

Better Farming

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BEHIND THE LINES Internet in the countryside

Throughout my university education, I was back and forth between Waterloo (where I went to school) and the home farm. I didn't have to think about Internet access a lot.

When I was at school, online tasks (and leisure activities) were simple. I could just open up my laptop and get started. Yes, the Internet speeds on the home farm were definitely slower – but it wasn't a big deal. I could simply wait until I returned to the city on Sunday night if our rural Internet was being sluggish.

Eventually, I decided that I'd rather commute to the city than back to the farm. So, when I moved to my current apartment (at the dead end of a gravel side road), I didn't think about the challenges I'd face with regard to Internet access.

Finding providers in the countryside can be challenging, as I know many of you can attest. But, I had an added complication: my apartment backs onto a bush filled with very tall trees. Only one company was able to complete an installation, provided that I remembered the trees could cut off my access as they grew.

So far, I've been lucky. But there have been service interruptions because of the weather. And I've had to become used to the fact that some days I can't access my company work server from home, or some nights I can't watch online videos.

In this month's main feature, writer **Nick Van Allen** explores the current state of Internet access in rural Ontario. There are certainly significant differences across the province. The infographic below shows how lucky urban residents are, for example, in contrast to those of us who are reliant on mobile wireless Internet.

Thankfully, Van Allen suggests there are improvements in the pipelines. Perhaps we'll be able to have fast, reliable access like our urban counterparts soon.

Finally, this month I'd like to make special mention of **Barry Wilson**. For approximately 17 years, Barry helped us to stay informed about federal agricultural policies in his monthly *Better Farming* column. He retired in December – after a career in journalism spanning 46 years. We will miss your monthly insights, Barry, and wish you all the best in your future projects. **BF**

ANDREA M. GAL

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The business of Ontario agriculture

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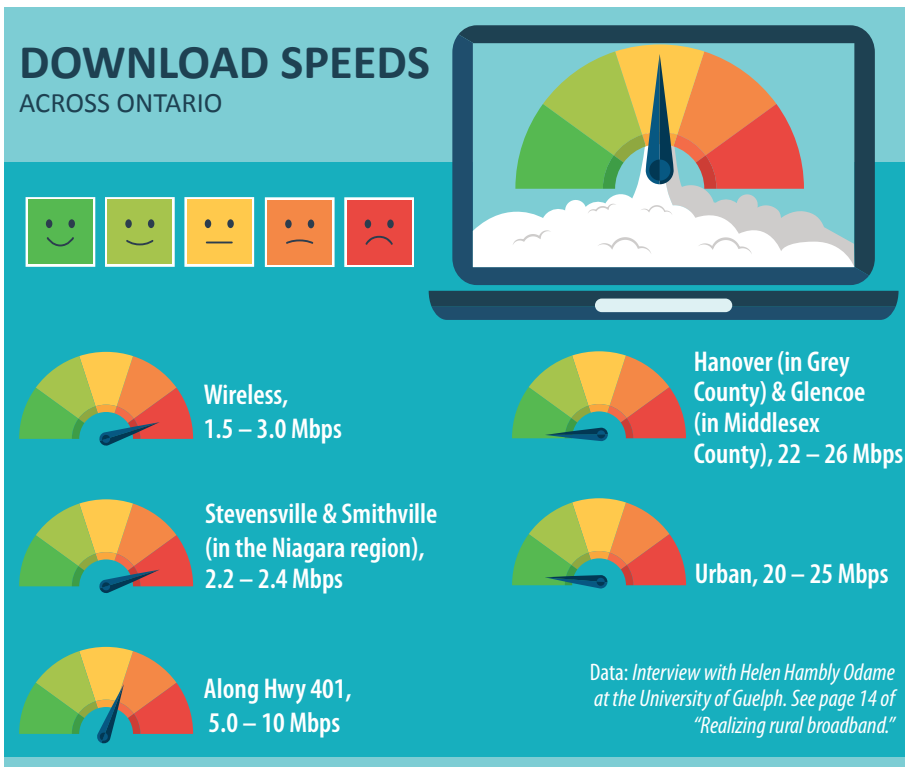
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Changes in farm severance policies

Despite split perspectives in the local agricultural community, Perth County now allows surplus farm dwelling severances.

In November, nearly 20 years after Perth County banned surplus farm dwelling severances, county council implemented a policy to allow them once again.

The decision to permit the severances was by no means unanimous, and **Allan Rothwell**, Perth County director of planning and development, says the division reflects the split perspective in Perth's farm community over the issue.

"Livestock producers for the most part do not support being able to sever surplus farmhouses," says Rothwell. Cash crop farmers, on the other hand, typically don't have an issue with such severances. For livestock producers, more neighbours mean more logistical headaches, such as the minimum distance separation that's required when planning a barn expansion, he explains.

The county will limit how severed farmhouses can be used. For example, the buildings can still be used for a home business but not a secondary farm occupation such as small-scale food production. **BF**



Hemera Technologies/Photos.com/Getty Images Plus photo

Conservation efforts

Rural landowners' involvement in land conservation is mostly dependent on their environmental attitude, according to a recent study led by **Silke Nebel**, a research associate at **Western University**, and coauthor **Jeff Brick**.

"Public recognition did not affect farmers at all," when deciding to participate in conservation programs, says Nebel. Instead "they were most interested in how a decline in the wetland areas would affect them personally, and if they would be getting access to information and technical assistance."

"Wetlands are important (to farmers) for a number of reasons, including providing a healthy ecosystem, and providing a filtering function for controlling any excess nutrients," says Nebel. About 3,000 rural landowners were surveyed. **BF**

Expansion of a rural Ontario dairy co-op

The agriculture and agribusiness sector is a significant driver in Ontario's economy. As a recent expansion in Bruce County demonstrates, the industry can also stabilize rural decline.

An expansion at **Gay Lea Foods Co-operative Limited** plant in Teeswater will create some new jobs, says **Michael Barrett**, company president and CEO. But more importantly, the expansion secures a steady future for the 85 employees the company already employs at this location.

Barrett says the decision to replace the dryer at the co-operative's Teeswater facility was a no-brainer. "Our 1,300 dairy farmer (owners) live,

work, play, sleep, marry, die in the rural communities," he says. "You cannot have rural sustainability without being able to have a balance of both agriculture and healthy (small) urban centres."

Robert Buckle, mayor of South Bruce, describes the addition, announced in November, as "a tremendous economical growth project for this area and it will benefit our agricultural industry quite a bit."

The two-year project will double the plant's current 140 million-litre capacity. The company will use the new 38-metre dryer in the manufacture of high-end milk ingredients such as milk protein concentrates and isolates. **BF**



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KEY PRIORITIES FOR THE YEAR AHEAD

OFA starts the new year with a new mission – Farms and Food Forever – to focus our work on the long term, the practice of sustainable farming, and the evolving relationship between agriculture and consumers.

Our key 2017 priorities include many of the issues we've been working on for the benefit of the agri-food industry and to create opportunities to meet the Premier's challenge for growth.

- ✓ **Energy** – pushing for affordable, accessible energy, including natural gas across rural Ontario
- ✓ **Infrastructure** – ensuring rural municipalities have access to investments to support roads, bridges, schools, hospitals and broadband
- ✓ **Climate change** – working on agriculture's role in the Climate Change Action Plan, and its potential to help mitigate the impact
- ✓ **Land use** – advocating for policies and plans that preserve farmland and water resources
- ✓ **Regulations** – continuing to work with government for a more effective regulatory system
- ✓ **Waste Free Ontario Act** – supporting this new legislation to reduce waste and dependence on rural landfills

Watch for updates on these issues at ofa.on.ca and through all our social media channels.

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New study explores implications of potential GMO bans

Amidst some consumer fears of genetically modified (GMO) crops, a new study sheds more light on the benefits of these crops.

Banning GMOs would cause food costs to increase 0.27 to 3.30 per cent globally, according to researchers at **Purdue University**. They predict cropland would also have to increase by 7.7 million acres to compensate for lower yielding, conventional crops.

If other countries approved to grow GMOs expanded their use of the technology to match the rate of cultivation in the United States, global carbon dioxide emissions would fall by 0.2 billion tonnes, the study says.

These benefits follow the same trends seen in Canada, according to **Ian Affleck**, executive director of plant biotechnology for **CropLife Canada**.

“Without the use of plant science innovations in Canada, consumers would pay around 55 per cent more for their groceries,” Affleck says.

Canadian “farmers would (also) need to use 50 per cent more land than they do today to produce the same amount of food.

“GMOs support more sustainable operations. Farmers can grow their crops with less water, land, and fuel.

“GMOs are another tool in the toolbox as farmers figure out the best strategy for their farms,” he says.

The Purdue study was published in the October issue of the *Journal of Environmental Protection*. **BF**



bergamont/Stock/Getty Images Plus photo



Kathryn Packer photo

A farmer’s reflection on zone tillage

Zone tillage is growing increasingly popular as farmers continue to pursue sustainability, as well as time- and labour-saving practices.

Chris Heinrich, co-operator of southwestern Ontario’s **Heinrich Farms**, says the operation’s first full year using zone tillage was a successful one.

After sixteen months of zone till on 1,800 acres, Heinrich Farms saw improved soil structure in the places it had zone tilled last fall.

“We figured we had some compaction issues in the field,” Heinrich says, “so hopefully the zone tillage also helps with that as (this tillage method) allows for more controlled traffic in the field.”

Having previously used both conventional tillage and other types of conservation tillage, Heinrich says that before the operation invested in its equipment it hired a

custom operator to zone till some of the land. “Something we didn’t think about as much is that you need very skilled labour to operate this machinery properly,” Heinrich reflects. “Before, we could put pretty much anybody on a tractor that can pull a cultivator.”

While a benefit to zone tillage is fewer hours on the tractor during planting season, Heinrich Farms spent more time spraying herbicides with the new tillage method to address perennial weed pressure.

Heinrich is confident the operation saw a yield bump after zone tillage and it certainly didn’t see any decline in yield for soybeans and edible beans.

“I guess to get a more accurate answer, we’ll have to do it a couple more years, but we’re pleased with zone tillage and we’re going to keep doing it.” **BF**

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Agriculture recognized on best employer list

The agriculture industry is well represented on the list of Canada's Top 100 Employers project for 2017. Winners include **Bayer Inc.** and **BASF Canada Inc.**

Al Driver, chief executive officer of Bayer CropScience Inc., credits his 30-year career with the company to the people in the industry, and the companies' products.

The people "are passionate, committed and get out of bed every day to work to be successful in agriculture. (Bayer) has always had a real customer focus; including growers, retailers, and internal employees," Driver says. "We also have the opportunity to provide innovative products for Canadian agriculture – there is no better success than the producer using our products, and growing a great crop."

Similarly, **BASF Canada Inc.** recognizes the importance of its people.

"BASF is committed to fostering an inspired and engaged workforce," **Marcelo Lu**, president of BASF Canada, said in a release. "We are looking for the next generation of leaders and innovators to help bring our solutions to life and join us in our journey of creating chemistry for a sustainable future."

The competition grades employers based on several factors, including the physical workplace, work atmosphere, vacation policy, training resources, and community involvement. The 2017 winners were announced in November. **BF**

Farmojis give unique look at ag

In a world where methods of expression continue to change, a Canadian company is helping the ag industry express itself in a fun and unique way. Winnipeg-based **Think Shift Advertising** released a series of emojis for mobile devices geared towards agriculture.

There are over 200 Farmojis, as they're known, including farmer faces, cattle, soybeans, tractors, farmer's tans and even plaid shirts.



Think Shift said in a release that the images, which are available from Apple's App Store, are a way for the company to honour those who feed the world on a daily basis.

And so far, the feedback on the stickers has been nothing but positive.

"I think it's very beneficial, especially in this age of social media," said **Brittany MacIntosh**, Glengarry County's queen of the furrow. "It's so important to promote agriculture on a variety of platforms and these stickers can help farmers do that."

MacIntosh, whose family runs **Glengarry Stock Farms**, said the emojis also show that farmers are getting younger. The emojis were released in the fall. **BF**

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Creating a buzz for insect farming

Ontario entrepreneurs are getting into a unique type of farming – insect farming.

Jarrod Goldin, owner of **Entomo Farms** in Peterborough County, believes insect production is an emerging business opportunity for the western world.

"Our farm has grown because demand is growing," Goldin says. "There have been a lot of insect start-ups (lately), with products ranging from pasta to chips."

Insects are 60 per cent protein, and very high in nutrients such as B12 and iron. "We still want (consumers) to eat their meat, but every once and a while maybe they can try insect-based protein."

With carbon tax and antibiotic regulations in the future, alternative protein sourcing opportunities (such as insects) may increase, says **Evan Fraser**, Director of the Food Institute of the **University of Guelph**.



The consumer popularity barrier may not be as big as most believe, says Fraser. He compares insect eating to sushi consumption. "Raw fish went from disgust and late night ridicule to established in 10 years – (sushi and insect eating) face the same consumer disgust barrier," he says. **BF**

doidan10/Stock/Getty Images Plus photo

PRE-BUDGET ASKS ON RURAL INVESTMENT

In advance of the 2017 provincial budget, OFA will submit key public policy recommendations to grow rural Ontario. We are advocating for new investments to rebuild our rural economy to drive growth for all of Ontario.

OFA's submission will focus on investments that will drive rural growth and alleviate the ongoing challenges of urban growth.

OFA is campaigning for investments in:

- ✓ **Natural gas infrastructure** – to grow our farms, businesses and communities
- ✓ **Roads, bridges and drainage** – to operate competitive farm businesses
- ✓ **Broadband** – to continue the necessary work that's started in southwest Ontario
- ✓ **Rural schools** – to promote and support our growing communities

Ontario agriculture depends on these rural investments to continue to grow, compete and drive the Ontario economy.

OFA: We advocate and serve Ontario farmers.

FAST & RELIABLE INTERNET: ARE WE GETTING CLOSE ON THE FARM?

Better Farming investigates rural Internet access challenges and highlights some of the developments which promise improvements.

by NICHOLAS VAN ALLEN

The Vani family of Fenwick, in the Niagara region, has struggled with Internet for years (left to right – Peter, Adrian, Jenny, and Vikki).



Nearly 10 years ago, Helen Hambly Odame, a professor at the University of Guelph, published a paper that started with the statement: “The promise of high-speed participation in Canada’s knowledge economy has not been achieved in rural Canada.”

Today, while much progress has been made, that statement still rings true.

In parts of Ontario, however, the situation appears to be at a turning point. Over the last couple of years, progress has been made through the announcement of new programs, says Clark Somerville, president of the Federation of Canadian Municipalities.

Stakeholders are taking an active part in the realization of rural broadband, and the future looks bright.

Indeed, as the case of rural broadband expansion in Ontario shows, the benefits of rural broadband have been recognized. Folks are actively working to bring improvements in this technology not only to farm businesses but to rural communities as well.

Hambly Odame and her team at the R2B2 project (Regional and Rural Broadband Project) are part of that effort. Their project seeks to “assess existing policy opportunities and potential economic and social outcomes of broadband infrastructure, applications and adoption in SW Ontario,” says the project’s website.

There is still some distance to go and are some hurdles to overcome, though, before true, 21st-century connectivity can be realized in the region. In particular, one problem is that many farmers don’t always know how poor their service actually is.

Peter Gredig, farmer and co-founder of AgNition, an agriculturally-oriented software company, said that “farmers need to become better educated on the speed that they have available to them ... and how poor it is in many cases.”

Here’s a good test that he offers to readers: “if every device in the house must be turned off or idled in order to watch a show on Netflix, you are definitely in the slow lane of the information highway.”

Struggling with the Internet

It doesn’t take long to find farmers who have experienced problems with their Internet. Discussions about the lack of access are as common as discussions about the weather, and sometimes they overlap.

Roy and Heather Bloomfield of Middlesex County agree that the weather and the Internet are interrelated.

The Bloomfields run Rotherfield Farms, a cash-crop operation just north of London. They use the Internet to advertise the produce they sell to local families.

More importantly, they use the Internet to get news about the weather. “As farmers,” they say, “monitoring the weather is one of the main usages of the Internet” since it helps them plan field operations.

But that very same weather can disrupt their ability to use it. “Any strong winds, rain or snow can cause our receiver dish to have issues and knock out our service,” they add.

So it’s a catch-22. Farmers need to know about the weather, but that very same weather can make them unable

to find out about it.

Disruptions caused by weather are not the only problem that farmers discover. Cost is also an issue.

Albert Witteveen notes a huge discrepancy in costs. Witteveen operates a farm in Smithville, in the Niagara Region, but also owns student rental housing in Guelph.

To get unlimited, high-speed Internet in the city, he pays only \$52 a month. And there is no installation cost.

But to get high-speed at the farm in Smithville, he would have to pay \$150 per month and have to install a tower at his own expense. “Some farmers are lucky to have been chosen for a tower,” he said in an email to *Better Farming*, since it can “offset their cost of this service.” But others aren’t so lucky.

Peter Vani of Fenwick knows this situation all too well. “My wife and I,” he said in an email to *Better Farming*, “have been struggling for the last three years trying to get any Internet at our farm, never mind high speed.”

Recently, Vani got some good news: high speed was now available



Middlesex Centre, just north of London, is lucky to be home to several cell towers from which rural people can access mobile Internet. Broadband, however, would increase connectivity, freeing people from the download caps placed on many mobile contracts.

HIGH-SPEED INTERNET

“because of a new tower that has been constructed in the area.” The bad news: Vani has “to put up a tower ... to communicate with it at (his) additional cost.”

To Vani, the “Internet is an extremely valuable tool,” but the struggle to get it, and pay for it, makes things difficult.

These farmers are not alone in their struggles.

Hambly Odame at the University of Guelph says she has found in her research that early investors in precision ag technologies are not able to use them to their fullest capacity because essential components are being turned off as connectivity (or the lack of it) limits their use.

One-third of these technologies have had parts turn off on southwestern Ontario’s farmers, she says, even on very expensive equipment.

Similarly, the benefit of drones on farms has not been fully discovered in the region because connectivity is low.

Opportunities are being lost

Internet fast facts

While some farmers have received better Internet access in recent years, many have not. Across Ontario, there is significant regional disparity.

Helen Hambly Odame at the University of Guelph has collected data reported by farmers on their average download speeds.

She has seen reports of download speeds as high as 22.0 and 26.0 megabits per second (Mbps) in Hanover and Glencoe, respectively, but also as low as 2.2 and 2.4 Mbps in places such as Stevensville and Smithville, in the Niagara region.

Near major conduit areas, especially along Highway 401, farmers may get between 5.0 and 10.0 Mbps “down.” But most connectivity, she says, is wireless. It is between 1.5 and 3.0 Mbps for downloading and 1.0 Mbps for uploading.

Compare that to the 20.0 or 25.0 Mbps download speeds available to



Helen Hambly Odame

urban residents, and you get a sense of the limits being placed on farmers.

She notes that quality of service is an additional issue. While download speeds illustrate connectivity, there are often multiple users of the farm’s Internet. If three people are using an Internet connection that transmits only 3.0 Mbps, each individual gets 1.0 Mbps.

None of them will be watching Netflix any time soon. And they likely won’t be able to upload videos or high-resolution images to advertise crops or farm technology for e-farm-gate sales either. **BF**

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OMAFRA photo

Last summer, the Ontario Government held a summit on the issue of “Attracting and Retaining Youth to Rural Ontario.” Those at the summit, shown here, discussed broadband connectivity.

because of such struggles and, Hambly Odame says, we’ll miss these opportunities if connectivity is not improved.

Fibre optics on farms

So is the struggle to obtain rural Internet, rural broadband in particu-

Goal is 20-25 Mbps

Xplornet is one of the province’s 14 (and growing) rural Internet service providers. It has been making headway with improving service in the past couple of years.

In particular, Xplornet has upgraded towers in its markets in many places. It seeks to provide users with up to 20.0 to 25.0 Mbps speeds in places where they have a “line of sight” to a fixed tower by 2017.

According to Chris Harlund, director of sales at Xplornet, such access will give users the same Internet experience that urban residents have in the rest of Canada.

Where such fixed tower access is unavailable, Xplornet offers satellite service that reaches 5.0 Mbps download speeds.

Elayne Miles, strategic marketing and product development leader at Xplornet, added that Xplornet seeks to invest to give access to “today’s Internet” to rural people. **BF**

lar, worth it? In addition to better use of technologies, what else might a broadband connection offer to farmers?

Farmers could benefit, Hambly Odame says, by taking advantage of “e-farm-gate” possibilities.

E-farm-gate sales are, essentially, farm-gate sales made via the Internet instead of a roadside stand.

For example, instead of putting a notice at the roadside that your farm has 50 sacks of Yukon potatoes for sale, Hambly Odame says, you put them up on the Internet. Local restaurants or others may see the ad and buy such surplus crops.

There is also the “Uber model” of buying farm equipment.

Farmers may take part in the sharing economy by sharing or renting their equipment with others. This is the 21st-century model of co-operative buying.

Increased connectivity is needed so that farmers can put up photos, videos and other bits of information to prospective sharers.

Another technology that will change the game is data, and the sale of it. According to Hambly Odame, farmers need better Internet so that they can control the data being generated on their farms about their activities – for example, GIS data – and link the data with groups that may want to buy that information.

If this realization comes true, it could be that farmers are growing

another crop and just don’t realize it. That crop is big data.

Bettering communities, broadband and rural society

Not only farm businesses but also rural communities will benefit from increased Internet access.

Rural Canadians are well aware that rural out-migration is an issue across Canada, and it’s related to connectivity.

According to Clark Somerville, increasing rural access to the Internet can help prevent such out-migration because it provides families with a host of new options.

First, access helps rural Canadians upgrade their skills, allowing them to take advantage of training courses offered electronically by colleges and universities.

Access also opens the door to the possibilities of telecommuting. Instead of moving to urban centres, rural residents can stay in their home communities and work there.

Anything that we can do to prevent out-migration is a good thing, Somerville adds.

Rural students also feel penalized because they are not often able to access the Internet in the way that their urban classmates can.

Hambly Odame found that it was not rare, for example, for a farm family to have to drive their children to a local Tim Hortons’s hot spot so that they could upload their home-

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Many rural households are dependent on mobile Internet provided by cell towers.

work to class websites.

As education moves increasingly toward the use of digital materials, rural kids feel the pinch.

Christina Crowley-Arklie, press secretary and senior communications adviser to Ontario Minister of Agriculture, Food and Rural Affairs Jeff Leal, notes that the Ontario government recently held a summit in Stratford to look at the issue of “attracting and retaining youth” in rural Ontario.

“The importance of investing in broadband activity was discussed by those in attendance,” she says, since they too saw the benefits that come from limiting barriers to education for rural youth.

For that reason, Crowley-Arklie states that “we will continue to work to develop a framework that supports growth of a digital economy and supports broadband networks in rural and northern Ontario.”

Finally, better rural connectivity creates solutions to overcome barriers to health care for rural Canadians.

In the Georgian Bay area, better Internet is opening up home-care jobs to locals and providing residents with better health care.

For this reason Clark Somerville says that improved Internet access has the “power to transform rural communities.” Instead of having to drive to an urban centre to receive medical care, a farmer may simply hop online and Skype his or her doctor.

This opportunity saves time and money, and can improve standards of living.

In terms of jobs, education, family life and medical care, better Internet access can revitalize farm communities or ensure their continued success. And in southwestern Ontario, a project unveiled this past summer may see such progress realized.

The SWIFT story

SWIFT (SouthWestern Integrated Fibre Technology) is a recently incorporated not-for-profit which “aims to build an ultra-high-speed fibre optic regional broadband network for everyone in Western Ontario,” according to its website.

“The project was initiated by the Western Ontario Wardens’ Caucus and its partners (City of Orillia, Town of Caledon, the Region of Niagara, Grey Bruce Health Services, and Georgian College), with support from the federal and provincial governments.”

SWIFT was incorporated in November 2015 and has since been awarded \$180 million from the federal and provincial governments.

According to Geoff Hogan, executive director of SWIFT, the not-for-profit “is all about filling in the gaps.”

The company is going to “find out where the fibre is” and “fill in fibre where there isn’t any.”

“We want to make sure that folks that are in low-density areas have the same access to broadband that these

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high-density areas do,” Hogan says.

In Hogan’s view, the Internet “really is the fourth utility now.” For that reason, “the UN has called it a human right.”

But, he adds, “the current connectivity (in southwestern Ontario) is so poor now ... What they (farmers) are used to is really, really horrible.”

SWIFT has high hopes, as do its investors.

Crowley-Arkie, in Minister Leal’s office, says that “the SWIFT project will expand access to broadband by delivering high-quality, fibre-optic coverage to over 300 communities and 3.5 million residents in southwestern Ontario, including the municipalities of Caledon and Niagara.”

“Our government,” she said in a statement, “understands that access to affordable broadband connectivity is a key ingredient to innovation and economic growth to rural Ontario and our agri-food sector.

“It allows families to stay in touch, connects businesses with the world, and makes our rural communities investment ready so they are able to do business.”

Hogan says that one way broadband might help is through easing the adoption of precision agriculture.

“We’re not making any more farmland,” he says. “We need to make every acre more productive.”

This goal can be achieved “with



Artfoliophoto/Stock/Getty Images Plus photo

Poor Internet has become a barrier to education for rural children.

precision farming and GPS technology,” but all those technologies “need to call home” to a hosting/cloud location to store their data.

In essence, he argues, they need rural broadband. They need SWIFT.

Taking notice

What’s interesting about the case of broadband in rural Ontario is that the story is not peculiar to this region of Canada. As Clark Somerville comments, in each rural community he visits, he has heard people discussing rural Internet.

Rural Ontario is not alone in facing the problem of expanding access.

Southwestern Alberta, Manitoba and the Atlantic provinces, for example, are dealing with similar issues. And, importantly, they are watching and learning to see how

progress is being made.

What can be said about all those places is that the benefits of connectivity need to be realized.

At one time we had to think about the benefits of railway building, then electrification, and then telephones. Today, it’s the Internet. **BF**

An advertisement with a black background. At the top, it says "There's MORE to this story" in white. Below that is a circular graphic showing a shovel digging into the ground. Underneath the graphic, it says "Dig Deep" in large, bold, white letters. At the bottom, it says "Visit BetterFarming.com now for A BONUS VIDEO" in white.

An advertisement for Husky Farm Equipment Ltd. The background is a photograph of various pieces of farm equipment, including liquid manure handling equipment, parked in a field. The text "HUSKY 50 Years" is in the top left corner. The main text reads "Husky Farm Equipment Ltd Committed To Quality You Can Depend On!". On the right side, it lists "Also Available Lagoon Pumps 10-12\" Pipe Carts Truck Mounted Tanks Wireless Remote Controls". At the bottom, it says "A Complete Line Of Liquid Manure Handling Equipment" and provides contact information: "husky@huskyfarm.ca 519-846-5329 www.huskyfarm.ca".

In the shop with Rachel

The Gingell family are tractor enthusiasts. Daughter Rachel and father Dan repair and maintain a range of older-model machines. The family also operates an interesting online business.

by ANDREA GAL and PAUL NOLAN



Rachel sits on a 1939 McCormick Farmall M. Her late maternal grandfather Guy Tripp purchased the tractor used and restored it with Rachel's father, Dan, almost 30 years ago. They narrowed the wheel base to make the tractor more competitive on the pulling track.

The Gingell family has a long-standing passion for tractors, and particularly older-model machines. Multiple generations have participated in tractor pulls, as their collection of trophies, proudly displayed in their shop, shows.

Not surprisingly, Rachel Gingell has inherited this passion. "I've always been in the barn with Dad, helping him since I was a young girl. I have gradually learned more and more through the years. Tractor repairs and maintenance just kind of came naturally to me," Rachel says.

She participated in her first tractor pull when she was 10, and started helping at the family equipment dealership when she was in middle school.

"Internet sales were just starting to take off at the

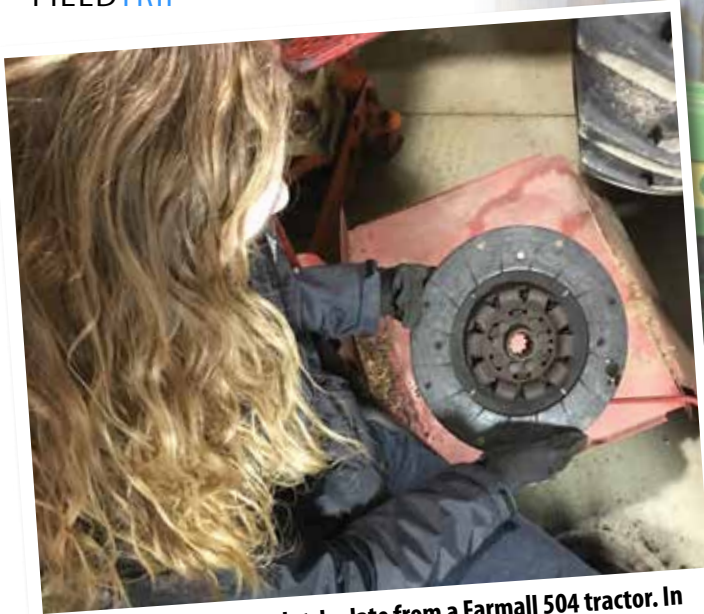
time," Rachel says, so she "contributed to the business by posting tractor ads online.

"It wasn't long before I started purchasing tractors on my own to re-sell. Fixing the tractors up along the way was a natural progression."

Now, Rachel writes about older-model tractors and creates tractor repair tutorials. She also works in the family business, creating and selling handcrafted tractor-related products, including hats, home decor, and baby items.

Rachel and her family live in Michigan, about an hour from the Windsor-Detroit border.

Better Farming is pleased to introduce Rachel to our readers; watch for her tractor articles in the coming months. **BF**



Rachel shows the worn clutch plate from a Farmall 504 tractor. In the case of this model, Rachel and Dan had to split the tractor in half in order to complete the clutch replacement.



Rachel completes a brake job on a 1957 JD 520. Here, she uses a brake riveting tool to apply new pads onto the brake shoes with brass rivets.



Rachel and Dan worked together on the hydraulic repair on this Massey Ferguson 165. The pump is in the transmission on these tractors – so it's a messy and involved job to repair the hydraulics. Rachel says her smaller hands made the job a bit easier, as she was able to work with the small bolts.

This iconic John Deere 720 standard diesel tractor is equipped with a gas starting motor – called the "pony motor". (All two-cylinder JD diesel tractors had this pony motor until JD introduced the electric start.) The gas engine starts first. When the pony motor is fully revved up, the diesel engine can be engaged and started. The pony motors are quite sensitive – and after they sit for a while they won't run. Rachel and Dan tuned up the pony motor on this tractor and now it runs beautifully.

Rachel has fond memories of the Ford 8N. She remembers that her father built an 8N pulling tractor when she was ten years old. She participated in her first tractor pull on the 8N – and won first place. The family sold that Ford 8N but Dan and Guy built the 1952 Ford 8N, pictured here, a few years later. While not evident at first glance, the engine is “souped up” quite a bit to enable this tractor to be fairly competitive in pulls.



Rachel examines the wiring destroyed by mice on this New Holland 4630. Rachel and Dan will soon replace the wiring. Dan is a licensed electrician and he says this training helps him immensely when repairing equipment. He's shared some of his expertise with Rachel, too.



Rachel and her father, Dan, next to an 1855 Oliver tractor. The company produced the 1855 between 1969 and 1975. This model has 100 HP so it handles a front-end loader very well. Waukesha made these engines for Oliver, and the engines were turbo-charged.



The Gingells display their tractor pulling trophies in the barn. The family has a long history of participating in these pulls; Guy Tripp, Dan, Jennifer (Rachel's mother), and Rachel have all competed. In the 1990s, Guy and Dan competed at national-level tractor pulls every weekend. Now, the family stays closer to home and competes in smaller community pulls.

Right of passage

The provincial government introduced the Supporting Ontario Trails Act last year. This winter, landowners and snowmobilers continue to debate the use of Ontario's rural trails.

by MARY BAXTER



In November, Graham Snyder, who farms near Breslau in Waterloo Region, was busy putting up markers for the two snowmobile trails that cross his property.

In the early 1980s, as Ontario's snowmobile clubs were beginning to form and develop trails, Graham Snyder decided to try a trail out for himself.

Snyder today farms 500 acres of cash crops on his farm near Breslau in the Region of Waterloo and provides custom farm services. Back then, he didn't have a trail running through his property. Even though the clubs sold permits to access the trails, he figured he didn't need a permit to travel locally where he knew the farmers.

But as he rode his snowmobile, he discovered the trails were extensive. "You could go for quite some time on the trails, and I really didn't know a lot of the farmers," he says. Crossing so much land without permission felt wrong, so he bought a permit.

Joining his local club, the Bridgeport Snowmobile Club, came next, and he added two trails to his own property. Local involvement led to 10 years of provincial involvement, including two years as the vice-president of the Ontario Federation of Snowmobile Clubs (OFSC). He

stepped down from that post earlier this year.

So Snyder is very familiar with the concerns about trails that erupted in February following the introduction of the provincial Liberal government's Bill 100 (Supporting Ontario's Trails Act, 2016) that introduced the Ontario Trails Act and changes to other laws that support trail access and trespassing enforcement. The bill was first introduced in May 2015 and obtained royal assent in June 2016.

Over the next several months, property owners, including farmers,



Graham Snyder, who farms cash crops, says he supports providing trail access. Allowing "one swipe" helps control how a person will access a property, he says.

would protest the legislation, some going as far as closing down access to trail corridors on their land. By early November 2016, as the winter snowmobile season approached, trail organizers continued to struggle to persuade farmers to sign on to hosting a trail.

"I used to have 55 (landowner agreements) in Stoney Keppel," says Randy Walker, president of the Stoney Keppel Riders Snowmobile Club in Grey County, at that time. "Now I think I've lost half of them."

When the bill was first introduced, much of the protest centred on the mention of property easements. The Ontario Landowners Association (OLA) led the charge.

"We found out about (the bill) by accident," says Tom Black, president of the OLA and an eastern Ontario farmer. A call from a concerned property owner about Bill 118, the Great Lakes Shoreline Right of Passage Act, tipped the association to Bill 100.

The Landowners contend that a section in the Ontario Trails Act

 A man in a dark jacket and a woman in a blue jacket are standing next to several large, white fuel tanks. The man is pointing at one of the tanks. The background is a clear blue sky.

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In 2015, Ontario snowmobile clubs began introducing signs to identify the location of trails in the event of an emergency. The signs, similar to fire number signs, have proved popular with municipalities, says Graham Snyder.

concerning property easements makes it possible for third parties to seize control of privately owned land. The organization continues to argue this interpretation, although adjustments were made to the section before the act was passed.

These adjustments weren't enough, says Black, who says the association had wanted to see requirements for organizations to provide clear explanations when negotiating easements. "There (were) probably up to 30 or 40 different entities that were going to be allowed to share that trail, if they wanted to," Black says. Most of the group types listed are governments or their agencies and non-profits.

Patrick Connor, executive director of the Ontario Trails Council and Canadian Trails Federation board member, says the concerns about easements are based in "a misinterpretation that the Act would be a land grab" or that landowner agreements permitting trails within a certain season are "all of a sudden going to be turned into an easement."

The agreements can't be changed into something else without involvement of the landowner, he says. "Easements are a legal process with public consultation that are pursued by some land owners but totally at the landowners' discretion."

He points to statements made in a

Are trails along roads the solution?

Neil Vincent, who farms in Huron County and is the reeve of North Huron, says more consideration needs to be applied when locating trails.

Vincent was among a number of people who opposed the establishment of a section of the Guelph to Goderich rail trail in Huron County. The multi-county trail opened in 2015.

The problem, he says, was the trail followed a former rail line that in at least one case strayed very close to farms with strict biosecurity codes in effect.

"Unfortunately, farmers cannot have a degree of biosecurity," he says, pointing out that farmers must embrace established biosecurity standards when their operations require it. And biosecurity isn't just about safeguarding livestock; some of the farmers in the area had pedigreed seed contracts.

He's not sure if any of the farms lost contracts once

the trail went into effect. *Better Farming* contacted two farmers who had also been involved in the issue, but they declined to be interviewed on record.

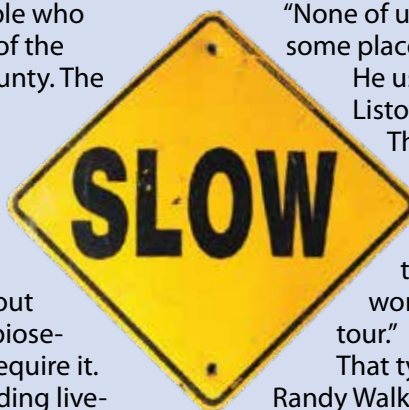
"None of us were anti-trail," insists Vincent. "It's just some places are better for a trail than others."

He uses the example of a trail that runs from Listowel to Gowanstown in Perth County.

That trail is positioned away from farm buildings at the edge of farms, he says.

The North Huron reeve says perhaps the solution is shifting trails to out-of-the-way roads. "They'd be wonderful trails to take a ride on and just tour."

That type of solution sets off alarm bells for Randy Walker, president of the Stoney Keppel Riders Snowmobile Club in Grey County. "The accident rate goes up incredibly" if snowmobiles operate on side roads or ditches, he says. **BF**



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Markings on snowmobile trails include signs such as this one, which warns users of their responsibilities and liabilities. Graham Snyder and his dog, Spud, are pictured with the sign.

Trails Act fact sheet released by the Ontario Ministry of Tourism, Culture and Sport in October. The fact sheet describes an easement as “an interest in land where the landowner grants the easement holder a right of way over a piece of land.” The sheet further notes that for the purposes of the Trails Act such easements would be voluntary.

Easements would also contain covenants, which the sheet describes as “a promise to do or not do something in relation to the land.” Covenants would have to be agreed to by both the landowner and the prospective easement holder. They might address “the uses and activities permitted, restricted and prohibited on the affected land and describing those uses and activities.”

“Landowners would not be forced to grant easements for trail-related purposes,” the fact sheet continues. It explains the easement options in the Act are needed because easement options in existing legislation “do not adequately address the longstanding issue of securing land and long-term access to land for use as trails.”

Connor says there was concern among trails organizations that trails were being closed but that in many cases landowners have returned to the fold. Snyder says he fielded a lot of inquiries while he was at the snowmobile federation’s booth at the International Plowing Match and Rural Expo in Wellington County in September. He too says concerns about the legislation are dwindling, although they haven’t entirely disappeared.

“People had their minds made up,” says Snyder. “It’s hard to get people educated after they’ve made their mind up.”

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Dedicated trails prevent trespassers, says trail council head

Graham Snyder, who farms near Breslau in the Waterloo Region, says over the past 25 years he's caught three to four different groups riding ATVs on the snowmobile trail on his farm in the spring.

In any given snowmobile season, traffic averages 500 sleds a week along his trail, so the percentage is low. (Traffic can reach the thousands at the centre of the trail system during the same time period, he says.)

"Once you explain to them how fortunate we are to have the trail in the winter time, they soon respect that ... And they apologize and leave," he says.

But Snyder, a former vice-president of the Ontario Federation of Snowmobile Clubs, acknowledges that people who use trails in unintended ways are a significant concern for farmers.

Bob Weirmeir, president of the Saugeen Regional Landowners Association, says the concern is not just about destroyed crops but also the safety of trespassers.

"Actually my biggest concern would be the fellow who has granted the snowmobile trail through the winter," he says. "It's marked out on a GPS and people use it as a walking trail. And I can see a family going

through a man's cornfield in the fall and a little girl or something say, 'what's that noise out there' and seeing what it is.

"The picture in my mind is so devastating on what could happen. Because in the big combines you just can't see."

Patrick Connor, executive director of the Ontario Trails Council and Canadian Trails Federation board member, says the key to making trails safer is dedicating trails to specific uses.

"It makes the trail system safer and puts the trails where people should be using them according to that specific use."

But 92 per cent of Ontario's 80,000-kilometre trail system is mixed use, and to ensure the presence of dedicated and diversified trails, more trails are needed, he says.

Tom Black, president of the Ontario Landowners Association, challenges the call for more trails.

"This is like having a pipeline across your property; you can never use that piece of property again," he says. **BF**

But Bob Weirmeir, owner of a hobby farm and small-engines business near Hanover in Grey County and president of the Saugeen Regional Landowners Association, says the legislation is still very much top of mind among farmers.

He says a Nova Scotia court case in the 1990s sets a legal

precedent for establishing third-party permanent access to a property if it could be proved consent had been given and the access was continuous.

(Weirmeir says the case's successful argument for access hinged only on a verbal agreement. Court documents connected to the case refer to the presence of both verbal and written agreements.)

The Ontario trails legislation's presence creates an unnecessary framework, and frameworks are easy to change with amendments, he says.

"I think if the trail bill was rescinded we could carry on," he says.

Walker suggests a different reason for farmers' continued reluctance to allow trails on their property: trespassers, in particular people using a trail dedicated to one use for a different type of use.

"I have yet to have a farmer say to me 'I don't want snowmobiles on my property.' But what I do get is, it's the trail; it's the fact that it's the ATVs

(that use the trail)," he says. Along with being president of his local club, Walker manages operations for the provincial snowmobile federation's District 9, an area bounded by Lake Huron and Georgian Bay shorelines in the north and west, a line in the south that runs through Goderich, Milverton and Dundalk, and, in the east, the Beaver Valley.

And it's not just riders of ATVs, he says. "It's the horseback riders, it's the walkers, it's the mud trucks. It's everything else that comes with the fact that there is or there was a trail there."

Walker says he's run into risky situations on land he owns and uses for hunting. "Last year I'm sitting up in my tree stand, and here comes these two horseback riders." They had seen the trespassing signs but didn't think the signs applied to them. "We were in bow season."

Walker says trails and their formal agreements define places for travel and types of use. Many of the snowmobile trails in his district are dedicated to that single use. The clubs have widened those that are multi-use to create room for sharing. "As a district, we've probably spent \$200,000 since last October (2015)



through provincial grants and alternate sources of money to widen them.”

Moreover, adds Walker, the liability coverage that comes with trail agreements protects landowners not only during snowmobiling season but also for the months of preparation leading up to the season and afterward to remove trail markers.

Insurance doesn't cover damage on the trail from another type of vehicle, but that doesn't mean the federation will abandon a farmer if such a situation arises. “We've been named in lawsuits where it has actually been an ATV that was riding on a snowmobile trail. We have always dealt with it,” says Snyder. “It doesn't necessarily mean that our insurance covers it, but the OFSC is self-insured for the first \$1 million, so they will take care of whatever lawsuits they can on their own. In my time, they've taken care of every one of them.”

Both Snyder and Walker say that the provincial organization has adjusted its memorandum of understanding (MOU) landowner agreement to address landowner concerns. One section states that the organization doesn't want anything to do with easements. There's an expiry date “so that there is no chance that this could be a continuity issue,” says Walker.

Another section offers the landowner the opportunity to list specific

expectations, such as removing trail signs throughout the property each year.

There's even a section which provides space to list the times when the club volunteers and permit holders have permission to be on a property. Permission can be renewed annually.

Weirmeir agrees the MOU Walker talks about “wasn't too bad.”

However, the organization's overall approach to the agreements is problematic, he says, because it appears more than one agreement template is in use. At a recent Ontario Landowners board meeting, there were four different snowmobile agreements on the table, he says. “How can we say we think this isn't a bad thing when there are this many across the board? At that point, there was a press release that went out that we're not standing behind any of them.”

Black says his organization would like to see a rental agreement instead. “That, our lawyers tell us, is a two-person agreement, and you have to pass a dollar, you have to exchange. And that's a sealed agreement that can't be interfered with by the government.”

But both Snyder and Walker say a rental agreement would mean the federation's insurance could no longer cover the property owner.



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Graham Snyder and his son, Jesse Snyder, head off on their four wheeler to erect trail markers on the family's farm.

“The minute there is any form of remuneration paid for the actual use of the property, our insurance policy is null and void,” Walker explains.

Walker adds that the agreement he uses was developed by the provincial organization, not his local club or district.

Snyder sees the outpouring of concern as an opportunity to create better relationships between those who build and maintain trails and landowners. “In the past there were some clubs that weren’t communicating with their landowners on a yearly basis,” he says. “This is a wakeup call. The clubs are going to be going out and communicating every year with these people. And the biggest thing is, if you find out there’s something that went wrong that year, you can act on it.

Where (as) if you wait four or five years, (it’s) pretty hard to do something four or five years down the road.”

Walker too says he’s hopeful the organization’s new agreement will help. But he knows more is needed. He’d like to see, for example, the federation remove its interactive trail maps from its website once the snowmobile season is over to make it more difficult for people to find the trails in off-season periods.

He expects the going will remain tough and refers to the province’s recent proposal to change land-use growth plans and their accompanying legislation for areas such as the Greenbelt and the Niagara Escarpment. The public comment period for the revisions ended in October.

“Everybody’s sort of sitting and wondering just which way the next piece of legislation is going to swing,” he



"I have yet to have a farmer say to me 'I don't want snowmobiles on my property.' But what I do get is, it's the trail; it's the fact that it's the ATVs (that use the trail)," says Randy Walker.

says.

"It's really all about the trials and tribulations of the poor landowners. It's about the expectations that they have; it's about the expectations that we have. ... They're caught in the middle of a whole lot of things. They're trying to feed families and run their farm operations but then all of a sudden you've got somebody saying, 'oh no, you can't do this and you can't do that,'" he says.

"I can see their level of frustration." **BF**

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Double cropping soybeans: risk vs. reward

An aggressive approach to crop management, paired with a suitable growing season, could be the key to raising a successful double crop of soybeans.

by JENNIFER JACKSON

Eric Deitrich, a farmer outside Lucan, was determined that 2016 was the year to finally try to double crop soybeans. Conditions looked good, and the thought of profiting from another crop in addition to his winter wheat was too good to resist.

“Our planting equipment is not doing anything at that time of year,” says Deitrich. We wanted to “try and get a bigger return – extra acres – through our equipment.”

Deitrich says the season started successfully after he harvested an average of 33.5 bushels per acre (bu/ac). (Depending on input costs, farmers should see profits on yields over 15 bu/ac, according to some industry representatives.) Deitrich is already planning which fields to double crop next year.

Over recent years, there has been increased interest in double cropping

soybeans, says Horst Bohner, a soybean specialist with Ontario’s Ministry of Agriculture, Food and Rural Affairs (OMAFRA). “Farmers are getting good at it,” he says.

But Bohner stresses that the most plentiful yields are the result of many factors – including soil conditions and farmer attitude – falling into place. Double crop soybeans require a high level of commitment and a keen knowledge of crop requirements.

Double crop soybean “yields (from the 2016) season were very favourable – 30 to 40 bushels an acre,” says Bohner. “It has been a huge opportunity for some growers.”

Planting date

The date that the crop goes into the ground is one of the most important factors that influences the yield. Some of the most successful double crop soybean growers pay the strictest

attention to planting details, says Bohner.

“We’ve come a long way (yield-wise) with aggressive growers who are putting in the extra effort to seed as soon as possible,” he says.

July 15 is a common cut-off date for planting. “Once you get past mid-July, it’s too late. We see at least one bushel lost per acre for every day planting is delayed,” says Bohner.

For Ian Matheson, a farmer from Embro, the ability to plant early was an incentive when he first tried double cropping soybeans. He grew winter barley for his hog operation and had early harvest dates.

After the barley harvest, the empty fields “seemed like a waste sitting idle,” says Matheson. “We were harvesting not much later than other producers planting full-season soybeans.”

Monitoring your winter cereal’s



Short season varieties have allowed some farmers to harvest their double crop soybeans before their full season soybeans.

maturity goes hand-in-hand with planting the soybeans in time, says Eric Richter, a seed sales representative at Syngenta. Some growers have to commit to combining the wheat early to help ensure a successful double soybean crop.

“The growers must consider everything they can do to move the wheat off as early as possible,” says Richter. They may have to “harvest (the wheat) a little wetter, and dry it.”

Wheat testing from 18 to 20 per cent moisture can be harvested and dried without damaging quality, he says.

It is important to note that double crop soybeans planted after wheat or peas are not insurable with Agricorp, says Stacey Edwards, the agency’s communications consultant. However, there are times when these beans may be eligible for coverage after harvesting a hay crop.

“Customers should call us so we can help them understand their options and how their coverage works in these cases,” Edwards says.

Pushing the frontier

“In the past five years, the interest in



Eric Richter, Syngenta photo

Double crop soybeans should be planted into narrow rows and in high populations to promote a thick, quick-closing canopy.

soybeans in Western Canada has just exploded,” says Richter. “It has allowed us to push the frontier farther into Northern Ontario with short season varieties.” There are now varieties that are suitable for growth in the short seasons of the Prairies as well. Researchers continue to breed varieties that can be grown farther west and farther north than before. These developments provide better opportunities for farmers who want to double crop beans in Ontario.

Double cropping “is not risk free; (however, growers) now have manageable risk,” says Richter. “I’ve always encouraged growers to have a plan – to be committed.”

“We have learned that variety selection is absolutely critical in terms of a success story,” says Bohner.

For Henry Denotter, a farmer in Essex County, the early years of double cropping soybeans included using leftover, full-season seed. Denotter has grown, with varied



MGS Farming photo



Eric Richter

success, double crop beans on and off for the past 15 years. Last year, however, he was able to choose a variety that specifically fit his farm and growing zone.

Variety evolution is a large factor that separates the double cropping of the past from the present. As the varieties' maturity continues to shorten, farmers sacrifice yield less often.

"Just within the past four years, we have learnt to scale back the maturity a long ways," says Matheson.

It is possible to grow a successful double soybean crop in 90 days. Today's varieties allow producers to strive for that goal.

How does one begin to plan for 90-day beans? The answer is in matching the production zone to the suitable variety maturity, says Richter.

A region needs at least 2,900 crop heat units (CHU) before a farmer considers double cropping, says Richter. Considering industry pressure for shorter season beans, Richter believes it may be possible to push double crop soybean opportunities into the 2,800 CHU area if farmers plant before the July 15 deadline.

In areas that have 3,000 CHU, a short season variety can be used and will mature in good time, says Richter. "We've had some growers who have harvested (double crop beans) before all of their full season beans were off."

Deitrich testifies to this result: he harvested his crop 89 days after planting. "You have to go early (with maturity). Our variety (was) designed for Manitoba," he says.

Growers will mitigate their risk by knowing their maturity zone and, in turn, the variety that suits it best. Farmers have peace of mind, "knowing the plant will mature by the harvest date," Richter says.

Mike Donnelly-Vanderloo, a farmer in Thorndale, experienced this first-hand when he decided after 20 years of growing double crop beans – and a dry spring – that he would return his seed and plant a cover crop instead. After a mid-July rain, he changed his mind, bought the earliest variety he could find, and planted on July 16. Donnelly-Vanderloo harvested a strong average of 38.5 bushels an acre in the fall.

"When you think you have it all

figured out, something odd will come up," he says. "I don't think I've learned as much as I have about crops than I have with double crop soybeans."

Planting logistics

The planting requirements of double crop soybeans are specific. They begin with equipment and planting population.

"It's really hard to plant too many seeds," says Bohner. Recommending 300,000 seeds per acre, he finds 250,000 is the minimum. "The plants do not grow as many nodes because of the shorter season, so increasing the plant population is critical."

Denotter echoes these thoughts, noting "the (beans) don't stand tall. You can't afford to be cheap on the population."

Most growers use air drills for planting double crop soybeans. The air drill allows for a solid seeded configuration: narrow, seven-and-a-half-inch rows. Narrow rows with a dense plant stand allow for thick, fast-closing canopies with higher lower pods, says Richter.

Denotter began by using a planter to double crop his beans in 20-inch rows. "It was fine, but the air seeder is the best way to seed them, even with straw standing up tall." To help preserve moisture, Denotter does not till the land prior to planting.

Matheson shares similar views about row width; however, he practices light tillage.

"Where there has been built-up



Eric Richter, Syngenta, photo

With today's varieties, farmers do not have to choose between beans that are fast maturing, and beans that are of high quality.

chaff, volunteer barley grows and chokes out the beans,” says Mathe-son. “We have (tried) no till, but we’ve learned to go light with tillage for the chaff to try and get a more uniform stand.”

The straw should be chopped and spread evenly, or baled, leaving eight to 10 inches of cereal stubble, says Michael Staton, senior soybean educator at Michigan State University. “This forces the soybean plants to set pods higher.”

Staton has worked with soybeans since the late 1980s and has been working on double crop recommendations for over a decade.

In Staton’s opinion, lack of moisture when planting is the number one factor that will cause a double crop soybean wreck.

“If June is too dry, do not try,” is a maxim that Staton likes to remember.

When planting in July, the farmer may have missed the wet weather that the spring brings. To reduce the higher risk of dry summer conditions, a little rain is needed around

the planting window.

“There needs to be enough moisture for germination and emergence. Last spring was very dry for some farmers,” says Bohner. “Getting a good initial emergence was difficult for some” in 2016.

Crop inputs

When growing double crop beans, farmers should create crop input budgets wisely.

“You’re dealing with the risk of even getting a crop. You have to keep your costs in check,” says Bohner. Fertilizer, for example, should be used sparingly, if at all, he says.

Although nitrogen may help close canopies in poor stand conditions, Bohner believes you are better off, value-wise, increasing your planting populations than your nitrogen.

“We’re not chasing 60 to 70 bushels; we’re chasing 30 to 40 bushels. Nutrients are not your main factor for yield loss in a 30-bushel soybean crop,” says Bohner.

Some growers, however, say



Horst Bohner

they’ve seen some benefits from a fertilizer application.

Denotter, for example, has found through trial and error that putting some MAP down with the seed has worked best for his operation.

Whether or not farmers decide to use a fertilizer application, they should reserve double crop beans for the best soil. If the soil has less than 3

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DOUBLECROPPINGSOYBEANS

per cent organic matter, Richter does not recommend double cropping. Instead, the grower should consider strategies to improve soil health first.

Glyphosate is a popular choice of pesticide for growers.

Roundup Ready soybean varieties should be the growers' first choice, says Bohner. The glyphosate will best control the volunteer wheat and barley that commonly grow among the beans.

"Only one application of glyphosate works well for growers, as there's not many flushes of weeds (at that point) in the season," says Bohner.

Challenges and growth

Dave Way, who farms outside Tillsonburg, grows double crop soybeans to be as productive as possible on every acre of land.

"I'm not a big gambler, but (by planting beans) what have I got to lose?" says Way. "If they don't make it, we still have a green crop that we can plow down."

Deitrich is already planning which



Eric Deitrich photo

Farmers should have the air drill ready to plant their double cropped soybeans as soon as possible after harvesting wheat.

fields to double crop in 2017. "We planted the wheat (in those fields) first and chose a variety that is shorter in height and seems to have less

residue to deal with next summer."

Deitrich's biggest tip? "Do your homework on your farms, and have a plan. Don't be afraid to ask for help." **BF**

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Doing their part to protect soil and water

This Essex County family has made conservation a top priority in their farming operation. They adopt new technology to achieve their conservation goals.

by MARY BAXTER



Neal Huber and his father, Don, were the recipients of the 2015 Essex County conservation award. The award, issued by the Essex Region Conservation Authority and Essex Soil and Crop Improvement Association, recognized the farm family's innovative approach to conservation.

The Huber family farm operation in Harrow, Essex County exemplifies that when it comes to using new technologies in the farm field, the size of your farm doesn't matter.

Neal, his father, Don, and their wives Tracy and Trudy, respectively, farm 250 acres of corn, soybeans, wheat and seed corn across three family-owned farms – Neal and Tracy's, Don and Trudy's, and Neal's grandmother's – and also custom

plant about 600 acres. In past years they have rented acres; last year they opted not to because of the high price of field rentals.

In recent years, the family added data mapping as well as variable rate fertilization and grid soil sampling. They are among a handful of farmers across the province to try helicopter seeding to plant cover crops into soybean stands. Last year, they began using an air seeder to set fertilizer directly in the ground instead of

surface applying and working it in afterwards.

"I like technology but I wouldn't be doing it on my own," says Don. The combined efforts of two generations makes new approaches possible, he says.

The family harnesses community effort to implement many of the practices used on larger operations. For instance, the custom service they use to complete the harvest also collects yield data. The operation



Neal Huber

simply isn't large enough to justify the expense of a combine, Don explains. But the family has justified the costs of their row planter by doing custom seeding.

They send data collected throughout the growing cycle to their local input supplier which uses the information to create fertilizer prescription maps. "(The supplier) takes care of making all our planning maps and then they upload it right to our field view cloud account and then it automatically syncs with the (tablet) and when it's plugged into the planter monitor, away we go," says Neal.

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It's the second year the family has employed the mapping technology in this way, he says. The first year, 2015, "was a learning year for everyone and (the approach) is new in general." In 2016, "it worked really well."

The family prioritizes conservation. When Don and Trudy bought their current farm in 1998, for instance, they added 10-foot grass buffer strips along the municipal drains on the property as well as a cedar hedge row.

So they also use technical innovation to achieve conservation goals, especially with their farms being so close to Lake Erie. (Don and Trudy's 100 acres is less than two kilometres from the lake.)

Using the air seeder to apply fertilizer now allows full no-till on the farm's sandy loam soils, Neal explains. Variable application rates mean the right amount of fertilizer in the right place and reduces the risk of nutrient loss.

The family's careful and thoughtful approach to conservation has been noticed. The Essex Region Conservation Authority and the Essex Soil & Crop Improvement Association awarded Neal and Don with the organizations' annual conservation award in December 2015.

Describe your role on your farm operation?

NEAL*: My role on the farm would be, I guess you would say starting to take over managing it. (Neal, 28, follows in the tradition of his father and grandfather by working off-farm full-time.)

How many people does your farm employ?

Just the four: my dad, myself, my wife and my mom.

Hours you work per week?

Anywhere from 10 hours to 70 hours a week, depending on the season.

Winter (I'm) not as busy and then (in) spring and fall, busier.

How many emails do you receive per day?

Three to five.

Hours a day on a cell phone?

Approximately an hour.

What about your smartphone?

I have an iPhone.

Email or text?

I prefer text over email.

Any favourite apps?

Don't really have one.

How about social media?

I use Twitter more than any other social media.

There's a lot on Twitter now. Different articles – not just what people are posting but news articles that are shared.

Hours a day on the Internet?

That's a toughie, because Twitter I don't use on my computer, I just use it on my phone, so that would fall under the hour I'm on my phone. So, I would say less than an hour on the Internet a day. A half hour.

How often do you travel?

Once a year, one big trip.

Where did you last travel to?

In July I went to Paris and Portugal with Tracy. That was good. We were there for just under two weeks.

Number of hours in the office each day?

I'm lucky because Tracy takes care of all the bookwork.

So I would say, I couldn't even put an hour, just minimum amount of time. In the springtime it's never. She takes care of writing the cheques and recording everything.

What do you like best about farming?

Seeing a good crop, a clean field. Seeing that the efforts have paid off.

What do you like least?

A bad-yielding crop. A dirty field.

What is the single most important lesson you've learned?

(Maintain) respect for everybody in the industry. There's no point in getting angry with people as getting along with everybody goes further than anything.

I guess that ties into the next question as well, management philosophy.

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What's your management philosophy?

There's always give and take.

What's your top tip or observation about farm succession?

Don't be afraid to talk about it.

Are you involved in any committees, boards, associations, or volunteer efforts?

I'm a director for the Essex Soil & Crop Improvement Association. As

well, I'm (on the) board of directors for AGRIS Co-operative Ltd.

What are your hobbies or recreational activities?

Hunting and hockey.

What was the last book you read?

American Sniper by Chris Kyle. He was a Navy SEAL.

He was actually killed on the firing range (about a year after the book was

released).

I read the book before the movie came out. It was a good movie.

What's your most important goal?

To be successful and respected in the community.

How do you define success?

Being respected in the community and by the peers in the farming community.

Is your farm vehicle messy or neat?

For the most part my vehicle is neat.

What are three items in your farm vehicle?

Phone charger, pad of paper and a pen (for) if I need to write something down, talk to somebody, (record a) phone number, (or) anything.

I find (writing notes) easier (than using my smartphone). Especially if you've got to pass (the note) or leave it. Like give a note to Dad or something.

I find it easier just to do that instead of going into the note part on the phone.

What are three items that are on top of your desk?

Laptop, probably a couple of bills that need to be paid and there's a printer, there's pens, paper.

What was the last piece of equipment you bought for your shop?

Cordless drill/impact driver and grinder.

What's the best time of day?

At the end of the day. You can see everything that you've accomplished for the day.

What was your most memorable crop/production year?

The fall of 2015. My wife and I bought a farm the spring of 2015 and then we harvested our first crop in the fall. **BF**

**All questions are responses from Neal Huber.*

This interview has been edited and condensed.

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Start the year off on the right foot

A new year offers a new variety of challenges and opportunities for commercial agriculture. Commodity experts offer advice for marketing in 2017.

by JENNIFER JACKSON

We are pleased to introduce **Better Business** as a new monthly department to explore topics which influence the bottom line of farm operations. In each new edition we'll connect with industry experts to provide readers with insight and advice on business management, marketing, and accounting.

Last year, some farmers faced a challenging growing season because of the drought. In such conditions, marketing considerations take on particular importance in helping to maximize profits. With a bountiful American 2016 harvest and varying export demands in the international marketplace, *Better Farming* asked two commodity experts what they think 2017 will bring for the markets.

Speculations for 2017 international markets and demand

Strength of market demand is crucial for farmers when selling their grain.

Cash crop commodity stocks from 2016 are up from the previous year. This move means export demand

strength will be the main influencer of pricing, said Jean-Philippe Gervais, chief agricultural economist for Farm Credit Canada. "Demand is strong and looks to remain strong for the foreseeable future.

"While lots of questions exist about the actual size of their inventories, demand from China is projected to be strong from consumers and buyers, especially as the hog herd may be rebuilding," said Gervais.

This export demand should continue to remain strong, said Abhinesh Gopal, commodity analyst for Farms.com Risk Management. (*Better Farming* is also part of the Farms.com group of companies.) "Many countries faced weather concerns because of El Nino. This resulted in production issues around the world," said Gopal. These weather problems helped boost the United States export program in 2016, especially for corn and soybeans.

Feed should continue to be in high demand for 2017. The United States Department of Agriculture (USDA) expects an increase in both livestock and meat production. This will be supportive for feed prices, Gopal suggested.

In regard to new Canadian export markets, "any new markets are great," said Gopal. Trade deals such as the Canadian-European Union Compre-

hensive Economic and Trade Agreement support demand.

Market signals for the beginning of the year

Although there are many market factors that cannot be predicted, there are some signals that hint at what the year may bring.

Western Canada faced less than desirable weather for part of the 2016 growing season. The Prairies' challenging harvest resulted in low-quality grain, thus limiting crop marketing opportunities for some farmers, according to Gervais.

Because of these harvesting challenges, elevators, producers, and processors had to dry and blend grain. "For crops like durum or



Jean-Philippe Gervais

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Abhinesh Gopal

pulses, quality issues are important,” said Gervais.

South of the border however, farmers harvested record crop yields.

These large 2016 American corn and soybean yields may keep grain prices right where they are for the time being, said Gopal. Although there is record international export demand, this bullish tone has been offset by the large crop of corn and soybeans. Therefore, low grain prices



DavidHewison/Stock/Getty Images Plus photo

Global demand and the size of the South American crop influences commodity market prices, according to Gervais.

should start off the year.

“The (American) soybean crop also has strong implications for the canola market which is showing some strength already for the 2017 crop,

given the strength of demand,” said Gervais.

Farther from home, the South American weather and crop size could also greatly affect the oilseeds

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market. “The size of the South American crop is the second important driver that could move markets in 2017,” said Gervais. (The first driver is global demand, he said.)

Due to strength of soybean prices relative to corn for the 2016 crop, there have been speculations of increased soybean acres and decreased corn acres for the 2017 season. However, “never count corn out” of your production plans, said Gervais.

Number one tip for grain marketing this year

With varying factors weighing in on the 2017 marketing year, Gopal and Gervais provide some final tips for navigating the commodity markets.

Gopal said farmers should avoid “panic selling” at low prices. “Each marketing year, various factors will impact the market and increase market volatility, such as politics, monetary policies (central interest rate moves, taxation, etc.), USDA releases, and unforeseen weather variations. The best plan (may) be to let these factors play



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Due to strength of soybean prices relative to corn for the 2016 crop, there have been speculations of increased soybean acres and decreased corn acres for the 2017 season.

out and give grain markets a chance to react and bounce up to marketable levels.”

However, Gopal reminded farmers to be cautious with market moves, and set aside time from their busy schedules to formulate marketing decisions for the next growing season.

Gervais also suggested the need for a strong marketing plan. “As profit

margins of crop producers get tighter, farm management becomes extremely important – and that includes marketing skills.

“Grain marketing must be seen as an integral part of business operations and risk management,” he said.

“Volatility could pick up later in 2017 and commitment to marketing plans will be tested out.” **BF**



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Let's focus our actions on protecting water

There is a lot of discussion about soil health and climate change. Underlying these concerns, however, is the need to conserve and effectively use water.

by DALE COWAN

We are at a point where predicting future weather from past activities may not offer us much insight into what is in store for agriculture. As Eric J. McNulty, the director of research at the National Preparedness Leadership Initiative, says, it is a VUCA world – volatile, uncertain, complex and ambiguous.

In Ontario, various stakeholder groups are working on a number of initiatives to try to address some of this uncertainty. For example, there is OMAFRA's Soil Health Working Group, the Soil Health Interpretive Centre at the University of Guelph, the Great Lakes Agricultural Stewardship Initiative managed by the Ontario Soil and Crop Improvement Association, and Fertilizer Canada's 4R Nutrient Stewardship. The Ontario Agri Business Association has a memorandum of cooperation with Fertilizer Canada and OMAFRA to adopt 4R Stewardship principles in

reducing phosphorus loss. There's also the OFA and Great Lakes and St. Lawrence Cities Initiative, Grow Ontario Together (the stakeholder group of agricultural industry producer associations), initiatives from Farm and Food Care Ontario, and initiatives from various conservation authorities. In 2016, the Certified Crop Advisors (CCA) of Ontario adopted the 4R Nutrient Management Specialist Designation for practicing CCAs.

I think the common theme that ties the various stakeholders together is a collective concern for sustainability. In particular, sustainability involves the triple bottom line of economic, environmental and social pillars that guide, or should guide, actions in the agricultural industry. We need all three pillars to be recognized in all future endeavours, regardless of the initiatives' affiliations.

I had the good fortune to attend

the American Society of Agronomy (ASA) annual general meeting in Phoenix in November, where I officially received my International CCA of the Year award. But, most importantly, the meeting is the annual gathering of over 4,000 ASA members. This group is comprised of university and private researchers who presented the latest research on hundreds of topics in concurrent sessions over four days, not to mention several hundreds of poster sessions. The theme for the convention was "Resilience Emerging from Scarcity and Abundance."

Sandra Postel of the Global Water Policy Project, which is headquartered in Boston, Massachusetts, gave the keynote address. She delivered a rather sobering view of the present water supply and gave glimpses into what could be done in the future to address the situation. Only 3.25 per cent of the world's water is fresh water and only 1 per cent of the total supply



Juliana/Stock/Getty Images Plus photo

Sustainability involves the triple bottom line of economic, environmental and social pillars that guide, or should guide, actions in the agricultural industry.

is available for human consumption, Postel said.

Regardless of all the good initiatives in Ontario, at the end of the day, the focus has to be on water. As individuals, we will most likely experience climate change effects through the hydrological (or water) cycle. We have already experienced periods of intense dryness, if not drought, followed by periods of excessive rainfall.

Looking at past weather records may hold little useful knowledge for predicting the future rapid changes. We have little idea of when, how long, and how frequently extreme events may occur, but they will potentially impact everything we do. Change is

all around us.

For example, for the first time I can remember, we accumulated over 4,000 Corn Heat Units (CHU) in Essex County last year. Will this high accumulation occur again? Should we extend our maturity selections on corn and soybeans? Can we grow 4,000 heat unit corn instead of 3,500? If we can make this switch, what else do we have to adjust in our crop management?

While in Phoenix, I had the opportunity to take a tour of the desert research farm at the Maricopa Agricultural Center. When you get off the bus you are immediately struck by how stark and dry the area really is. But, the more you look, the beauty of the place does emerge – it is just different than what we are used to in Ontario. Very quickly, you appreciate how the farmers and residents in the region have adapted to the scarcity of

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water. In most winter months, the area receives less than 0.7 of an inch of rain and the summer months rarely exceed 0.3 inches of rainfall. Farmers grow vegetables, forages, wheat, sorghum and corn under irrigation.

Smart irrigation is used; residents apply water in the right amounts at the right time. Any leaks in the irrigation system are fixed immediately. Residents consider water to be liquid gold. The landscaping is void of grass; lawns are irrigated properly or artificial. Residents make every effort to maximize the efficient use of water.

Contrast this picture to Ontario, where you see certain businesses with irrigation on timers running while it's raining and the water is running down the sidewalk into the gutter. We waste so much water!

We can learn a great deal about managing water from areas that have water challenges.

Climate change is complicated



Jarmien/Stock/Getty Images Plus photo

If we can increase soil organic matter by 1 per cent, soil will hold another inch of water per acre.

because it may well offer either scarcity or abundance of rainfall at any time. What can we do to stretch the water supply when it's dry? How can we handle the water when too much arrives from intense events?

These situations are cases when soil health initiatives, best management practices and the resulting resiliency come in with all of their component parts. The collective and compounding benefits of crop rotation, reduced tillage, residue management, tile systems, cover crops, compost, manures, balanced fertility, and the right seed genetics are all important ingredients in offering a solution to extreme weather events. It will take a multitude of options to improve soil structure, optimize water holding capacity, maximize infiltration rates, and reduce runoff.

If we can increase soil organic matter by 1 per cent, soil will hold another inch of water per acre. As a matter of fact, if all agricultural soils worldwide could hold another inch of water, we could hold 100 trillion gallons of water for crop production. That is eight times the amount of water in every lake and river worldwide.

We will never keep all the water that falls on our farmland, nor should we. There is a hydrological cycle at work to recharge natural systems. However, we can influence the amount of water that does leave and we can control what's in it. We have a

lot of technology we can use for this purpose and the science is emerging to help us understand how to do a better job. Perhaps we need a new measurement for success. Something like "more crop per drop" or economic incentives that require more productivity per litre of water extracted by various industries.

I know it is not an "either or" scenario when it comes to protecting water. We all need to find a way for industry, agriculture, public and recreational users of water to harmonize and work together.

Eric McNulty says in a VUCA world you need VUCA management. We need to have a vision, seek understanding, look for clarity, and be agile. Each field on a farm, every factory, and every municipality will have its own unique characteristics and will need a unique solution. Therefore, no single unified solution will ever work to protect water. The solutions will be as much about societal behaviour and attitudes as they will be about science. We need everyone working on a VUCA approach.

Our bodies are made up of 90 per cent water. We need to spend more than 2 per cent of our time talking about it. **BF**

Dale Cowan, CCA-ON, 4R NMS, is a senior agronomist with AGRIS Co-operative Ltd. and Wanstead Farmers Co-operative Ltd.

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Lessons from the 2016 crop year

As you are planning for the next growing season, consider some of these key lessons from last year. Keep in mind, though, that 2016 certainly wasn't a typical production year.

by PATRICK LYNCH

Each winter it is nice to reflect on some of the things you learned from the previous season. There were a lot of lessons from 2016. Some were new and some were reminders. I asked a number of Certified Crop Advisers (CCA) and farmers what they learned in 2016 and have summarized some of their main points below.

The first lesson is how sunlight affects yields. During the wheat head filling period there was approximately 20 per cent more hours of sunlight than average. This unexpected energy surge resulted in very high wheat yields. If you changed one thing last year and had higher than normal yields, the increase may not have anything to do with what you changed but rather with the weather.

A similar phenomenon occurred with corn and soybean yields. This fall, some growers said they could not believe the yields. This increase happened because of the extra sunlight. During the grain fill period in August, we received again about 20 per cent more sunlight than normal.

The sunlight factor trumps things like kernel count and, as CCA Russ Barker of St Marys says, makes kernel tip fill insignificant. Yield is determined by kernel number but also by kernel size and weight. This year with extra sunlight we had bigger, denser and heavier kernels. There were



If weeds emerge and you wait to see if they will die – they won't.

places where corn was over 64 pounds per bushel compared to the normal 56 pounds per bushel.

Second, we were reminded that you should never give up on a crop unless there is absolutely nothing there.

I spoke with one grower in September who was wondering about using a harvest aid to help get the beans off and achieve a higher yield. He said, "Oh well, I will probably be in an insurance claim so won't bother." After more discussion he decided to use the harvest aid. He ended up with an average yield of over 50 bushels per acre. And he had no crop insurance claim.

Third, we relearned that red clover pays. I have one customer who

reluctantly spread red clover into his wheat last spring. When we met to review his crops he said, "Well, that was a waste of money." He insured the crop.

Late in the fall, I asked him if he received his claim cheque. He had. When we looked at the cheque and subtracted costs for seed and application he netted \$2,100 on his red clover plough-down crop. (He would have made more if the clover had lived.) Oh yes – he will be spreading red clover in the spring.

Fourth, I am not sure we learned too much definitively about tillage in 2016. Some growers who worked the ground had higher soybean yields than where they practiced no-till. Other growers saw no difference. But,

Solar panel output in kWh May to August 2016

Month	2015	2016	Percentage difference 2016 versus 2015
May	2,007	2,271	+13.2
June	1,975	2,421	+22.6
July	2,243	2,323	+ 3.6
August	1,765	2,124	+20.3

Source: Jonathan Zettler, CCA and Cargill agronomist at Harriston

looking at tillage practices in more depth, there were reasons for the results. These reasons will be discussed in a future article.

Fifth, we relearned lessons about weed control. If you spray early with the right product and get rain in the correct timeframe, the weed control works. If weeds emerge and you wait to see if the weeds will die, they won't. And if the big weeds get too big they will be very hard to kill.

Some growers experienced first-hand the dreaded glyphosate-resistant fleabane. I think more growers will plan programs to control this weed in all crops in the coming growing season.

Sixth, we witnessed the benefits of crop rotation in 2016. Second year corn on heavier soils did not yield as well as rotated corn. Overall, crops grown under a good rotation yielded better than monoculture crops. These rotated crops proved more successful at surviving the dry weather. There



We witnessed the benefits of crop rotation in 2016.

were, however, some exceptions. For example, continuous corn on silt loam soil typically yielded quite well.

Seventh, if you planted into tough soils in 2016, you paid a yield price. Sometimes you can get away with

planting in these conditions if there is a lot of rain after planting and emergence. But when the rain did not come last year, seed that was planted into tough soil did not grow very well.

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Patrick Lynch is an independent CCA-ON. He has won a number of awards for his service in the industry, including the Certified Crop Advisers (ON) Award of Excellence in 2013 and the OAC Outstanding Service Award in 1999. Patrick has written for Better Farming since its inception.



Dale Cowan, CCA-ON, 4R NMS, won the International Certified Crop Adviser's Adviser of the Year Award in 2016. He has advised growers on cash and horticultural crops for over 35 years. His areas of specialization include sustainable agronomy and precision agriculture.



Andrea Gal is active in her family cash crop operation. She has worked with field crop research trials, focusing on responsible nutrient management. Andrea combines this hands-on knowledge of crops with a passion for writing, developed through the completion of her PhD in ag history.

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Seeding red clover pays.

Eighth, wheat, corn and soybeans had a positive response to fungicides more times than not. With a hot, dry summer you would expect less response to fungicides. I am starting to believe the plant health claims that manufacturers talk about is real. In greenhouse studies in Raleigh, North Carolina, some fungicides show better moisture utilization. I believe this utilization occurred in the field in 2016.

Ninth, what did we learn about western bean cutworm? I don't know. The early flights indicated higher than normal numbers. Hot, dry weather is conducive to insect buildup, which meant we should have seen a lot of egg masses. But early scouting showed low levels of western bean cutworm egg masses. No one predicted in-season how devastating western bean cutworm would be.

Scouting did not seem to help. Fields that seemed to have very few insects during scouting still had damage and worse – these fields had high vomitoxin levels at harvest. And there is no new genetic control for this insect. Hybrids with the Cry1F Bt protein gene did not control western bean cutworm. The Viptera gene gives good control of this insect but that gene is not in current hybrids.

In 2017, I am sure more growers will spray for western bean cutworm in the traditionally susceptible areas.

Tenth, there were some lessons to be learned on nitrogen rates and timing. Mainly that you do not learn anything from one year's worth of plots. But this does not mean you should give up. In many cases, the strategy that growers had going into the year would work in a normal year. But 2016 was not a normal year.

And this is the summary lesson: 2016 was not a normal year. Take the lessons from 2016 and blend them with lessons from other years as you make plans for 2017. **BF**

Consulting agronomist Patrick Lynch, CCA-ON, formerly worked with OMAFRA and Cargill.



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Farmers always striving for self-sufficiency

Rural Ontarians are concerned about the mounting price of hydro and associated delivery charges. Consider some of the alternative sources of energy you may be able to use in your operation.

by RALPH WINFIELD

Farm owner/operators have strived to be self-sufficient in many facets of the rural lifestyle. They produced their own meat, milk, and eggs.

As a young farm boy, I remember milking cows and gathering eggs. I fed cows, pigs, chickens, and yes – even the horses. Fortunately or unfortunately, those days are long gone.

When hydro came to the farm, at a very reasonable cost, it made many tasks easier.

Unfortunately, the cost of electrical energy has now increased to unrealistic levels. We are charged not only for the electrical energy we use, but the rate varies by time of day. We are also charged for delivery.

Fast forward to present

My Hydro One billing is classified as “residential-low density.” This classification, which applies to most Ontario farms, means we are subjected to the highest level of delivery charges, which also includes a charge for line losses on our monthly electrical consumption. In other words, that charge is for the electrical energy that is lost between the point of generation and our “remote” farm location.

All electrical conductors have some resistance to current flow. If you remember your high school physics classes, you will know that: power (P) in watts is created by current flow (I) in amperes across a voltage difference (V). The formula is $P = V \times I$.

In addition: one ampere (I) flowing across a resistance of one ohm (R) will produce or require a voltage (V) of one volt. This is usually written as $V = I \times R$.

This information should explain why electrical energy is transmitted at a very high voltage to minimize transmission line losses by keeping the current value (I) as low as



Time-of-use metering by smart meters like this one has put many meter readers out of a job. But do these smart meters report potential line problems – such as floating insulators – and maintain customer contact?

practical.

Electrical power is generated at a relatively low voltage. Transformers are used to increase the voltage to 300,000 – 500,000 V for transmission along the tower lines.

At transformer stations that voltage is reduced to 27.6 kV. (A kV is 1,000 volts.) The voltage is further reduced at a local distribution station within a few kilometers of your farm and is then reduced again by the transformer at the farm to 120/240

volts.

Power losses do occur between the generation facilities and our points of use on the farm. In the August edition of *Better Farming*, I talked about efficient use of electrical energy as well as shifting usage to off-peak periods whenever possible and practical.

The hydro bill that I have in front of me for Sept. 14 to Oct. 14 shows that we averaged 35 kWh per day, with 25 kWh being off-peak.

But guess what? My delivery charge of \$114.13 exceeded my total usage charge of \$112.85! Does this make sense? Not to me.

I know that the delivery charge includes the line loss charge. (The latter charge used to be shown separately on our bills.) To add insult, we also have to pay the “regulatory charges” that presumably cover the cost of billing.

Then, let us not forget the HST (harmonized sales tax) of 13 per cent that has been added to the total hydro bill. Many of us farmers have been able to recover a portion of that cost.

Other users have not been as fortunate. But there is good news for them. As of Jan. 1, the HST on electrical bills is reduced by 8 per cent. This is great news – especially for low-income seniors.

What is in the future?

On Aug. 30, I attended an open meeting organized by Jeff Yurek, the MPP for Elgin-Middlesex-London.

He arranged to have the new Hydro One Ombudsman, Fiona Crean, with him to hear concerns from local residents and to answer their questions. About 200 people attended the meeting and the questions/comments were many and serious.

Two issues stood out. First, many seniors who are on fixed incomes stated very clearly that they cannot afford to pay their Hydro One bill and still put food on their tables.

Secondly, there is an issue with erroneous billing. Many commercial operators talked about ridiculous bills due to meter reading errors. These operators also talked about closing down businesses and/or moving to Manitoba or Quebec where hydro costs are much lower.

The provincial government announced that it is going to buy clean “hydro electricity” from Quebec. For some of you younger readers the term “hydro” is synonymous with electricity generated from water falling to produce electrical power using turbines like the ones at



A typical farm single phase transformer.



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Niagara Falls. This is often referred to as “clean” power.

Where are we going?

There is no doubt in my mind that more and more rural customers will be looking at ways to go “off-the-grid.”

In early 1986, I completed a research report for a joint contract supported by the Agricultural Energy Centre of OMAFRA and the Ontario Ministry of Energy, in cooperation with the Engineering and Statistical Research Institute, Research Branch, Agriculture Canada. The report was titled “Biogas Production Facilities on Farms.” We covered all existing digestion systems in Canada and the northeastern United States.

At that time electricity generated by biogas systems was not viable because utilities like Ontario Hydro would only pay a very nominal amount for supplied electricity. Storing biogas on the farm for on-demand use was not reliable or safe.

Only a few biogas-generating units are in operation in Ontario today.

In Germany, many “free-standing” biogas-generating systems are operating very effectively. These German systems are using significant additions, including chopped corn plants and other plant byproducts such as oat hulls, to the animal waste that was/has been the primary biogas input in Ontario.

Where relatively cheap natural gas is available in Ontario, along with a consistently high electrical demand, on-site electrical power generation can and will become a primary source of electrical/heat input. Grain drying systems, ethanol production, large greenhouse operations, and large dairy operations are all potential users of on-site generation.

Unfortunately, specialized knowledge and dedication was, and will be, required to operate anaerobic digester systems. For example, an antibiotic used to treat animals can kill the desired microbes in the digester, just as some soaps or other additives like milk can shut down a septic system.



A local hydro distribution station reduces the voltage down from 27.6 kV to distribution voltage.

Gas-fired systems are simpler and will become more common as long as the electrical demand is high and consistent.

In conclusion

Many smaller commercial users of electrical energy in Ontario will continue to shut down their operations due to high electrical and labour costs.

I believe the green energy program is not and will not fill the need for reasonably priced electrical power in Ontario on a 24-hour/365 day basis.

We as small rural users of electrical energy are in a no-win situation. We cannot afford to buy high-priced electrical energy with the unreasonable distribution component.

But going off the grid and generating one’s own electrical power is just not a practical solution for most farmers.

I must come clean at this point.

From 1969 to 1974, I worked for Ontario Hydro in Toronto as a farm sales officer, also known as an agricultural applications engineer. During that time we promoted the effective and efficient use of electrical energy on all Ontario farms.

Why? Because there was a need to increase the flow of electrical energy into those low-density areas in order to keep the price per kWh down. How ironic! As I stated in my August article, the peak system demand was always on the Monday preceding Christmas day.

The tremendous increase in load, primarily by air conditioners, has moved that peak system demand into the hot summer days.

I ask: should we in the rural area supplying food be penalized for using electrical energy efficiently for the benefit of all Ontarians? **BF**

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

Checking over your MFWD tractor

The winter months are a perfect time to complete maintenance on your equipment. Consider these practical tips when inspecting your tractor.

by JAAP KROONDIJK



Look for leaks in the rear axle seal and wheel bearing area. Make sure, too, that there is no play in the axle.

Before you begin to check over any mechanical front-wheel drive (MFWD) tractor, make sure you have something handy on which to record your findings. These notes will make it easier for you to remember any problems or issues and give you a better picture of your equipment's condition.

Start by visually breaking down the MFWD tractor in sections and inspect each section of the machine. Some examples of sections include: front axle, engine, transmission, hydraulics, hitch mechanism/drawbar and cab. And there might be more sections, depending on how your machine is equipped.

My recommendation is to have

your grease gun handy. That way, you proceed at a slower pace and get a good chance to look around while greasing the machine.

On a front axle, look at the axle pivot bushings. These bushings are crucial to keep the axle in place and need to be greased regularly.

Lift the front of the tractor until the axle no longer carries the weight of the machine. That positioning allows for a good check on play in the axle pivot and provides you with a good opportunity to grease as well. You can look at wheel bearings and kingpin bearings at the same time. When the weight is off of the wheels they are easy to turn, so you can check or change the oil in the

drive hubs.

On the engine, check fan drive, look for play, and see if the viscous fan is functioning properly. Inspect the fan belts for wear.

Also examine the alternator and starter motor wiring. Check the cooling package for cleanliness and leaks, as well as all coolant hoses for wear. Examine the water pump weep hole – look for signs of oil or coolant leaks in this hole.

Inspect all fuel lines, filters and pumps. Most fuel filters have either a drain valve or a clear bowl to spot water in the system. Drain any water and, if a large amount is present, change your filters and drain water out of the fuel tank as well.

Pull the dipstick out of the engine. Do you see any odd discolouring of the oil (grey or brown), any condensation etc.?

Is the intake and exhaust system free of any leaks or cracked hoses? Are the air filters and housing clean? A good way to inspect an air filter is by holding a light on the inside of the filter and trying to look through it. Can you see dirt or weathered filter material?

Make sure the inner safety filter is clean. If this filter is not clean, something is wrong with your main filter or the sealing of the filter housing.

On your transmission, examine at the filler cap and dipstick. See if the oil has any discolouration or odd smells, or if there are signs of condensation on the transmission.

If they are present on your specific tractor, check cooler lines and shift linkages. Or, in solenoid-controlled units, make sure all wiring is in place and none was damaged during the season.

Also inspect the drive shaft between the engine and transmission if your unit has an external drive



Check to ensure there is no play on the viscous drive hub on the engine cooling fan drive. Make sure, too, that the hub is operating properly.

shaft. If you still have a dry clutch, check it for free play and adjustment. Have a look in the access covering. Do you see any signs of leakage or lots of clutch dust?

Examine the drive shaft going to the front axle. In most cases, some shielding will need to be removed to gain access to the universal joints and drive shaft. Check the splines on both the tractor and the front axle side.

Once all drives to the front axle are inspected, let the tractor down and repeat the lifting process for each rear axle final drive and check them for play.

Does your rear axle final drive have an oil reservoir independent from the transmission? If so, examine it. Check all wheel hardware for proper torque with the proper torque wrench – an impact wrench will not do!

On your machine, does the transmission oil serve as the hydraulic fluid? Or does your tractor have a stand-alone hydraulic reservoir? In case of the latter, check its fluid level and oil quality.

Inspect all remote valves for operation. If you have a pressure gauge handy, you could inspect the pressure and leakage of each of the valve outlets as well. Don't forget: most systems today run around 3,000 PSI of pressure and you need to be careful when working on the system.

Also check the three-point hitch for operation. Does it hold the load okay without settling?

Most newer tractors use electronic-controlled valves but there are still a lot of units with mechanical linkages. Make sure these linkages go through the cycle without binding, allow for full control of the valve and go in float

(this is a function where the oil can freely flow through the valve) as well.

Do you frequently use your three-point hitch to carry heavy weights or to pull your planter? This hitch gets used sometimes as much, or more than, the drawbar. So you need to examine the three-point hitch carefully.

Are all the ball joints in good order? Are the adjustment linkages free from damage? Are the threaded parts free, without excess play? You should also inspect the top link closely. Is this link bent or damaged? Does it spin freely for adjustments?

In the case of either a quick hitch or quick hitch arms, do their locking mechanisms function properly?

As for the drawbar, is the mount solid? Are the length and sway adjustment pins in place? Have a good look at the bottom support. A lot of weight can be carried on the drawbar and the supports need to be flawless. Also make sure the holes are not worn in an oblong manner. Is the drawbar safe for pulling a load?

Most cabs today are the centre of the controlling systems of the machine, with many electronic controllers mounted on or near it. Make sure that those locations are free of any foreign materials that do not belong in the cab. I have seen many tractors that have draw pins, chains, water bottles and you name it laying on top of or near expensive control units. That should not be, but it happens. Now is the time to take care of the problem and put the collectables in a more suitable location.



This MFWD input drive shaft has a leaky seal. Examine the constant velocity drive unit and the seals on the outboard drive and axle.



There is an engine oil leak in this head gasket which will need to be addressed.

Check heating and cooling systems, as well as all warning systems. Are neutral safety start systems functional and in place? It sometimes just takes a little effort to prevent a big disaster. Be careful and prevent a chance of tragedy down the line in the heat of the season.

Are all lights functioning properly? These lights include: headlights, taillights and work lights, and above all extremity lights, hazard and warning lights and rotating beacons.

Since the cab seems to house most of the wiring, this would be a good time to inspect the batteries as well as all power cables going to the cab. Look for corrosion on the positive and ground cables, as well as on the battery connections. Are all windows and doors latching properly and sealing well?

Are all window wipers and washer systems in place? Are wiper blades in good shape? You work in a lot of dusty conditions and the wipers have a tough time.

I hope this gives you some guidance in inspecting your tractor this winter so that it's in tip-top shape for the coming season. Give your tractor some much-needed TLC so it will serve you well. **BF**

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



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Corn signals for help

Corn seedlings “call” for assistance when eaten by caterpillars, according to researchers from **Martin Luther University Halle-Wittenberg, Cornell University**, and the **Boyce Thompson Institute (BTI)**.

The seedlings release a scent compound which is attractive to parasitic wasps. The wasp’s larvae then devour the pests from the inside out.



stevanovicigor/iStock/Getty Images Plus photo

Researchers compared the strength of the “help” signals between 26 corn varieties, and paired varying signal strengths with their

associated plant genes.

This research will provide the genetic knowledge required for improved plant breeding, according to **Annett Richter**, lead researcher and scientist at BTI.

“The aim is to improve the volatile signals of (plants’) natural defenses, and now breeders have the opportunity to use those defense genes,” Richter said in a release.

The study was published in the journal *The Plant Cell* in the fall. **BF**

Field trips for city dwellers

Farmers may soon help educate consumers by offering farm visits through a web-based, start-up program much like **Uber**.

The idea for the Visit My Farm project stemmed from a discussion of consumer-farmer boundaries, according to **Sonia Muir**, manager of business and social resilience programs at the **Department of Primary Industries** in New South Wales, Australia.

“We surveyed over 400 non-farmers and a large percentage of them said they would be really interested in visiting a farm and they would be prepared to pay for that experience,” Muir said to the **Australian Broadcasting Corporation (ABC)** in



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October.

Visit My Farm could increase communication between farmers and consumers, while providing an extra source of income for farmers.

“The concept is really about value-adding to your actual farm,” Muir said to ABC.

The program is currently attracting investors. **BF**

Flavoured Alberta beef

Researchers hope to highlight and help market the unique flavour of Alberta beef.

The **Food Processing Development Centre** in

Alberta is now studying the flavour difference between barley- and grass-fed beef, as opposed to corn-fed beef, according to an October **Call of the Land** podcast produced by **Alberta Agriculture and Forestry**.

Alberta cattle are dominantly grass- and barley-fed. “We hope the (results) allow Alberta beef to have a unique flavour profile that could then be used to demonstrate product differentiation for entering into new

markets,” says **Nicole Gaudette**, sensory scientist at the Food Processing Development Centre, in the podcast.

A trained research panel will also flavour profile beef from Alberta’s main competitors – the United States and Australia – and look for marketable differences.

This project provides “a snapshot of where beef flavour is for the province,” says Gaudette. **BF**



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Winged farm workers

Your newest farmhand may have wings.

Some Washington state farmers are turning to an innovative crop protection source: a falconer and his birds of prey.

Vineyard and orchard crops can be damaged and destroyed by some birds. **Brad Felger**, owner of **Air-strike Bird Control Inc.**, uses his trained falcons to scare off pest birds

from farmers’ fields, according to an October **Washington Post** article.

Operations with fewer than 1,000 acres typically require one falcon, says Felger. Farmers should fly falcons daily from crop ripening to harvest in order to deter problem



RyanVincePhotography/iStock/Getty Images Plus photo

birds.

Felger’s customers incorporate the falconry with other standard bird repelling tactics such as noise-makers or Mylar strips.

Some of the species that can damage crop include seagulls, sparrows, starlings, finches, and crows. **BF**

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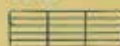
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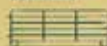
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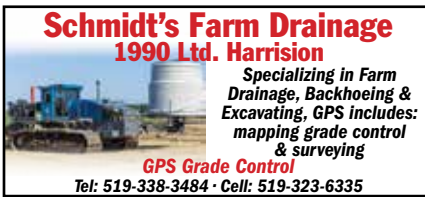
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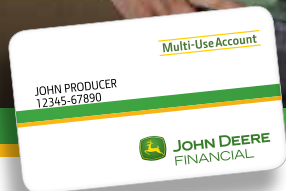
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