays the mixer/grinder (foreground) is used in two stages for sausage meat: an initial pass producing medium sized chunks, and a second, finer grind with spices.

Anna pre-measures spices according to old family recipes passed down by the Teals. The company specializes in four types of sausage. No fillers or colorants are used. Each week she touches base with customers for orders, and then calculates the size of batches she will require. Clients include local restaurants, grocery stores, call in orders, walk-in sales, and those who visit the couple's weekly booth at Hamilton's Ottawa Street farmer's market. ➤

Anna hand cuts links, while Mark guides the sausage filler as it stuffs natural casings. Newer machines will stuff and twist links automatically, but Mark and Anna prefer the consistency the older machine provides. ➤

➤ Anna hand packs the sausage-filling machine with seasoned meat on Wednesday morning, while Mark looks over the report from an inspector who visited the day before. Anna was born and raised on a farm located next door to the Teal family's original property.

Former owner Gary Teal stops by the retail location on Wednesday morning to pick up sausage meat for a family gathering. Here, he shares a story with Anna about having to throw out over 3,000 pounds of meat right after the Hagersville tire fire of 1990. He recalled government officials suddenly calling back inspectors when the fire broke out, and then putting a hold on all meats not stored in an airtight environment. This measure was taken out of concern the meat had been exposed to airborne contaminants from the burning tires.

A round up of 2017 pickup trucks

These trucks offer a range of options and benefits for Ontario farmers.

by TROY BRIDGEMAN

Farmers rely on their trucks to fill a wide variety of roles – whether it be transporting crop inputs and feed, travelling to family events and industry meetings, or even just offering a quiet and comfortable location to grab a sandwich in the field.

With ongoing technological and engineering developments, the features and capabilities of these trucks are advancing at a rapid rate.

Pickup truck drivers can connect with friends, family and industry representatives while on the road or catch their favourite country music or ag programming, thanks to a range of digital technologies.

Drivers can also carry and tow heavier loads due to the introduction of new metal alloys, such as aluminum, which has increased the strength and durability of pickup trucks while reducing their overall weight. An added benefit of this engineering development, when combined with other design improvements, is the decreased fuel consumption.

Given the centrality of the pickup truck to most farm operations, *Better Farming* spoke with representatives from Ford, General Motors, Ram Truck and Toyota to find out about the designs and new technological features in their 2017 line of pickup trucks.

The 2017 Ford Super Duty F-250 Lariat.

Courtesy Ford Motor Company

Ford 2017 Super Duty truck lineup

"Our customers look at technology as a tool," said Mike McGarrell, truck marketing manager for Ford Motor Company. "They are looking for technological features that enable them to maximize their productivity."

Ford has been at the forefront of the truck's technological evolution since 1925 when its first pickup, the Model T Runabout, rolled off the line in Detroit.

It came with very few options, but as Henry Ford famously said, "A customer can get it painted any colour they like as long as it is black."

Much has changed since then, with the 2017 Super Duty being offered in five trim levels. It has numerous options to allow customers to build the ideal truck for their application, and of course, in a variety of colours. McGarrell said the 2017 Ford F-Series Super Duty is the most exciting line of trucks they have built to date with significant advancements in power, durability, and innovative technology that consumers can use to work more efficiently, and safely.

"The new 2017 models are improved in every way," McGarrell said.

Bigger cabs have increased storage capacity and improved passenger comfort.

The use of a high-strength military-grade aluminum alloy body and bed has helped reduce the overall weight of the vehicle. This design decision allowed more weight to be allocated to the high-strength steel frame. This redesigned frame is up to 24 times stiffer than its predecessor, thus allowing for better towing, payload, ride and handling.

The redesigned frame and advancements in engine and transmis-

sion technology has also improved fuel efficiency.

The second-generation 6.7 litre Power Stroke V8 Turbo diesel engine delivers 440 horsepower and 925 lb-ft of torque. The standard 6.2 litre V8 gasoline engine offers 430 lb-ft of torque and 385 horsepower.

Both the diesel and gasoline models come with a six-speed automatic transmission.

"This is the best heavy-duty truck we've ever made," said McGarrell. "We listened to our customers and created the toughest, smartest and most capable Super Duty ever."

New high-tech features include a trailer tire pressure monitoring system and BLIS (Blind Spot Information System) that uses radar sensors in the tail lamps to monitor areas that might not be visible to the driver.

There is an option for seven cameras that connect to the eight-inch LCD productivity screen located in the centre of the front console.

They include a front camera, side mirror cameras, centre high-mounted stop-light camera, tailgate camera, and a customer-placed trailer camera. The cameras work together to provide views around the vehicle. They facilitate technologies such as the reverse guidance system, the ability to peek around corners and equipment, and the 360-degree camera.

McGarrell said it is Ford's insight and response to changing market demands that have made the Ford F-Series the best-selling line of trucks in Canada for the last 50 years.

Ram 2017 truck lineup

Brand loyalty is also a factor behind the enduring success of the Ram lineup.

"Ram trucks are Canada's longest-lasting line of pickups," said Bradley Horn, product communications manager for Fiat Chrysler Automobiles. "Of all Ram trucks sold in the last 28 years, 81 per cent are still on the road today."

The new line of 2017 Ram trucks builds on the company's reputation for award-winning design and performance.

"Whether focusing on a family that uses a Ram 1500 day in and day out, a hard-working Ram 3500 Heavy Duty owner or a farm business that depends on its Ram ProMaster commercial van every day for deliveries, Ram has the truck market covered," said Horn.

One of the class-exclusive features of the Ram 1500 is the RamBox Cargo Management System, a drainable storage system incorporated into the side rails of the truck bed.

All models are available with the Uconnect Infotainment system that features an 8.4-inch video-touch screen located on the front console that allows you to easily monitor and control entertainment, vehicle systems and smart devices.

The 2017 Ram 3500.

Courtesy FCA Canada

The Ram 1500 can be augmented by a seven-inch customizable full-colour display to allow operators to monitor engine performance, trip information, temperature settings, fuel economy, cruise control, trailer braking and other vehicle data.

Under the hood, the Ram 1500's segment-exclusive EcoDiesel engine makes it Canada's most fuel-efficient full-size truck at 8.0 L/100 km (35 mpg) with towing capability up to 4,173 kg and 420 lb-ft of low-end torque.

"Ram Truck has held one title longer than any production pickup," says Horn. "It is the most off-road-capable."

The 2017 Ram Power Wagon features a number of off-road-specific enhancements, including a suspension with more than two inches of lift, locking differentials and a 5,443 kg winch.

"That gives this beast a significant advantage over all production pickups," said Horn.

Ram's heavy duty truck line has best-in-class towing at 14,157 kg and best-in-class torque at 900 lb-ft.

"Overall, the pickup truck has become a much more advanced, comfortable, efficient and connected vehicle in recent years," said Horn. "In order to be the best it takes commitment to innovation, capability, efficiency and durability."

Courtesy General Motors Canada

The 2016 Chevrolet Silverado 3500.

General Motors 2017 truck lineup

Innovation has long been a primary focus for the engineers and designers at General Motors, and that is reflected in the company's 2017 models with useful features for modern farmers.

"We have trucks to meet every farmer's needs from a half-ton Silverado for everyday farm activities to our three-quarter or one-ton trucks for hauling large loads or towing with the fifth wheel," said Masha Marinkovic, assistant manager of product communications for General Motors Canada.

A new feature for the line of 2017 Chevrolet Silverado heavy duty trucks is a patented dynamic hood scoop to improve the performance of their Duramax diesel engine.

The new air intake system provides 60 per cent of the air to the engine from an inlet at the front of the hood. The air is close to the outside ambient

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Vehicle(s) may be shown with optional features. *On F-450 DRW with 6.7L-V8 diesel engine. When properly equipped with available factory-installed equipment. Class is Full-Size Heavy Duty Pickups over 8,500 lbs. GVWR vs. 2016 competitors. **On F-350 DRW with 6.2L-V8 gas engine. When properly equipped. Class is Full-Size Heavy Duty Pickups over 8,500 lbs. GVWR vs. 2016 competitors. ***On F-250/F-350 with 6.7L-V8 diesel engine with automatic transmission. When properly equipped. Class is Full-Size Heavy Duty Pickups over 8,500 lbs. GVWR vs. 2016 competitors. †F-Series is the best-selling line of pickup trucks in Canada for 50 years in a row, based on Canadian Vehicle Manufacturers' Association statistical sales report up to 2015 year-end.

The 2016 TDR Pro model of the Toyota Tundra.

Courtesy Toyota Canada

temperature and cooler than the air under the hood.

"Cooler air helps the engine run better under load especially in conditions where engine and transmission temperatures can rise quickly," said Marinkovic. "Running cooler allows the engine to maintain full power and vehicle speed for capable trailering in even the toughest conditions."

The company has also made a number of advancements in fuel efficiency with its EcoTec 3 gas engine family. The 4.3-litre V6, 5.3-litre V8 and 6.2-litre V8 provide the power and torque of a large displacement engine with seamless switching to four-cylinder mode to save fuel during light-load driving.

"So your large engine acts like a small engine when you don't need the power," said Marinkovic. "You don't have to give up power to get great fuel economy."

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Optional features shown throughout.

options such as MyLink Radio, OnStar, 4G-LTE with wi-fi and cell phone charging provides farmers with online connectivity wherever and whenever they are in their truck, the company says.

"Farmers are loyal truck customers," said Marinkovic. "We continue to strive to earn that loyalty everyday by providing the most durable trucks on the market with purposeful technologies that enhance the vehicles' capabilities and functionality."

Toyota 2017 truck lineup

Toyota has two trucks in its 2017 line up that are designed with farmers in mind.

The Toyota Tacoma is the best-selling compact pick-up truck in Canada and the 2017 model, which was fully redesigned for the 2016 model year, has been just as popular.

It is available with the choice of two engines, two drive-trains, two transmissions, two cab configurations and two bed lengths.

Engine choices include a 2.7-litre four-cylinder engine and a new 3.5-litre D-4S direct injection with Atkinson cycle V6 engine with 278 horsepower and 265 lb-ft of torque.

Drive-train options include 4x4 and 4x2.

Transmission options are six-speed manual or six-speed automatic.

Cab configurations are Access or Double and bed lengths are five or six feet.

Towing capacity is up to 2,950 kg with a payload capacity up to 680 kg.

The new 2017 TRD Pro model is designed for extreme off road with features such as crawl control, multi-terrain select, A-TRAC or hill-start assist control.

The 2017 Toyota Tundra offers farmers improved towing capability and also comes with a choice of engine sizes, drive trains, cab sizes and bed lengths.

Engine options are a V8. 4.6 litre with 310 horsepower and 327 lb-ft of torque or a V8 5.7 litre with 381 horsepower and 401 lb-ft of torque. Both are mated to a six-speed automatic transmission with choice of 4x2 or 4x4 drive trains.

There are three cab configurations: regular cab with three passengers, double cab with five or six passengers and CrewMax cab with five passengers.

There are also three bed options – short (5.5 ft), regular (6.5 ft) and long (8.1 ft).

The Tundra has a maximum towing capacity of 4,760 kg and a maximum payload of 800 kg.

All 5.7-litre models are now equipped with a tow package that includes a trailer brake controller, a trailer sway control and a larger 144-litre fuel tank.

High-tech options include reverse camera, parking sensors, wireless phone charger, smart key, blind-spot monitoring, navigation and premium audio systems. BF

‘My go-to vehicle’ – farmers as reliant as ever on their pickups

Better Farming caught up with some Ontario farmers to discuss the role of the pickup truck in their lives and farming operations.

by ANDREA GAL and TROY BRIDGEMAN

A tally of vehicles in the Woodstock parking lot at a Farms.com Risk Management event in early September surely confirms the pickup truck as the standard vehicle of choice for the Ontario farm community.

In total, of the 45 vehicles in the lot, 40 were pickups. (Four of the cars and SUVs belonged to Farms.com staff.)

Better Farming recently caught up with a few farmers to learn more about the multiplicity of roles their trucks play – both in their businesses and in their lives.

John Borda, a cash crop farmer in Brant County, reflected on a close call with one of his past trucks. He said he had driven his 1988 pickup for about 20 years when, suddenly, the carburetor caught fire.

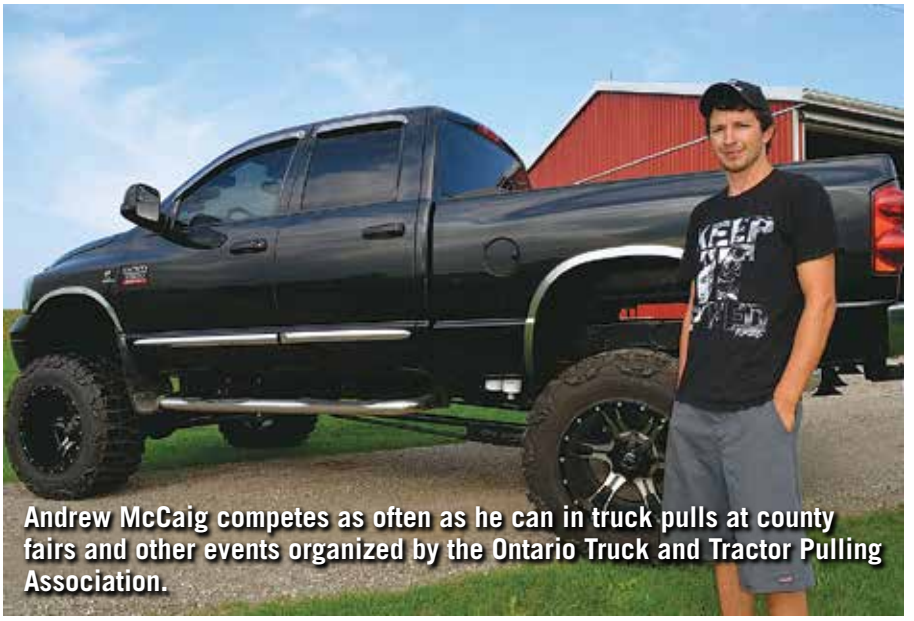
“By the time I got my tools out (of the truck), I couldn’t get my glasses off of the dash,” Borda remembered. He said the firefighters laughed and said it was “‘about time you got a new truck.’”

But, Borda said, “that (truck) did us good.”

Talking about his current truck, Borda said “you need to have two” trucks – one of which he classified as a “run-around truck.”

Having at least two trucks helps you to handle the range of unexpected situations that can arise, he explained. “If something breaks down, you don’t want to run around with a tractor” to get parts. And, for Borda, these trucks have to be built by Ford. “Nothing but the best,” he said.

A number of other farmers described how their pickups are central to the completion of their farm chores.



Andrew McCaig competes as often as he can in truck pulls at county fairs and other events organized by the Ontario Truck and Tractor Pulling Association.

Deborah Simmonds, owner of White Rock Ostrich Farm near Rockwood, for example, said that the family pickup is an essential part of the farm operation.

“We have a 2010 Chevy Silverado,” said Simmonds. “We use it for hauling ostriches to the processing plant, for picking up feed supplies and moving ostriches from one pen to another.”

Andrew McCaig, a diesel mechanic who remains active in his sixth-generation family farm operation in Puslinch Township, highlighted the usefulness of the farm pickup.

“You can throw a round bale in the box (of the truck) and haul it out to the field,” said McCaig. “You can use (it) to pull a wagon or, if something breaks out in the field, you can load up your tools and go back with the truck.”

McCaig’s pickup, however, serves more than just a utilitarian purpose. It is also a source of pride and enjoyment.

Influenced by his childhood memories of his father’s participation in tractor pulls, McCaig has now entered the competitions at county fairs and other events. McCaig’s activity of choice, however, is truck pulls, and his prize possession is his Ram 2500.

McCaig’s father was only too happy to help him in readying his truck for the competitions.

“Dad helped me do a lot of it so, it was fun,” he said. “You have to beef up everything.”

Bev Shaw, a Grey County cash crop and beef farmer, summed up the general consensus on farm pickups.

“My truck pulls the camper trailer, the wagon and it does all of the farm stuff,” said Shaw.

“The truck is my go-to vehicle.” BF

Crop management after glyphosate: the integrated approach

Europe is moving towards a full ban on the use of glyphosate. But farmers there, battling pervasive weed resistance to the popular herbicide, are already coming up with alternatives.

By NORMAN DUNN

Most scientific reviews still give glyphosate a clean bill of health. But public fears of cancer risk mean members of the European Parliament, particularly from France, Italy and the Netherlands, want it stopped. Glyphosate may be applied to crops until the end of 2017 but a decision regarding its use in the 2018 crop year has yet to be reached.

What does practical European agriculture think of glyphosate's fate? First reactions indicate farmers and their advisers are maybe a bit more laid-back about the issue than might be expected.

One reason is that continued use of the herbicide has induced a degree of resistance. Glyphosate is no longer the silver bullet for grass weeds. Hans-Peter Naunheim, product manager for cereal herbicides for Bayer in Germany, says: "We've got

Just a few years on after an error in blackgrass control strategy, for instance mistaking the timing of a glyphosate treatment, can lead to a grass weed explosion in a crop. Here, a severely infested winter wheat crop in Westphalia, Germany in May 2016.

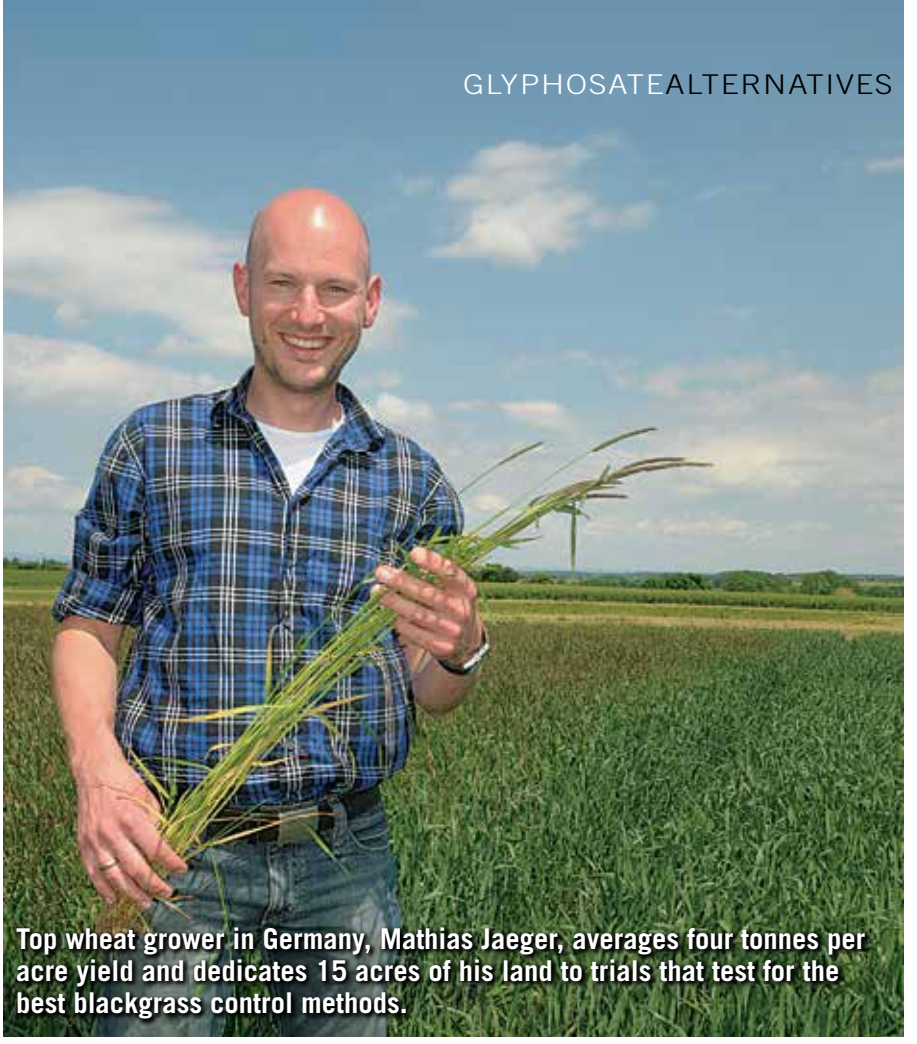
trial plots where shallow cultivations are used throughout a typical north European arable rotation of canola/winter wheat/winter wheat and, even with glyphosate treatment before sowing, the blackgrass population has risen in four years from 160 heads per square meter to an average 2,800 heads. (Blackgrass is an annual grass weed that is particularly prevalent in Northern Europe.) Even in plots with absolutely no herbicide treatment – but with deep plowing every year – the rise in blackgrass population is less than this."

Crop advisers have watched with concern as low-till or no-till farms struggle with weed resistance to most current herbicides. Well-timed applications with the sprayer can still be effective, said Naunheim. But European climate means the weather windows for perfect spraying are few and far between. On top of this, early sowing to squeeze higher yields, particularly from canola, means there's little time for bare land mechanical weeding and spraying before crop emergence.

Without glyphosate, or even while still using it, a radical antidote is already being practiced. "We are telling our customers with really serious blackgrass problems to consider stopping winter wheat in some fields for a few years, substituting spring-sown cereals or legumes that allow more time for mechanical and chemical control measures, or introducing grass leys into the rotation with several forage cuts per season," explains Naunheim.

A less radical approach can mean a return to soil inversion with the conventional plow as well as a larger variety of crops in the rotation. "For instance field beans or maybe lupines," he says. "I know farmers who have taken this route. It's a tough call because there's still no combining crop in northwest Europe leaving a better margin than winter wheat."

What this profit looks like in Canadian dollars can be seen from last November's European milling



Top wheat grower in Germany, Mathias Jaeger, averages four tonnes per acre yield and dedicates 15 acres of his land to trials that test for the best blackgrass control methods.

wheat market that offered farmers an average C$253 per tonne. Yield levelled at just short of 3.4 tonnes per acre in the best areas, giving a per-acre gross margin of almost exactly $500.

Not too far from the Bayer spray resistance management plots in German Westphalia, grower Mathias Jaeger reflects on the new integrated approach at his farm. His rotation is much wider than a lot of the neighbouring farms and includes not only winter wheat and canola, but also grass for seed production, barley, sugar beet and corn.

With his wheat, Jaeger averages four tonnes per acre. He hasn't used a plow on his heavy clay loam fields for the past eight years. Herbicide treatment – including glyphosate – is still the big gun here. But the integrated approach, such as mechanical weeding whenever possible and very accurate timing of spray applications, is crucial.

"Integrated management pays off every time," he says.

Just like the Germans, British farmers have been pushed by the European political pressures as well as growing weed resistance into finding answers to life after glyphosate. Speaking at the British Crop Production Council weed review meeting last fall, Jock Willmott from the land management organization Strutt & Parker LLP pointed out that glyphosate-resistant blackgrass was adding at least six per cent to crop-growing costs.

On the east side of the North Atlantic, England is recognized as the home of winter wheat monoculture. Now, a more varied rotation is being advised by crop advisors and industry representatives more generally, including the insertion of grass, field beans and lupines into the rotation. A British approach also features building in more crop competition for weeds with wheat drilled at higher-than-standard plant populations of up to 300 plants per square metre.

Barley is another weapon in the integrated fight against weeds because this cereal offers higher natural competition to weeds, according to British crop advisers.

The country's Agricultural and Horticultural Development Board goes a step further than the European mainland by recommending a fallow year when the blackgrass situation gets really bad. The board's figures show this strategy, with accompanying intensive mechanical cultivations, can reduce weed infestation by as much as 80 per cent.

Whatever happens with glyphosate in the end, the threat of its withdrawal has certainly made farmers all over Europe much more receptive to the integrated approach for improved weed control and often lower input costs. BF

The transition from barn to field

When you've spent your farming career specializing in one type of product, shifting to another one can be like learning how to farm all over again. Just ask Huron County farmer Kate Procter.

by MARY BAXTER

In 2010, as Ontario's pork industry continued a slide begun during the 2007 recession, Kate Procter and her father, George, sold the family's pig genetics business. The Procters grow corn, soybeans and wheat in Morris-Turnberry, Huron County where they also maintain a herd of 30 purebred short horn cows. As well, they farm cash crops in Chatham-Kent.

Selling the genetics business was the type of hard, letting-go decision farmers sometimes have to make. "My dad had been working on the genetics since the 1960s, and we were exporting those genetics around the world," Kate Procter says.

Procter, 47, had spent all of her farm career managing livestock. Moving to cash crops operations presented an immense learning curve.

Learning and applying her knowledge both to farm operations and community, however, is second nature for Procter. She holds a B.Sc. in agricultural resource management and a master's degree in rural planning and development, both from the University of Guelph. She writes about farming and rural matters (including for this publication in the past). She tackles planning projects such as the recent development of the Healthy Rural Lens for Huron policy decision-making tool.

Such passion for ongoing professional development helps her grapple with farming's diverse facets. "I think this is what the general public has no idea of – how complex farming really is, and how many different areas or other aspects of life that might be quite unrelated that you have to know about," she says.

Kate Procter

She remembers two years ago when she had to tackle a new grain dryer that wasn't working. It was November. "It felt like it was minus 20 C, and the wind was just howling. I've never been so cold in my life running back and forth between the dryer and the shop, trying to figure out why it wasn't working." Today, she knows the piece of equipment inside and out, she says.

Procter credits three mentors for her successful transition from barn to field: her parents, George and Elizabeth, and Ken Procter (a fourth cousin and also a farmer) who has

worked on the farm for more than 40 years.

If there's a downside to farming, she says, it would be the dismissive attitude she often experiences because of her gender, such as people arriving at the farm and asking to speak to the man of the business.

"Gender inequality is so ingrained, both men and women maybe aren't even aware or realize they are contributing to the problem," she says. "It is there in many tiny ways, especially in language. Sometimes I think if people are made aware, that can go a long way to making things better."

Describe your role on your farm operation?

This is the first year that my dad did not do any planting at all. We have one full-time employee (Ken) and then we have another fellow that we employ as well as needed. I'll operate; I'll run equipment. I don't handle heights very well. I'm not climbing to the top of the silo.

'Gender inequality is so ingrained, both men and women maybe aren't even aware or realize they are contributing to the problem.'

I do quite a bit of record keeping. I try to keep really detailed records as far as what we're spraying. I work on the cost of production; I do all that. I do all the data entry on the financial side. (Until she retired a few years ago, Procter's mother, Elizabeth, did all the books). As well as analysis of the accounts; Dad and I go over it all together.

Any kind of hiring/firing, I do that. Dad and I discuss things when we're making decisions, but I'm taking on more of that too.

Hours you work per week?

When I worked in the pig barn, that would have been much easier to answer, but now, just because when it's cropping you're so intense for part of a year and then it's not so busy.

Hours a day on a cell phone?

I don't talk on the phone very much, actually. Ken and I would text one another when we're trying to coordinate when I'm in the field in the combine and he's in the truck. We would probably text more than we would talk on the phone.

What about your smartphone?

If I am out in the field having an issue, I can pull up my operator's manual for the piece of equipment I'm driving and download it into the phone. I have a handy level on my phone for trying to get the equipment working properly. I can look up the weather; I can look up the markets; I can make trades when I need to. Yes, it's quite, I would say it's a necessary piece of equipment now.

Sometimes I take pictures. I take a lot of pictures – if there are weeds I don't know or insect damage, things like that. I'll take pictures of the variety labels when I'm planting so I'm making sure that I have the right variety when I'm entering (the information).

I enter it actually in the computer on the planter then transfer it to the desktop after planting. We can then generate planting maps that include dates, planting rates, etc. Before harvest I transfer the data to the combine. Then when I'm combining, I can see how the varieties are yielding.

This year was especially interesting because we were trying different seed treatments – I'm looking forward to seeing how they turned out.

But we also keep paper copies. I just want to be extra sure when I enter it in the computer on the planter that

I have the right variety in the right side because we sometimes split the planter with two different varieties. So as I'm planting, I'm watching the monitor and can see every row and how many seeds are planted per row.

Any favourite apps?
Google maps, the calculator, weather. Of course I have my Kobo books on everything. I do use Twitter a little bit. I have Grain Farmers of Ontario's app.

Does your phone ever turn off?
Yeah, but it will turn back on if you need it. I do have to have my charging cord for the tractor and combine because (my phone) doesn't stay charged as long as I do.

How often do you travel?
I don't travel that much, although this year was a bit of an exception. I went to Alberta, New York City and Thunder Bay.

What do you like best about farming?
I really like the fact that you are independent and can make decisions and then see the outcome of those decisions, whether it's good or bad. So there's always learning. You don't have to go through layers and layers and layers of people to get a decision made.

I like to see things grow.

The natural environment has always been a big concern of mine, so I really enjoy being able to be a steward of the land that we have and to try to do things in a way that will improve it and leave it better than how we found it.

What do you like least?
I have kids (Luke, 20, Wes, 18, and Dianne, 16) and I'm a single mom, and I find it really challenging in the busy times when I have those 16- to 18-hour days. I don't like being away, especially for meal times for my kids. Now that they're teenagers, they don't care. But that's always been really difficult (for me).

What is the single most important lesson you've learned?
My dad, he always manages to see the good side or to see things in a positive light. I try to do that but I think he's better at it than I am. I try to remember to be optimistic when things are looking worrisome.

What's your guiding management principle?
Be respectful of the land and treat it well. The other thing that's always been important to me is the people, taking care of the people. The farm should be about the people and not the other way around. It's sad to see people sacrifice themselves and their families for their farms.

What are your volunteer efforts?
Chair, Maitland Conservation Foundation; board member, Huron

Business Development Corporation; past-treasurer, Maitland Trail Association; and crew chief, Celtic Roots Festival in Goderich.

What are your hobbies or recreational activities?
I like hiking and being outdoors and doing things with my kids. I catch a lot of soccer games. Music (piano and guitar), reading and gardening.

What was the last book you read?
A Man Called OVE by Fredrik Backman.

What does your family think of farming?
My daughter has always been quite interested in it and she notices the quality of the crops as we're driving around. She looks at them like a farmer does.

I would say my sons are not that interested. My oldest son is studying forestry. My other son is interested in wildlife biology.

What's your most important goal?
To take care of my family.

How do you define success?
I know a lot of people are very concerned that their farm passes from one generation to the next. I would be more concerned that the people who are farming are caring for the land and getting joy from doing that as opposed to saying, 'I want my kids to be farmers.' I would rather see my own kids doing something they like and somebody who loved the land taking care of it, if that's how it worked out.

Is your farm vehicle messy or neat?
Well, our (previous) farm vehicle was stolen and burnt, so we have a new farm vehicle. It's very tidy right now.

What are three items in your farm vehicle?
Pin flags (for scouting). Pens. Two trailer hitches.

What was the last piece of field equipment you bought?
Discbine.

What's the best time of day?
Right now. I've been sitting on my deck watching the sun set as we've been chatting. I have lots of sunset pictures.

What was your most memorable crop year?
2014. It was difficult right from the start. I didn't think we were ever going to get the crops off. We were harvesting almost right up until Christmas. It was terrible. And the beans were terrible. They all had white mould – which I had never seen before. It was very discouraging. BF

This interview has been edited and condensed.

A look ahead at fertilizer prices

Crude oil prices are predicted to remain low until mid 2017 and grain prices are expected to remain low, too. Here's how those factors will affect fertilizer prices over the next several months.

by MOE AGOSTINO and ABHINESH GOPAL

Two factors play a key role in forecasting fertilizer prices: crude oil price outlook (which determines fertilizer supply) and grain prices outlook (which determines fertilizer demand). For nitrogenous fertilizers (ammonia, urea, ammonium nitrate), natural gas is the direct feedstock for their production, and the fuel's price is correlated to crude oil. The other main fertilizer types are phosphates (diammonium phosphate or DAP and monoammonium phosphate or MAP) and potash, both of which are mined and processed, so fuel makes up a significant portion of their direct and indirect costs.

In 2016, crude oil prices were low on average because of concerns about high levels of U.S. and global petroleum product inventories, despite relatively strong demand, and a drop in U.S. oil rig counts. U.S. Energy Information Administration (EIA) expects global oil inventory builds to be on the higher side in the second half of 2016, limiting upward price pressures in the coming months. EIA expects consistent global oil inventory draws to begin in mid-2017. The expectation of inventory draws contributes to accelerating price increases in the second quarter of 2017, with price increases continuing later in 2017.

Average West Texas Intermediate (WTI) crude oil prices are forecast to average a little above $40/barrel during the second half of 2016 and $52/barrel in 2017. Forecast WTI prices average $58/barrel in the fourth quarter of 2017, reflecting the potential for more significant inventory draws beyond the forecast period. EIA expects natural gas prices to gradually rise, with Henry Hub natural gas prices to average $2.41/

U.S. Wholesale Fertilizer Prices (in USD per Ton)

Nutrient	AUG-20-2015	AUG-18-2016	% CHANGE VS. YEAR AGO	5-YEAR LOW	5-YEAR AVERAGE	EXPECTED 2017 RANGE
Anhydrous Ammonia	$684.84	$515.22	-25%	$515.22	$750.51	$500 - $625
DAP	$551.96	$427.23	-23%	$427.23	$583.53	$420 - $480
MAP	$551.96	$431.50	-22%	$431.50	$603.97	$420 - $510
Potash	$457.96	$289.01	-37%	$289.01	$515.11	$270 - $370
Liquid Nitrogen	$306.27	$222.46	-27%	$222.46	$346.46	$200 - $290
Urea	$453.38	$311.40	-31%	$311.40	$504.07	$300 - $380

Source: USDA, Farms.com Risk Management

MMBtu (one million British Thermal Units) in 2016 and $2.95/MMBtu in 2017. Lower crude oil prices in 2015 and 2016 have led to a global glut of fertilizers, which has made them more affordable. Future price direction could depend on the U.S. crop, and the market does not seem too optimistic about grain prices going forward. U.S. farmers are looking to harvest huge (record large) crops in the 2016-17 growing season. With resultant tight crop margins expected, some corn farmers could tighten their input spending and cut back some on applying fertilizer. But some may feel that it is even more important to make good yields, now that grain prices are low, and maintain their fertilizer application levels.

Nitrogen fertilizer is a major input in corn production, and the two are highly positively correlated. Better-than-expected soybean prices could prompt U.S. farmers to switch to more soybeans and less corn. Soybeans do not use nitrogen fertilizer and have been more profitable than corn in recent years. Moving acres out of corn will reduce demand for nitrogen fertilizers. Less demand in turn will exert downward pressure on fertilizer prices.

Factors that could push fertilizer prices higher include:

- Global currencies strengthening as the U.S. dollar weakens (making fertilizer imports cheaper);
- The slowdown in Chinese urea exports due to strong domestic demand (demand for the product in China has led to higher domestic prices than export prices);
- Solid demand out of Brazil; and
- A lucrative Indian subsidy for fertilizer purchases and strong Indian demand due to forecasts for a return to normal monsoon rains.

With U.S. retail fertilizer moving lower in recent months, fertilizer prices are significantly lower compared to a year earlier. Anhydrous ammonia is down by 25 per cent; MAP and DAP are down by 22 to 23 per cent; potash is down 37 per cent; liquid nitrogen is down 27 per cent; and urea takes the biggest drop at 31 per cent.

In 2017, as seasonality kicks in, nitrogen fertilizer prices are expected to drop after the spring season. Though grain prices have eased off recently, current fertilizer prices make crop nutrients more affordable today than they have been during the last five years.

An expected rise in crude oil prices could tighten supply, but lower grain prices should keep demand steady to low. This could lead to 2017 fertilizer prices remaining range bound and trading at the lower end of the 2016 range. Farmers could simply buy as their need dictates for the remainder of 2016 and/or 2017. BF

Maurizio "Moe" Agostino is chief commodity strategist with Farms.com Risk Management.
Abhinesh Gopal is a commodity research analyst with Farms.com Risk Management.

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Consider the pre-harvest inspection

A pre-harvest visit provides useful insights about the challenges that may have affected your yields.

by DALE COWAN

We are heading into harvest of soybeans shortly, followed closely by the harvest of corn. With a dryer growing season, the normal maturity patterns have been shortened somewhat.

There is always something to be observed and learned before harvest. A pre-harvest visit presents the opportunity to gain insight as to why the yields have not met expectations. It is far too easy to simply say it was dry weather alone.

With soybeans, a great deal can be learned by observing plant height and the relative number of nodes and branches. (Nodes are where the pods are formed.) Looking at just plant height does not necessarily mean a better- or lower-yielding field. It is the space between nodes that determines height. The number of pods and beans per pod at the nodes times the number of plants per acre determines yield.

Foliar leaf disease can be observed prior to leaf drop. The one foliar symptom that is showing very prominently is Sudden Death Syndrome (SDS). This is not a foliar leaf disease but is a fungal disease that enters the plant early at emergence time and expresses its symptoms at flowering or later during bean fill. The management of this disease starts at planting.

Planting at appropriate depth and preparing seedbeds for rapid emergence is a good preventative practice. The longer the soybean plant takes to emerge, the greater the length of time for infection to occur. Good drainage, reduced compaction, proper fertility to reduce early season stresses, and crop rotation are all good practices to embrace.

Most seed companies have removed susceptible varieties from their offerings. There is, however, no resistance to the disease. Varieties will respond differently. Now is the time to observe those differences.

This soybean plant is affected by Sudden Death Syndrome, a fungal disease that enters the plant early at emergence time and expresses its symptoms at flowering or later during bean fill.

Soybean Cyst Nematode (SCN) is often associated with the disease and typically the two are found together. Feeding scars from the nematode offer an entry point for the fungus to gain a foothold through the roots. Rotating SCN-resistant varieties is also a good practice. Digging up roots and counting SCN cysts gives some insight about how some varieties reduce the ability for SCN to reproduce.

The main way to manage the pest is through reduction in cyst population in the soil. There are currently commercial seed treatments available to suppress both SCN and SDS infections; it is worth investigating their efficacies. We will still need, however, good stewardship around these seed treatments to keep them as viable options in succeeding years.

In the corn crop this year we can see a lot of stresses due to hot weather during the reproductive stages of VT (tassel emergence) and R1 (silk emergence). The incomplete fill on the cob tips is evident. However, it is a good practice to perform plant population counts at pre-harvest and to also count plants that have cobs.

There are a number of barren plants lacking cobs. There will be an environmental by genetic interaction. Fields that could store higher amounts of plant-available water created an environment for the hybrid to perform closer to its genetic potential. Even in the most drought-

Incomplete fill on cob tips was a challenge in many fields this year.

stricken fields there are areas with near-normal growth.

A lot can be learned about soil structure with a shovel, so dig up those areas to examine differences in things like depth of topsoil, aggregation, structure, compaction, etc. Crop rotation and tillage practices, cover crops and general soil health are good things to evaluate while in the neighborhood. Take notes, engage with other farmers, seed dealers and agronomists, and make plans for next season.

The yield components for determination of grain yield are the number of cobs per acre multiplied by the number of kernels, divided by 90,000 kernels per bushel, to figure out bushels per acre of dry grain. You can use this approach in various parts of the field to determine bushels per acre by marking out 1/1,000 of an acre and counting the number of plants. Then, pick four cobs at random. Count the rows of kernels multiplied by the number of kernels in a row to get an average per cob; multiply by 1000 and divide by 90,000. On barren tips you can count the unfertilized ovules to determine potential yield loss from unfilled kernels too.

There will be differences in hybrids' abilities to handle stress. Making notes of those differences may help shape hybrid selections in


This cob shows the effects of Western Bean Cutworm activity.

future years. However, there is one part of the seed guide from most seed corn companies that often gets overlooked. We may concentrate on days to maturity and miss the number of days to flowering. Agronomists always recommend planting at least four to five different hybrids of varying maturities to spread the risk of yield disappointment. Moving planting dates based on maturity may inadvertently result in all the hybrids flowering in the same one- to two-day window increasing risk of incomplete fertilization – especially this year.

Western Bean Cutworm activity and the development of ear rots are also worth observing. In particular, a pink mold developing at the tip of the cob is most likely the one to produce vomitoxin, which may limit grain quality and market access. The longer the corn is in the field, the higher the risk that the vomitoxin level may increase. A faster harvest and drying schedule may be required to maintain a saleable crop.

Checking on stalk integrity with a push or pinch test is another pre-harvest tip. Stand in the row and push across the row to see if stalks break. Or, pinch the bottom of the stock by the node above the ground to potentially reveal weakened, easily crushed stalks. You can use this information to determine which fields to harvest first to avoid unacceptable losses from lodged corn.

A pre-harvest checkup is well worth the effort and will provide the insight to help validate final yields and facilitate planning for next year. **BF**

Dale Cowan is a senior agronomist with AGRIS Co-operative Ltd. and Wanstead Farmers Co-operative Ltd. and the AgGrower Dashboard program.

Lessons from my Father

By Dave Sexsmith, President of the Ontario Woodlot Association

During 35 years of woodlot ownership, my understanding of sustainable forest management has grown appreciably, thanks to the help of forestry professionals. But the more I learn, the more I think of my father and appreciate what he handed on to me.

Farming was in his blood, but Dad's favourite place in all the world was the woods. He grew up in a time when wood was still used for everything from whistles to wagon wheels, and he was familiar with the importance of the farm woodlot in a society without cash. No doubt every multi-generational farm family has a story of how the woodlot helped pay the mortgage during the Great Depression.

My earliest memory in the woods is of wearing rubber boots in the wintertime and feeling like my toes would freeze and break off. But I also remember my father stopping the tractor to point out a "thrifty" tree, which meant it was healthy with good form. The finest specimens were "peelers." He didn't elaborate on his harvesting selection process, but I noticed that thrifty trees and peelers weren't cut.

Willie's woodpile.

I also noticed that he deliberated before felling a tree when a nice sapling was nearby. If, when the tree came down, it bowed the sapling over, my father would chastise himself as he tried to free the youngster and straighten it back up.

Many trees were planted on the farm, in fields too stony to be cultivated and too remote to pasture. They had to be planted correctly, and I remember, months later, Dad taking time on the way back to the hayfield to inspect the seedlings. In later years, whenever I returned for a visit, we would go back to admire the groves of pine on the landscape. He was as proud of them as he was with a bumper wheat crop.

Some of the things I learned from my father's time are now obsolete. Splitting firewood with an axe was almost an art form in his hands, but with hydraulic splitters, the "twist of the wrist" isn't learned and nor do you need frost in the wood. I'll never forget his instructions on how to be an asset, as one-half of a crosscut saw team, although I doubt I'll ever use that skill again.

However, there were many lessons that are still valid today. Whenever I inspect a cant hook, I know how to tell if the tip of the hook has the correct angle. And when I'm wrapping a skidding chain around a log, I still hear him telling me how to set the slip hook.

Long before biodiversity was invented, I learned that every type of tree had its purpose. Species considered inferior by some still had usefulness. Poplar lumber was good as strapping under steel and, used vertically, made decent barn siding.

Basswood took paint well and, for firewood, his first choice was rock elm.

When I purchased my own woodlot, we explored it together, and he pointed out the various species and their uses. For a number of years, he would fall the bigger trees for me, as I was still a novice with the chainsaw. Today, I look at those photos and cringe at the absence of any safety equipment, not even a chain break on the saw.

We planted trees on my property in the same way we had when I was growing up, only this time he worked with my children. Now, my grandchildren are the fourth generation in this family tradition.

He had a knack for summing things up in a few words. On more than one occasion, he told me, "Working a woods is mostly common sense." His observation that a tree never stands still (it's either growing or dying or both), has stayed with me and helps me view my woods as an evolving system.

When I first asked him, "How do you know all the different kinds of firewood?" his answer was, "After you've cut firewood for a few years, you'll know your trees." I got back to work and, sure enough, in a short time I was beginning to recognize ironwood, ash and the other hardwoods. Whenever I'm throwing firewood into a pile I hear the particular sound that dry, hard maple makes and recall when he pointed that out to me.

I don't know that he ever said it, but I observed that a tree was always used for the highest possible purpose. Some became firewood, some were destined for lumber, while others were left as seed trees.

He always took particular pride in having plenty of firewood. I don't recall us ever running out, but there were times when a neighbour needed an emergency supply in a long winter. That was when I learned that you can keep from freezing by burning fresh-cut ash and dead elm. Oak, however, had to be dried for two summers. Dad quoted a neighbour who once said, "There's never been a fire made that couldn't be put out by throwing green oak on it!"

As Dad got older, the roles reversed, and I cut while he cleared away the brush. A few years later, in his eighties now, we arranged to go into the woods for shorter periods so he could still come along and not get too tired. On those trips, the chainsaw was rarely started; instead we wandered through areas thinned a decade or more earlier and admired the thrifty trees that had filled in the spaces. Once in a while, we even saw one that might be called a peeler.

Perhaps this was the most important lesson of all; to visit the woods often – where the weather is always better, civilization recedes and stresses diminish.

Ontario WOODLOT ASSOCIATION

Learn more about the OWA please visit: www.ontariowoodlot.com

Hickory Heart Farm

By Bill Warwick, OWA member

In 1991 we acquired a 125-acre parcel of rough farmland in South Fredericksburg Township. For the most part, the land had been abandoned for over 20 years with only about 40 acres still being cultivated by a local farmer. There was no home on the property, only an old barn and several smaller structures, all of which were losing their battle with gravity.

What attracted us to the property was its diverse nature. There was a 30-acre mixed hardwood bush, 20 acres of mature red cedar, several small fields marked by thick hedgerows, an EPA wetland, and a small orchard that we initially thought we could bring back into production.

In the spring of 1992 we started planting trees; 1,200 of them, mainly conifers. And in the following years we added many thousands more such that today much of the property

Reviving the orchard proved to be a learning experience doomed to failure.

that should never have been put to the plough years ago is once again under forest cover.

Reviving the orchard proved to be a learning experience doomed to failure. The trees turned out to be too damaged to be saved, and we encountered more bugs and disease than I thought possible. So we began to clear the old trees out and think about what we could plant to replace them. Not being farmers, we also began to think about developing an alternative crop that we could introduce to replace the corn/soybean rotation on our 40 acres of arable land.

During the years we were planting and tending our tree plantations, we gained a good deal of helpful information through our participation in the Ontario Woodlot Association. So it was not surprising that our next endeavour was sparked by a presentation sponsored by the OWA on growing nut trees. Nut trees seemed to be a perfect fit for our old orchard, and so we planted our first 20 heartnut trees in the spring of 2010. We then followed this up with further plantings; filling the old orchard and pushing back one of the cornfields. Heartnuts are a type of Japanese

Continued on page 46

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The Evolution of Log Fences

By Eugene L. Fytche

Travelling through the Ontario countryside, one can still see examples of log fences built in the traditional manner. In this article, author Eugene Fitche gives us a glimpse into the history of the log fences erected by the first settlers to this area.

In 1870, it had been over 200 years since the first Europeans settled in the United States. A survey in that year estimated that there were between six and seven million miles of log and rail fences in use. Barbed wire and page-wire fencing had not yet become available. Stone fences were an alternative, but more labour intensive, and with the disadvantage that their construction could best be done in the summer, when the scarce labour was required for other work on the farms.

If we think of a four-high rail fence made with 12-foot rails, it would require 2,000 rails per mile, and 10 billion rails would be in use for the national stock of fence! Much of this material would have been available from the clearing of land for agriculture, but there is no doubt that many living trees had been cut to build and maintain the fences. Maintenance in the long run would make metal fencing more attractive, even at higher cost, and probably the mileage of log fences declined after 1870.

No one knows exactly how many miles of log fence were built in Ontario, perhaps half a million, starting in 1785 when the first settlers, the United Empire Loyalists, settled along the St. Lawrence River. Many of the settlers were of farming stock, and we can assume that they knew how to split rails and build fences when they arrived. They would also

Hickory Heart Farm *continued from page 44*

walnut that, with care, should be productive in our area of southern Ontario. They are our main crop tree. However, we have also planted a small number of Chinese chestnut trees, hazelnut, ultra-northern pecan, shellbark hickory and Carpathian walnut, in order to test their ability to adapt to and survive in our area. And we nurture and grow other nut trees that are found naturally on our property, such as the shagbark hickory, that can be found along the hedgerows and throughout the woodlot.

Our focus on hickory and heartnut trees has led to our farm name – Hickory Heart Farm. Our objective is to develop a tree-based business producing nuts, nut trees and forest products. We expect to begin producing commercial quantities of nuts by 2020.

have passed the skills to later arrivals, before metal fencing became available in Ontario. The peak acreage of agricultural land in the province occurred in the 1870–1880 decade, and substitution of rail fences by metal probably started about that time. That is not to say that new fences were not being developed and built, because new patents were being registered up to the turn of the century.

Probably the first log fence to be built by the early settlers was the snake fence, called the Virginia fence in the southern U.S., suggesting that the design spread from the first settlements in the Jamestown area in Virginia. It was the easiest type to build, didn't require any metal, no postholes needed to be dug, and it was quite stable. Improved stability of the top log could be provided by pickets at the junction of the bays. The snake fence had the disadvantages that it required a wide band of the cleared land, and if the logs were small, many logs.

Snake fence.

It is interesting to see how fence design evolved as the settlers sought economies in the design. For example, in this area, the Ferguson fence was developed. This design in effect straightened out the snake fence using less land, but at the cost of requiring sturdy posts to provide stability. These posts had to be dug below frost level. Because logs were still stacked on top of others, this design required the same number of logs vertically as the snake fence.

Since fences were required either to mark property lines or to contain large livestock, the close spacing between logs was not always necessary, and it was possible to reduce the number of logs by putting spacers between courses. Spacers could be stones or short pieces of log, and when large logs became scarce, it worked for split rails too. Still, the two posts were required for lateral stability. Sometimes where there wasn't enough soil to dig post holes to the required depth, a squared timber was drilled for two pickets.

When cheap, soft wire became available, the spacers could be eliminated and rails suspended on wire, at some loss of durability.

If the ground permitted a good post hole, shovel work could be reduced by installing one post and nailing or tying rails to it. Spacing could be adjusted freely. The design of the pole fence required little space, so that crops could be planted close to it, and cattle could keep the grass down under it. It did tend to look ugly, and neighbours would not have been impressed by the beauty of the pole fence.

Perhaps the final step in this chain of evolution is the post-and-paddle fence, loved by those who operate horse farms for its tidy appearance. It requires a minimum space, needs no wire, and the rails are fixed. The holes require special machining, and replacing a broken rail is awkward. In my opinion, the present practice of using posts that are too small in diameter is its weakness, so they don't last long. Perhaps horse farm owners don't need a long-lasting fence.

The same sort of progression can be traced in the development of other designs. In addition, every builder seemed to incorporate a bit of himself in his fences, and when one drives the rural roads of Ontario, the variations in basic designs are many. Let us hope that the coming generations will value these evidences of their heritage, and log and rail fences will continue to remind them of the struggle that went into creating our rural landscapes.

A more complete account of this topic is available in Eugene's booklet "400 Years of Log Fences." He can be contacted by email at : efytche@xplornet.com or by phone at 613-256-1798.

Testing the soil test

Why is it that if you send the same soil sample to two labs you'll get different results? Here, the mystery is explained.

by PAT LYNCH

Did you ever wonder what would happen if you sent the same soil sample to two labs? Or if you split a sample and sent it to the same lab as two different fields? Or if you sampled a field and then sampled it again a month later? How would the results differ?

Well I have wondered and I did those things. And more.

I became interested in soil sampling when I was a teenager. Jim O'Toole and I did a soil sampling demonstration as part of the Central Ontario 4-H demonstration competition. We won and advanced to provincials. Over the years my interest has not diminished.

I am surprised at how many farmers do not have a soil sampling history on every field. Part of it is because of the secrecy and "untold" truths about soil analysis. Even now I can't get analysing details from all labs.

Over the years I have done my own testing of the soil sampling system. When I taught at Centralia College of Agricultural Technology I had students soil sample the same field. Two members of an eight-member team soil sampled the same 10 acres every week. Each of these samples was sent in as two separate samples. Thus there were at least 16 samples from each field over a four- to six-week period. Of these, one-half were the same sample split in two.

The results were interesting. There was a significant difference among the results. The variation was very large. I concluded some students were sampling deeper than others. Some samples were not mixed well enough. From that I learnt you should have the same person sample the same field every time. Better still, get a professional soil sampler with a set depth to take your samples.

Create a 20- to 25- year history of your soil by sampling regularly.

In the 1980s, I had summer students sample an area about 200 feet square. This area was sampled every week during the year (when the season permitted you to draw a sample) over three years. Again, the results were amazing. There was about a twofold change in both P

Use a plastic pail for soil sampling, as a metal pail can impact soil test results.

(phosphorus) and K (potassium) levels. This can be partially explained by seasonal changes. What was really dramatic was the change in pH. It varied by a whole point and ranged from 7.4 to 8.4 over the 12 months.

At the time I was working with Dale Cowan, CCA ON, who was manager-owner of Agri-Food Laboratories. He graciously also sent me the results of the standard. Every sample that is analyzed is placed on a tray with a check sample, which is the standard. This check sample is taken from a tub of soil and used to detect any abnormalities in the tests. It was interesting that the analysis of this test soil also varied over time.

How could the check sample vary in its analysis? The answer is lab variability. "The best a lab can do is have 25 per cent variation in samples," says Cowan.

This variability brings to light another issue. How come you get a different analysis if you send the same soil to two different labs? There are a total of seven accredited labs in Ontario, meaning they have passed the test of being able to perform the various extractions that the provincial government recommends for Ontario soils. However, when you send a soil sample for analysis the labs may not perform the analysis in the same manner as they are accredited to do.

There are a lot of political reasons for this divergence. In Ontario years ago it was decided that the "scoop size" used by most labs in the United States was not representative for Ontario soils. As a result, the accredited test is done with a larger scoop size than some U.S. labs use. Also, the amount of time that a soil sample is shaken differs between labs. Obviously, if you use a larger scoop size and shake the sample for a longer period of time, the soil solution releases more nutrients for extraction. So, if you send the same sample to two different labs you will get different results.


Side dressing fertilizer.

Does all of this give you less faith in the soil analysis system? I hope not.

Sampling is still the only way to know what is in your soil. However, when you see changes in your soil test

I hope this explanation will help you to understand. For instance, if your P levels change from 18 to 21, that is not a real change. Or, at the high end, if your P levels change from 120 to 90 that also is not a big difference. But if they change from 18 to 90, something is not right.

If your pH changes from 7.8 to 7.2, again no big deal. But if your pH drops from 6.0 to 5.6 that is a big drop. As a matter of fact, this June and July I noticed a consistent drop in soil pH. This is in part due to dry weather and part due to a decline in organic matter.

A real solution is to soil sample and record over years. Two samples over three years is good. But it is better to have a 20- to 25-year history of your soil. There are growers who do have that type of history. You should also develop a history of your soil nutrient levels. And work with someone who knows and understands soil analysis. BF

Consulting agronomist Pat Lynch, CCA (ON), formerly worked with the Ontario agriculture ministry and with Cargill.

This sample is ready to send to the lab.

Giving your crop a good start

Controlling seed placement as well as soil contact and moisture is critical during planting. New technologies are changing how these factors are managed.

by RALPH WINFIELD

In my last article about newer hydraulic systems ("Keep your hydraulics running smoothly with regular maintenance" in *Better Farming*'s September 2016 issue), I referred to the recent developments in planter designs. Many upgrades have occurred in recent years. Most manufacturing efforts have been directed to improving seed spacing, seed-to-soil contact, and uniform planting depth, as well as firming of the soil cover over the seeds.

In addition, higher plant populations can be desirable in some areas of the fields to take advantage of yield potential. Also, many new planters allow for row run out or for switching varieties to maximize yield potential in the entire field.

Gone are the days of the large row hoppers that provided varying seed unit down pressure as planting progressed. In many cases now, down pressure is provided by air or hydraulic pressure to ensure uniformity. Down pressure can even be controlled electronically by strain gauges. This is technology that was used extensively in machine design and testing only a few years ago.

Down pressure is controlled by electric over hydraulic systems.

Many of us recall the years when we used a roller or even a packer to firm the soil to increase the seed-to-soil contact if sufficient rainfall did not follow planting. Some of us also note that after-planting rolling was a requirement to smooth the soil surface to improve harvesting conditions for crops such as field peas and beans. The roller also pushed stones down to prevent damage to harvesting equipment!

But most of us also remember the need for a rotary hoe! On rare occasions excessive rainfall would prevent emergence, mostly in soybeans. Unlike corn, soybeans require a larger soil breakthrough area to prevent the cotyledon from being held back and breaking off, resulting in a no-plant space in the row.

In 2016, many conventionally tilled soybean fields looked like this.

To maximize yields, we often planted soybeans at a higher rate than necessary to reduce plant spacing. Closer neighbours meant more help to break through crusted soil. Plant spacing became an issue as we decreased row spacing in an effort to ensure an earlier canopy to control weeds.

The decision to use a rotary hoe is, and was always, difficult. As I was told one year when it was absolutely necessary to bring peas through – "keep your speed up and don't look back!" The resultant pea yield was very respectable. It would have suffered greatly if the rotary hoe had not been available and used at the critical time.

The evolution of plant spacing

Some of us remember when the row spacing for corn was 38 to 40 inches. That row width had been dictated by the need to accommodate the width of a horse when cultivating for aeration and weed control.

Row width for corn (and soybeans) decreased to 30 inches as varieties improved and yields increased. This narrower row width also assisted soybeans in breaking through.

In very recent years we're trending toward 15- to 20-inch rows for both corn and soybeans. Again, improved corn varieties drive the trend as yields increase into the 250-bushel per-acre range. These yields often require higher plant populations which can better utilize the narrower row widths.

This no-till planter can plant both corn and soybeans effectively and accurately in 15-inch rows.

On the positive side, narrower row widths allow soybeans to form beneficial canopies earlier in the season. Soybeans were planted successfully in 30-inch rows but many farmers were, and still are, planting soybeans with grain drills in seven-inch rows.

No-till's environmental advantage

We are seeing a significant trend to

no-till planting of both corn and soybeans. This no-till planting trend is being encouraged by environmentalists as well as by some farmers. Conventional tillage can permit greater opportunity for soil movement and pollution of our surface watercourses – including the Great Lakes.

Technology is available using hydraulics and pneumatics to move seed and control planting down pressure while controlling seeding depth and seed-to-soil contact.

This electrical strain gauge that measures and senses planting unit down pressure requires special care and attention.

Travelling the back roads in many areas of Ontario this year brings to light the tremendous variation in plant stands, especially with conventionally-planted soybeans. The yield variations will be significant this fall.

In 2017, we visualize a greater use of no-till planting systems as we move forward to save our soils and reduce the amount of energy used. This would include the tractor fuel used to produce corn, soybeans, and winter wheat, as there would be fewer passes over the field.

Travelling the back roads in many areas of Ontario this year brings to light the tremendous variation in plant stands.

The technology (equipment) is available to achieve those objectives. Yes, the equipment will be more sophisticated (complicated) and will require greater owner/operator expertise to operate and maintain.

Please remember we have reduced, or virtually eliminated, our pastures and fence bottoms that held back both snow and soil. We cannot afford to let our very valuable top soils drift into the Great Lakes system. Soil movement not only takes phosphorus with it but also leaves us with those unproductive knolls that have been stripped of valuable topsoil! BF

Ralph Winfield is a retired professional engineer, farmer and technical writer.

Note the small planter unit hoppers that add virtually no down pressure.

Radial tires: your farm equipment's secret superpower

Use radial tires properly to spare soil and maximize equipment's efficiency in the field.

by JAAP KROONDIJK

Tires and tracks are used to distribute the weight of the tractor or implement on the ground, preferably in such a way that the soil does not get disturbed and no evidence of travel is left behind. Ideally, there is no mud or compaction to damage the soil.

Unfortunately, that does not happen in most cases. Sometimes we can't avoid damage because we have to get into the field even if the weather isn't cooperating. In other cases, however, we can do a lot to prevent damage if we take some time to set things up right. Most modern equipment is fitted with radial tires and we can adjust tire pressures to fit the circumstances. Do you know how low you can go? (I am talking about the pressure in your tires!)

It is sad to see radial tires pumped up rock hard. At that pressure, the tire can't do its task properly. These tires should get as much ground contact as possible and distribute the machine's weight over as large an area as possible. And, in the case of a driven tire, radial tires should get the most traction out of the soil-to-tire contact without disturbing the soil surface.

A radial tire is meant to flex its side wall in such a way that the footprint of the tire becomes as large as possible. It only can do that when the tire pressure is adjusted to match the weight loaded on the tire and when the tire size matches the vehicle properly. Then, the tire will hold the soil together the best it can. It will only leave behind a crisp indentation of the lugs and won't smear the soil surface or cause soil compaction in the underlying layers.

Tire specifications need to be top of mind when considering a new piece of equipment. These specifications should be discussed with your sales associate. A tire that is too small would not work and would be overloaded all the time. It always would need too high a pressure to carry the load.

According to one recommendation, radial tires should have three consecutive tire lugs on the ground at all times – as pictured here.

A tire that is too large does not always work well either. If the tire is too big, especially on driven axles, it cannot put its thread properly on the ground and slippage occurs, even in ideal situations. So please resist the urge to make the equipment look impressive but not serve you correctly in the field.

The minimum pressure for a tire at any given time is around six PSI. That is the pressure needed to keep the tire seated on its rim and allow the friction between tire and rim to transfer traction power. If the pressure is too low, then slippage occurs and you ruin your tire and take the chance it will roll off of the rim! A tire that is too large for the weight of the equipment can only go down to six PSI and will not flex enough to lay on the ground. One tire manufacturer's recommendation is that the tire needs three consecutive tire lugs on the ground at all times. Here is an easy way of checking your tires: drive your equipment on a flat surface, preferably a flat paved area, and look! It's a simple way of doing a quick check – especially if you know that everything else was set up properly.

All radial tire manufacturers have tire guides, and most equipment manufacturers have this information in their operator's manuals as well. The tire guide will show you what your tire size is capable of doing, and what weight it can carry at what pressure and at what speed. Better tire guides will give you two or more tire pressures for the same weight. These pressures depend on what speed you travel. A substantially higher pressure is needed to prevent too much flexing of the tire at higher speeds. At a lower speed, in contrast, not as much heat will be generated and a lower pressure will suffice for carrying the weight. If you do a lot of hauling of weight (like spreading manure), you would want to use the higher pressure scale for the weight. This way, you will not do damage to your tire by traveling at higher speeds.

But this means you need to do some homework and know the weight of the equipment (and any loads) on the tire. In cases where the weight can vary (like the rear axle of your tractor, depending on the implement hooked up), you might need to know multiple equipment weights and the necessary corresponding tire pressures. Take the time to set the tire pressure right!

The use of an on-the-go tire pressure regulating system is another option.

You might think that this process sounds like a lot of work and one pressure will do for all of your farm and field work. Well, let me give you something to think about. While working as a technician I was approached by one of our sales associates. He needed to demonstrate a tractor against a competitive brand tractor with a higher horse power. We did not have the equivalently rated HP in stock and had to go with a tractor with 30 HP less. This was not an ideal situation and was a cause for anxiety on the sales side. We ballasted our tractor the best we could and set the tire pressures accordingly. We ran circles around the competition pulling the same implements.

How, do you ask? Well, we put traction to the ground and pulled. The tires on the competitor's tractor still had high tire pressure from shipping. (This high pressure allows for a more solid tie down on the truck so the load is more secure.) The competitor's representative did not adjust the tire pressure for the fieldwork, and consequently the tractor did a lot of tire spinning – even though it had lots of HP on-board. We sold our tractor while the competition, who had been sure of an easy sale, had to take its tractor home again!

Moral of the story: know your tire pressures and set them right.

Proper tire pressure saves fuel and saves your soil. Both are money in your pocket in the long run. **BF**

Jaap Kroondijk is a farm boy mechanic who lives near Woodstock.

This is an example of an on-the-go tire pressure regulating system.

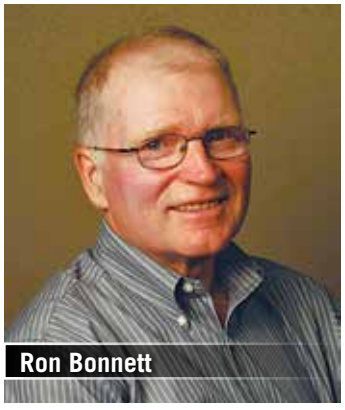
Matching refugees with agri-food

Forty-five per cent of Syrian refugees have an agriculture connection. Could their arrival in Canada solve the sector's HR crunch?

by BARRY WILSON

For Canadian farm leader Ron Bonnett, it seemed like a sensible, winning proposal to make to the new federal Liberal government and its newly minted agriculture minister, Lawrence MacAulay.

In the winter of 2015-16, the government was struggling to make good on a campaign promise to quickly welcome and accommodate 25,000 Syrian refugees.



Ron Bonnett

Photo: MARY BAXTER

The Canadian agriculture and agri-food industry was struggling with an ongoing problem of too few workers to fill all the positions on farms, greenhouses, packing plants and food processing facilities.

Bonnett, a northern Ontario beef producer and Canadian Federation of Agriculture (CFA) president, figured both the government and the industry had a problem and he had a proposal that could help both sides.

"It was one of the first conversations we had with the new minister, and we were highlighting that labour continued to be a key issue as far as the industry goes," he recalls. "One of the things we mentioned was the Syrian refugees coming in and the problem of finding a place for them in the economy. Agriculture could be part of the solution."

The pitch appeared to fall on deaf ears. MacAulay didn't respond although the former farmer and 27-year representative of a rural Prince Edward Island riding in the House of Commons surely had heard of the industry problem.

"It is fair to say that initial conversation didn't have as much uptake or response as we thought it might," said the CFA president. "I see it as being about looking at immigration and refugee policy to identify agricultural skills as a priority, streamlining people who have that background."

Fast forward several months.

At a Winnipeg conference in March, the Canadian Agricultural Human Resource Council released a report based on 2014 statistics. It estimated tens of thousands of unfilled food industry positions equated to an impact of $1.5 billion for Canadian farmers and a far larger hit for the value-added side of the industry. If not for foreign workers, the industry would be in trouble.

The report also projected the gap

The Canadian agriculture and agri-food industry has been struggling with an ongoing problem of too few workers to fill all the positions on farms, greenhouses, packing plants and food processing facilities.

between workforce needs and available workers would grow significantly over the next decade. Foreign workers and immigrants are key potential candidates for filling the gap.

Fast forward another few months.

Agricultural industry leaders met with immigrant, refugee and citizenship minister John McCallum, a former university professor, bank economist and, since 2000, a Toronto-area MP. He appeared to get the agricultural argument despite his lack of background in the industry.

"Until last month or so I don't think we were on the government radar screen but then we met with minister McCallum and he zeroed onto it pretty quick," Bonnett said in August. "He has a good handle on the file and he has been well briefed and sees and understands both sides of the question."

Meanwhile, a pilot project to try to integrate Syrian refugees with previous experience into Canadian agricultural and food industry jobs begins this autumn in the Quinte area, supported by the Ontario government and the Canadian Red Cross.

'It also aims at giving the refugees a chance to see employment and stability in an industry that needs workers.'

Quinte Immigration Services executive director Orlando Ferro estimates that 700 or more refugees could qualify for a place in the project. With family members, the affected numbers would swell into the thousands. As many as 45 per cent of the Syrian refugees have been identified as having links to or experience with agriculture in Syria before they fled the civil war.

"The purpose of the pilot project is to substantiate the numbers and that they can be integrated into the industry, into the community," said Ferro. "It also aims at giving the refugees a chance to see employment and stability in an industry that needs workers."

Bonnett says the success of the Quinte pilot project is a key to solving the two problems and now proponents of the idea may have an advocate in the federal government.

"I think the fact that minister McCallum has the file is a good sign. He's a pretty sharp cookie, I think."

Results of the Quinte pilot project will be available in late 2017. **BF**

Barry Wilson is a member of the Parliamentary Press Gallery and specializes in agriculture.

Study discovers happy cows make more calcium

jaimax/iStock/Getty Images Plus

A **University of Wisconsin-Madison** hypocalcaemia prevention study revealed in the July issue of *Journal of Endocrinology* that cows injected daily with serotonin produced more calcium. Hypocalcaemia, a metabolic disorder, decreases pregnancy rates in dairy cows and affects calcium levels.

In an email, Laura Hernandez, one of the study's authors and assistant professor of lactation biology, described serotonin as "critical for calcium uptake and transport into the mammary gland," and for "aiding in calcium mobilization throughout the body." In Holsteins, serotonin raised blood calcium but in Jerseys the neurotransmitter generated more milk calcium. Investigation is needed to determine why the difference exists and whether serotonin can prevent hypocalcaemia in cows, Hernandez said. BF

The age of nitrogen in fields

New research out of the **University of Illinois** may shake up some of your preconceptions of the age of nitrogen in your corn and soybean fields.

Praveen Kumar, a civil and environmental engineering professor, and **Dong Kook Woo**, a graduate student, found the nitrogen in soybean fields typically had a lower average age than that in corn fields. This finding is perhaps counterintuitive, as nitrogen is typically applied to corn and not beans. In a university release, Woo attributed the lower average age of nitrogen in soybean fields to soybeans taking up old nitrogen.

Kumar and Woo also expected the age of the nitrogen would increase as it travelled lower into the soil. They observed, however, a "relatively higher nitrogen age in the upper layers, compared with the age of the nitrate that dissolves in water, which doesn't have that barrier and can migrate down through the soil." The researchers attributed this finding to the accumulation of ammonium, one form of nitrogen, in the topsoil.

"Ammonium has a positive charge, which adheres to the soil particles and prevents it from leaching to the deeper layers," Woo explained in the release.

Their research was based on studies of the corn-corn-soybean rotation Midwestern U.S. farmers typically use.

The paper was published in the July issue of *Water Resources Research*. BF

New Aussie wheat variety boasts more protein

David De Lossy/DigitalVision/Getty

Australian researchers have developed a new variety of wheat to give the country's producers an advantage in the global markets, according to *SeedWorld*.

Buyers examine protein content when purchasing wheat for flour. Australian farmers, particularly on sandy soils, apply nitrogen to boost protein.

Even with this fertilizer application, Australian wheat's protein content often isn't high enough to satisfy its biggest customer, the South East Asia market.

According to the *Australian Broadcasting Corporation*, Tungsten, the new variety researchers at **Murdoch University** developed, achieves 14 per cent or more protein using less nitrogen than older varieties.

Tungsten will be commercially available in Australia in 2017. BF

Topsoil transplant triggers transformation of unproductive soil: study

Researchers in the Netherlands are studying new ways to address soil degradation with the use of healthy soil microbes.

In some test plots, **Martijn Brezemer**, a biologist at the Netherlands Institute of Ecology, and his team removed unproductive topsoil. Next, they applied a centimetre or two of transplanted soil to the remaining subsoil.

In other plots the researchers applied the same small layer of transplanted topsoil directly on the unproductive topsoil.

In both sets of plots, the "new" topsoil came from either grassland or heathland areas.

stevanovicigor/iStock/Getty Images Plus

The transplanted soil was a catalyst for transformation which gradually helped to shift the plots towards the donor grassland or heathland ecosystems. (The research was conducted over six years.) Results were most pronounced when the unproductive topsoil was removed.

Brezemer's work contributes to ongoing attempts to understand soil microbes.

The study was published in *Nature Plants* in July. BF

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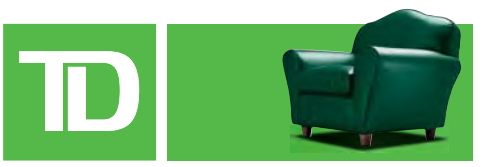

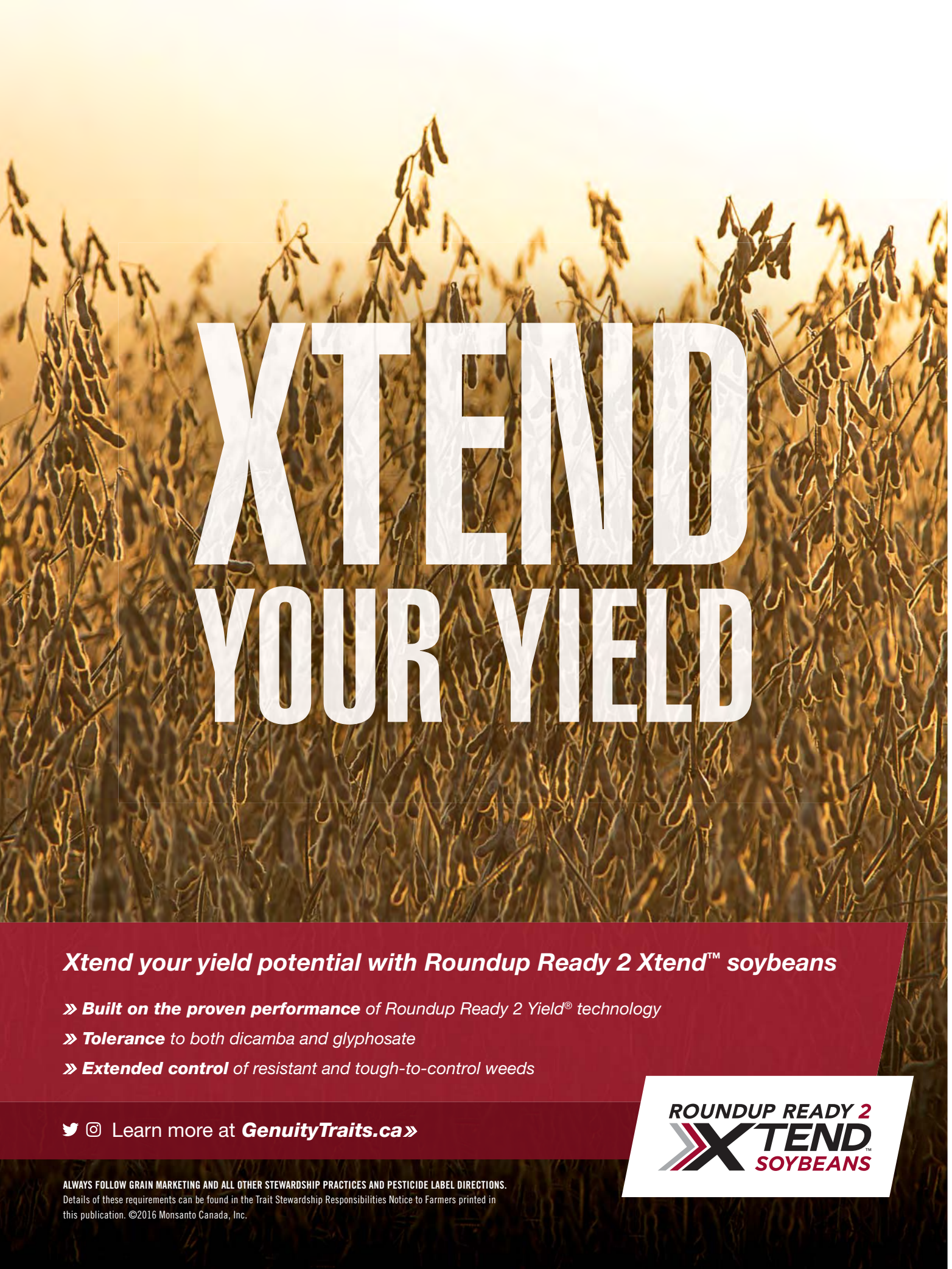

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