

CountryGuide

Strategic. Business. Thinking.

WESTERN EDITION / COUNTRY-GUIDE.CA / OCTOBER 2016



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ONE THING'S INVIGORATED IN THE NEIGHBOUR'S FIELD: THE CLEAVERS. YOU SMOKED YOURS WEEKS AGO. BECAUSE WHEN IT'S TIME TO HARVEST, YOU'RE NOT BURNING DAYLIGHT ON CLEAN-UP DUTY.

YOU CAN WAIT TO WORK, OR YOU CAN GET TO WORK.

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New Series 6 and 7 tractors from German manufacturer will soon be hitting our shores.

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For the three generations of Manitoba's Ellis family, the breakthrough came when they realized their succession plan isn't an estate plan or a will. Instead, it's a tool that can open up more options for the members of their family at every stage of their lives.

8 Plan before you retire

Today's farm retirement planning can incorporate everything from pension plans and holding companies to trusts and innovative land ownership strategies. There's a mix that's right for your farm, but be forewarned. Tax-smart retirement planning takes time and lots of expert advice.

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This time, Ottawa must listen



If the average Canadian farmer was 40 instead of pushing 65, would we really be giving our governments such a soft ride?

Of course there have been serious political issues in Canadian agriculture in the last five years. A list is easy to rattle off, comprising everything from grain transportation in the West to trade negotiations, plus myriad other issues as well.

Even so, as an industry we have largely let ourselves take our eyes off the political ball. At least, we haven't been anywhere near as assertive as in previous decades, when stabilization programs and regulatory reform seemed to start every conversation.

Now, this will have to change.

If there's one extra job to add to your list for the winter (I'm definitely adding it to mine), it's to bone back up on national and provincial political issues, and on the lobby organizations — and their leaders — who are the farm voices that politicians and bureaucrats actually hear.

Yes, it's true that Canada's farms are healthier than they have been in over a generation, but a good deal of that is due not just to the few recent years of great prices and yields, but also to the age of our farmers. As Maggie Van Camp points out in her must-read "Plan Before You Retire," the average age of Canada's farmers is rushing toward 65.

We mustn't undervalue the courage it took that generation to get this far, but we also need to be mindful of the young farmers that we hope will replace them, and we need to recognize we are asking them to take on the job without the level of government support and protection that their parents had.

In this issue, the article "Deciding on AgriStability" examines just one aspect of this. AgriStability is key to Ottawa's farm strategy, but it is unsatisfactory at best, and it is in jeopardy. It's hardly a secret. In a recent survey by the Ontario Federation of Agriculture, 85 per cent of farmers not only said they find AgriStability confusing, they don't believe their bankers understand it either (and certainly don't consider it when evaluating loans). Similarly, in Saskatchewan, APAS has found that only 20 per cent of farmers believe AgriStability is helping them, while 35 per cent have completely dropped out.

AgriStability's margin protection is dwindling, the program is unpredictable, and it punishes diversified farms. And now, even AgriStability is at risk, in part from food processors and others who have lost their Industry Canada funding and are looking for vulnerable government sources to tap.

On top of that, Ottawa has made reform even harder. Under the Conservatives, it gagged the staff at Agriculture and Agri-Food Canada, which has proved so effective as a political strategy that the Liberals are maintaining it.

Increasingly, a coterie of people at the top make the rules that the country must accept, and too many of us in agriculture have effectively agreed to sit on the sidelines and allow the industry to be managed for us.

Am I getting it right? Are we failing our young and mid-career farmers? Let me know at tom.button@fbcpublishing.com.

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Deutz-Fahr AIMS HIGHER

The Deutz-Fahr brand kicked off a three-day media event in mid-summer in Dresden, Germany, to show off not only some new tractor models, but a new factory and visitor centre as well. It's another sign it aims to become a bigger player in global tractor sales, particularly in the 300-plus horsepower market.

That new factory in Lauingen an der Donau, Germany is set to come online shortly, and the company expects to slash the wait time for filling global customer orders for tractors. At the same site, it's also

With a new factory and 'global' tractor lines, the brand is determined to get your attention

BY SCOTT GARVEY / CG MACHINERY EDITOR

14 models and some 600 available option choices to meet those global differences. The company believes these 14 models along with the five models in the larger 9 Series that it introduced in 2015 will form the core of its future global tractor sales.

"These new high-end tractors are a result of the effort made in recent years towards the completion and renewal of our product offering," said Lodovico Bussolati, SDF chief executive officer in a press release. "The new 6 and 7 Series, together with the 9 Series launched last year and the new innovative factory and customer centre in Lauingen, are fundamental pillars of the Deutz-Fahr strategy for the next few years."

The 6 Series includes two chassis sizes. The smaller models get a 2,767-mm wheelbase, while their larger brothers get 2,848 mm between their axles.

All 6 and 7 Series models will pack a Deutz 6.1-litre, six-cylinder diesel under the hood that is already able to meet the EU's pending Stage V emissions standards. The company claims these engines are more fuel efficient than their predecessors, and their DEF consumption has been reduced down into the three to five per cent of fuel consumption range. Meanwhile, the new Electro-Visco fan system and all-aluminum, accessible cooling package keeps system temperatures in check.

Spanning the 156 to 226 horsepower range, the 6 Series models

are available with the brand's new (ZF built) RCshift technology. These programmable transmissions offer five gears within six powershift ranges, for 30 forward 16 reverse gear options. The five gears can function in automatic, manual or semi-automatic modes, and the transmission's "intelligent" feature allows it to learn operator preferences for shifting. (Even with these capabilities, the company claims the transmission is simple to program and operate.)

In all, the 6 Series offers three different transmission choices, depending on the model. The RCshift transmissions are also available with a creeper gear that provides an incredible selection of 54 forward and 27 reverse gears. And the RCshift technology allows



An all-aluminum cooling package and new Electro-Visco fan keep tractor system temperatures in check.

building what it calls the Deutz-Fahr Arena, designed for plant visitors with a display area and training facilities, plus a museum and gift shop among other things. The arena is slated for completion in 2017.

But the real heart of the Dresden event was the brand's completely updated "Next Generation" 6 and 7 Series tractors. Designed to be what the company calls global tractor platforms, it uses a modular design concept, meaning their sub-systems can be easily interchanged during assembly to suit different world market needs.

Together, the two series offer



PHOTOGRAPHY: DEUTZFAHR



6 Series machines to get down the road at high speed with reduced engine r.p.m. to save fuel. TTV models come equipped with a CVT transmission that has a speed range from 0.2 to 40 or 50 km/h.

The two 7 Series tractors, which offer 226 and 246 horsepower, are both limited to the TTV CVT transmission, which gives them a 0.2 to 60 km/h speed range, and these tractors too will run at top road speeds with reduced engine revs.

In the hydraulics department, the optional LS pump supplies a 170 l/min. flow rate on the 6 Series with up to seven spool valves (five at the rear and two in the front). The 7 Series gets a standard 120 l/min. flow rate with the option to increase that to 160. Actual flow rate and timing can be set through the in-cab monitor.

Also new is the MaxiVision cab, which the company says has reduced noise and vibration levels. The dashboard gets a five-inch InfoCentre Pro screen with tractor function readouts, and the arm-rest comes fitted with the MaxCom joystick. Armrests can also be fitted with the 12-inch, colour iMonitor 2.0.

To really brighten up night work a 40,000-lumen light package is available.

Underneath the cab and chassis, Deutz-Fahr offers an adaptive front axle suspension fitted with dry disc brakes. Both Series get 1,000 and 540 r.p.m. PTOs with an Eco function to reduce engine speed (and fuel consumption) while maintaining shaft speed.

New Generation 6 and 7 Series tractors should be arriving on Canadian shores early in 2017. **CG**



Above: Deutz-Fahr held a three-day event in Dresden, Germany to show off its new factory along with its "New Generation" 6 and 7 Series tractors.

Left: There are two new 7 Series models offering 226 and 246 horsepower.

Plan before you retire

Whether you're selling or if you're transferring farm assets to the next generation, tax-smart retirement takes planning... and time

BY MAGGIE VAN CAMP / CG SENIOR EDITOR

In 2011, 48 per cent of Canada's farmers were 55 years old or older. Five years earlier, the number had only been 41 per cent. If you draw a straight line, that means 55 per cent of farmers are now 55 or older. And it also means our median age is approaching 65!

Whether that's exactly how the statistics will turn out, we won't know until Ottawa publishes the results of the 2016 ag census next May. But either way, we're on the cusp of a huge wave of farmers ready to retire.

Already we've seen an upward cycle of asset liquidation and consolidation, as farms get bigger and more valuable. Following many years of average farm asset appreciation, in 2015 it was again up 6.2 per cent across Canada. This increase in land values combined with lower commodity prices has put the thought of retirement into many farmers' heads.

Plus, baby-boomer farmers often want to retire younger and do not want to keep farming until they die. Now they can afford it.

If the children have left the farm, many baby boomers are asking themselves whether they should expand, or whether they should sell.

Is it worth it to keep growing, with all the risk attached? Are you going to be at it long enough to get a payback from scaling up?

Recently, Glenn Dogterom, accountant with MNP in Lethbridge, Alta. has seen a different scene being played out on many western Canadian farms. "When someone knocks on your door waving a cheque for several million dollars, it can be a pretty easy decision to sell and retire," he says.

Although, the cheques look big enough to retire from

farming while your health is solid, the challenge is to not let them get eaten up by the tax dog.

The truth is, most farmers haven't done any retirement planning. They've felt they haven't had to, because the plan was just to sock everything back into the farm and to avoid taxes by taking small draws throughout their entire careers.

But this can be costly in the end.

"Waiting until the last minute is not effective tax planning," says Dogterom.

In one example Dogterom worked on, a retiring farmer sold his farm. He had done his own tax filing for 30 years and had not used many personal deductions. It was in a sole proprietorship structure and after the dust settled from the sale, he discovered that he owed \$300,000 in income taxes.

With some time and planning, there are ways and tools to help minimize the taxes on the sale of farm assets. "Tax itself isn't a bad word," says Dogterom. "We just need to use the rules the government has made available to us."

By setting up a farm asset distribution plan ahead of retirement and in case of death, you'll get better use out of the Tax Act's capital gains exemption and land-rollover provisions. "Investment planning is also part of tax planning, so use the tools available to plan for when you contribute and withdraw," says Dogterom.

Although there's no inheritance tax in Canada, procrastinating doesn't necessarily allow you to take advantage of the rollover provisions or the corporate tax advantages that are available. Besides, leaving all the decisions for the remaining spouse isn't fair and can cause additional difficulties and stress for the family.



Farm adviser Larry Batte recommends a five-step process to slow down the farm transfer, making it more predictable and tax-smart

YOUNG GENERATION SAYS, "GO!"

Larry Batte, a chartered accountant with Collins Barrow in Stratford, Ont., is seeing more farmers being pressured by their children to retire sooner — in their early 50s. He's even seeing gold-digger children trying to push their parents into transferring the farm to them right away.

To ensure everyone is treated fairly, he suggests a predetermined five-step approach that slows down the process first with a transfer of management, followed by ownership.

This way, the younger generation begins basically as labourers and then moves to management as their skills develop. Once proven capable, they can be given a small portion of growth, maybe starting with 10 per cent of the common or growth shares, in addition to their wage. A decade or more later, the final steps kick in and the successors begin to get ownership beyond the growth.

Yet fundamental control on how the company operates overall isn't transferred for many more years.

Until then, the older generation maintains voting control so the younger generation can have their say but can't make any huge changes without the parent's consent. Rarely is this control card played, but it just makes everyone feel more confident knowing it's there, says Batte.

This process also enables a slower transition into retirement, which in turn allows for tax planning, investing and communication.

It's important to sit down and explain your vision of how you want your retirement to look to your family and business partners, says Batte. Then, using trustworthy advisers, sort out the best possible options with that goal in mind.

"Get a team in place," says Batte. "A law-

yer, an accountant, a financial adviser, maybe a human resource specialist, and someone to help with the soft issues. Then, as a group correlate your retirement (and succession plans) to your estate plans."

VALUE OF INCORPORATION

One useful retirement and succession tool is to set up a farm corporation structure while you are still actively farming.

First, it's a way to deal with the taxes on the future sale of inventory. Small business corporations pay about 14 per cent on the first \$500,000 of income in Alberta. Dogterom says it's often better to go ahead and pay the 14 per cent, and build up tax-paid reserves. Then you won't have a massive tax bill on the sale of inventory to deal with when you go to sell the land.

For example, if you have a 250-head cow-calf operation, ahead of retirement you could roll the cattle into a farm corporation, keeping the land separate and renting it to the farm corporation. At retirement, if you keep owning the land personally and sell the cows (now in the corporation), the income from the sale of the herd will be at a much smaller tax rate than if you continued to hold them in a sole proprietorship or partnership.

Dogterom says by putting the inventory and equipment into a farm operating corporation ahead of retirement, say, for five years, you'll pay income tax in advance and will have all the inventory taxes paid up at a much lower rate than if it was taxed at sale time outside of a corporation.

"It comes down to how do you manage the cash that comes out of this sale," he says.

Good advice? Be careful

We've all heard about con artists, ponzi schemes, pyramids and financial advice gone wrong. Their geographic isolation and large wealth at sale of a farm make retiring farmers a big juicy target for financial fraud and bad advice.

Choosing a financial professional is one of the most important retirement decisions you'll make. Not only must they be trustworthy and understand your needs, they must be competent with larger-scale funds.

Always check references and ask friends and professionals for recommendations. An online search to check for whether a particular professional has been sanctioned by regulators or industry bodies is another good idea. If advisers promise sky-high returns, if they won't give clear answers about how they're paid, or if they provide complex, jargon-filled responses to simple questions, then be very careful.

Any time you're making big financial changes you might want to consider looking around for other help, comparing fees and scope with your current provider. Other products might work better for you in this new circumstance. It's your responsibility to understand your portfolio's performance and strategy.

CONTINUED ON PAGE 12



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TIME FOR A HOLDING COMPANY

Holding companies, sometimes affectionately known as HoCo's, could also be a strategic move to reduce total tax burden.

In the past, holding companies have been used only as operating companies for non-farming types of investments. But, says Batte, "holding companies are becoming more and more popular."

The attraction is the opportunity to transfer money from the operating farm corporation to a HoCo on a tax-free basis. Also, each corporation can pay dividends, wages, make loans to its shareholders, and that can be very handy for succession or for winding down and getting funds out of a farm. For example, you might think about setting up your non-farming children as shareholders of the HoCo so they can receive dividends.

Moreover, HoCos can be set up to keep funds in the operating company "clean" or not over the threshold for government to

consider it not a qualified farm or small business income. By transferring funds to a holding company you can purify the farm's corporation if it has too many passive assets. (To be considered an operating business, the non-farming assets, such as excess cash in the farm company, need to be less than 10 per cent of the value of the assets.) Keeping this status is a way to ensure you can use capital gains exemption and rollover provisions.

TAX-FREE SAVINGS ACCOUNTS

If you have extra cash flow, tax-free savings accounts (TFSA) are easy to set up at any financial institution and unlike an RRSP, can be withdrawn from without penalty. Although contributions made to a TFSA are not tax-deductible, the withdrawn funds are tax-free, so you won't get taxed on any income your investments in a TFSA earn, even upon death. "Tax Free Savings Accounts are no brainers," says Dogterom.

Originally started by Harper's former government as a way to encourage Canadians to save more, from 2009 until last year the amount we were allowed to put in a TFSA increased steadily. However, starting on January 1, 2016, the annual TFSA dollar limit for 2016 decreased from \$10,000 to \$5,500. From now on, instead of being accumulative, the TFSA annual room limit will be indexed to inflation and rounded to the nearest \$500. If you take it out, that doesn't count as space.

However, if you contribute more than your allowable TFSA contribution room, you'll be considered to be over-contributing and will be subject to a tax equal to one per cent of the highest excess TFSA amount in the month, for each month that the excess amount remains in your account.

CONTINUED ON PAGE 14



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AGRIINVEST

Many farmers have been putting aside money for a rainy day using an AgriInvest account. For older farmers this rainy day can mean when they are slowing down, decreasing production or, in other words, retiring. Farmers can invest one per cent of allowable net sales (ANS) each year into this self-directed risk management account and receive a matching government contribution.

Although the limit on matching government contributions is \$15,000 a year, you can contribute up to 100 per cent of ANS annually and up to 400 per cent of ANS in total. This is for non-supply managed production only.

“Investing in AgriInvest is a slam dunk,” says Dogterom.

The government-supported part has to be taken out first and it's the taxable portion. However, farms with large turnovers, like feedlots, have large amounts they can invest and will get larger government contributions.

Unlike the old NISA, with AgriInvest there are no premium bonuses or interest rates being paid. Also, compared to NISA a smaller amount is matched by the government. Many farmers are thinking that their funds are better used to drive profitability on their own operations, says Batte. “AgriInvest is not used as much as NISA for retirement savings,” he says.

PENSION PLANS

Recently some financial companies have come out with professional pension plans for farmers.

There are two different pension plan structures, the Professional Pension Plan and Individual Pension Plan. Both are owned and paid for by your corporation, with the farmer named as plan member. This is a deductible expense for the corporation and provides a tax-efficient way to take money out of the business.

Neither Batte nor Dogterom have had any farm clients interested in PPPs or IPPs. The farm must be incorporated to use a pension plan, and it's not something that

can be set up easily on your own. “They're fairly sophisticated,” says Dogterom.

An IPP is even more complex as it requires the incorporated person to hire an actuary, an investment manager and funds custodian. Even though the management fees and all other costs associated with the plan are tax-deductible for the incorporated business, it's still costly. These services and fiduciary oversight are already built in to a PPP.

Like an RRSP, investment into a PPP triggers a tax refund and grows tax-sheltered inside the plan. However, PPP has an advantage over an RRSP because you can put away more money in a shorter period of time, especially over 50 years of age.

For a tax-effective retirement strategy, you can set up a holding company for the pension plan and register it as a Registered Retirement Savings Plan. As many farmers haven't contributed to RRSPs, they can use up multiple years of available RRSP space. This works really well if you do it the same year farm assets are sold. The pension funds in the holding company can either be managed by a trusted investment company or be self-directed.

RRSP

Registered Retirement Savings Plans (RRSP), are about tax bracket timing and tax deferral. RRSPs are a tax deferral and should be managed around taxable income levels. For many retiring farmers, when they sell assets is when they'll have a higher income. Then they'll be paying taxes on the RRSP at the higher tax rate and for that reason, for most farmers, it's not a useful tool. “I'm not a big fan of RRSPs,” says Batte.

On the plus side, RRSP contributions are tax deductible against your income. The idea is to delay the payment of tax until retirement, when you're earning less and your tax rate is lower. You can also set up a spousal RRSP and put money into it with the spouse as a benefactor but you get the tax deduction.

If you don't withdraw, RRSP savings are rolled into a Registered Retirement Income

Fund (RRIF) when you're 71 years old. After that you're required to withdraw a minimum amount each year based on your age and government regulations. A RRIF is basically the “taking out” account of RRSP.

On the plus side, the initial setup costs are minimal and it's a well known, common and accepted way to save for retirement. It's also a forced savings account because you'll likely not withdraw it until you're retired.

CANADA PENSION PLAN

Canada Pension Plan is another very safe way to save for retirement, and if your farm is a sole proprietorship or partnership, you'll likely have contributed based on your earned income. If your farm is in a corporation, dividends, rent, or interest on a shareholders loan can pay you, so you wouldn't have had to pay into CPP. But if the corporation paid you a wage, you likely have contributed into CPP.

You can also voluntarily pay into the CPP plan. Basically, with this government-controlled and -managed pension program the more you put in, the more you'll get out. The maximum amount is about \$950 per month, but that would require that people contributed the maximum amount to their CPP over the years, which many farmers do not.

Advice around CPP varies. Some accountants suggest paying into CPP at a minimal amount so you get the disability tax credit and CPP in case you get hurt or die.

Dogterom usually advises his 50-year-old-plus-clients to pay into a CPP plan. “It's a reasonably good plan and all you need to pay yourself is \$48,000 or \$50,000 a year to maximize it,” he says.

If you've paid into CPP since you were 18, Batte says at 55 it maximizes and doesn't have as a significant return on investment after that point. Most of his clients don't have to rely on CPP for their retirement. “If you're counting on CPP, you've made some serious mistakes (managing your farm assets) along the way,” says Batte.

RENTAL PROPERTY, ETC.

Back in Ontario, Batte says that about half of his retired clients have investments outside of their businesses, and often it's land rented back to the farm. Instead of drawing cash flow out of the business, they keep money invested in assets that are productive for their businesses.

Only about a quarter of them have off-farm investments, like rental properties in town, mutual funds and equities. However, Batte says his farmer clients between 45 and 55 years old are more likely to look for investments in other places.

The best vehicles and tools for retirement vary for every situation so make sure you consult with your team of advisers, including your accountant. They'll know the details and history of your situation and should help you not miss any options in your planning.

Sometimes people forget about invest-

ments they made years ago. For example, if you're a member of a co-operative that has been building patronage reserves, says

Dogterom, you probably want to cash that fund out when you retire. Don't forget to apply for the payout for the plan. **CG**

How much is enough?

When chartered accountant Larry Batte meets with his farmer clients to discuss retirement, he gets them to fill out a personal cash-flow lifestyle worksheet. The vast majority of the folks find their estimated living expenses are at least 50 per cent short of the estimated budget needs. They forget that the farm has been paying a portion of the home's utility and vehicle expenses and often providing some food.

Paul Vaneyk, a financial adviser in Peterborough, Ont., says that a good estimate to use is a four per cent withdrawal rate to figure out how much you'll need in total nest egg to retain the principal. So if you want \$50,000 a year over CPP, using that estimate, you'll require \$1,250,000.



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NEVER too young

As the Ellis family is learning, there's no such thing as too soon for starting the conversation about farm succession

BY SHANNON VANRAES / CG FIELD EDITOR

Lincoln Ellis has just got his first taste of combining. “He thought it was pretty interesting for the first 10 minutes, and then he realized how small the combine cab was, and that was about it,” says his dad, Simon Ellis, with a chuckle.

“So it was short-lived, but you know, small steps for now. And as he gets older I’m sure he’ll like it... I know I certainly have good memories riding tractors and combines.”

And while it will be many seasons before one-year-old Lincoln decides whether to take the wheel at the pedigreed seed farm his parents and grandparents operate near Wawanesa, Man., it’s not too soon to start thinking about succession planning.

“It’s never too early, but it can be too late,” says Jolene Brown, Iowa-based professional speaker, author, farmer and family business consultant.

Succession planning isn’t about focusing on an end date — when parents retire and the next generation takes over. It’s about anticipating everything that needs to get done to facilitate that transfer, and preparing for all the unexpected things that might crop up before then, says Brown.

“Succession planning is a process,” Brown says, explaining that it isn’t at all like some kind of box that you’re supposed to put a check mark in, showing

CONTINUED ON PAGE 18



Today’s revolution in succession planning starts with the recognition that succession isn’t about estate planning and wills. It’s about the living, and how everyone can get the most from their lives

For one-year-old Lincoln Ellis, climbing into a combine cab with father Simon and grandpa Warren is an introduction to a world of wonders. Of course, he won’t know for years whether a farming life is right for him, but if it is, the plan will be in place to make it possible.



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you've got the job all done. "It will have to be evaluated and reviewed whenever there is a major change. When someone new is brought into the business, when children are born and as they age, you'll always have to review these documents because it's a process."

It also means recognizing that calamity can strike a family at any time, and that you'd have to be ready to deal with things you may not like to even think about.

"If there is that unforeseen catastrophe, death or disability, or divorce today, what will you do?" Brown asks. "You have to have a plan in place in case something happens. If this happened today, how could the business continue and not be compromised?"

For those farming with young kids or teenagers (or other young heirs), it also means deciding what kind of legacy you want for your farm business.

"So if you've got young kids and you want your business to continue and possibly be available for their ownership or management or leadership skills, well then you have to have a plan for who is going to lead this business now," Brown says. "(The kids) are not ready, they've not been vetted, so I'm not saying they can't be owners... things can be in a trust, but I do have a problem when we transfer ownership to people who know nothing about the business."

But just because children are too young to run a business, it doesn't mean they are too young to start learning how a farm works, or that it's too early for them to start acquiring valuable skills.

"Succession planning is the transfer of labour, management and ownership. But whether or not that transfer is going to happen depends on the culture and the attitude towards agriculture that you bring to your family business," says Elaine Froese, farm family coach from Boisbervain, Man., and author of *Farming's In-Law Fac-*

tor. "So you start creating attitudes that embrace farming as a business when children are very young."

That means conversations at the kitchen table about whether they want a career in farming and if they want to be part of the family business, says Froese. It also means their spending time on the farm, helping out, or seeing what Mom and Dad are up to.

However, in many cases it's not the older generation that broaches the issue of succession, it's the younger generation — if succession planning gets discussed at all.

"I'm not sure what the numbers are on how many people actually do it," says Jennifer Wright, senior human resources adviser with the Canadian Agricultural Human Resources Council. "But I can tell you anecdotally that not nearly as many people as probably should be are doing it, at least not at the right time."

That is starting to change though. As farm businesses become larger, more are adopting formal business practices, Wright says. Many organizations representing or supporting farmers have also recognized a need for greater awareness around succession planning and are offering tools as well as planning sessions and speakers for their members.

Still, approaching the issue is fraught with emotional stumbling blocks surrounding death, entitlement and legacy.

"I think this can be especially difficult if it's a family situation. It can be difficult for any business, but with family it can be very hard to do," says Wright. "If you're the younger generation looking for answers for the succession of the farm... you certainly don't want to make it appear to your parents that you are trying to kind of push them out the door."

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Emotions are as real as any part of farming, says Ellis. They must be talked about.

“The first question is: what do you want?” says Froese. “What do you want for your lifestyle? What do you want for your income stream? Where do you want to live? What kind of role do you want on this farm?”

Back in Wawanese, Ellis said he’s thankful that the topic arose naturally with his parents, Warren and Karen, and siblings.

“There’s quite a bit about it in farm news and at conferences right now, and we knew that I wanted to take over the farm one day,” Ellis says. “And soon as I married Amanda, well then we knew that I had a partner who wanted to be involved in the farm as well. So I think it kind of came along naturally and we’re really quite fortunate that with my parents and us, we have a very good communication line.”

Weekly or bi-weekly meetings also allow Ellis, Amanda and his parents to discuss any issues that arise.

“Of course, during harvest it might get dropped for a month or two and then during seeding it’s probably dropped for a month or two, but it’s still a fairly regular conversation,” Ellis says, adding that there is so much more to succession planning than the monetary side.

“It’s not only a business or a job, it’s a lifestyle,” he says, explaining the hardest issue for his family so far has been figuring out changes in living arrangements.

“That’s actually one of the stumbling blocks that we’re on currently. We don’t live in the farmyard, my parents still do. But there are a lot of benefits to Amanda and myself moving into the yard because we also run a seed retail business as well. So there’s benefits there.”

That said, Ellis is confident those issues will be resolved through ongoing dialogue. But he notes that it’s not surprising issues like this prevent some farm families from making succession plans.

“There are these huge emotional attachments to things, to the farmyard, what’s been built over 30 years or 40 years,” he says.

But with a 10-year farm succession plan in place with his parents and siblings, Ellis says he can confidently plan for his son, whether or not young Lincoln decides he wants a career in agriculture.

“When he was born I think we had already established shares for Amanda and myself, and moved my parents to a preferred share status to lock in the value of the farm at that time,” he says. “So we kind of talked about it but it took a little bit before we really decided what to do and how to get moving for the next generation, as far as Lincoln was concerned.”

Wright says that if it’s difficult to get a conversation around succession going, bringing in a third-party adviser can help facilitate succession planning. They can also provide expertise around legal issues, and distance from emotional issues where it’s needed.

“Even if it’s coming from the person looking to retire, looking for a success plan to facilitate that retirement, sometimes having that third person involved can help people have that conversation without it becoming personal or anything like that... particularly when there is more than one child that is interested in the farm or has been identified as a possible successor,” says Wright.

Ellis and his family did hire a farm consultant as

they worked on some portions of the plan. He says having someone else to guide the conversation helped with communication.

"She went over everybody's goals and what our plans were as far as retirement and where we saw ourselves in two years, five years, 10 years and what values we all hold important to us," he says. "It wasn't the same for everybody. Everybody had different goals and aspirations and values — as expected — and there was the odd surprise in there."

Froese says that getting the ball rolling on succession planning takes what she calls a driver, someone passionate about the issue who is willing to make meetings happen. It's that driver who usually makes the first move towards outside expertise.

"Because nothing is going to move or shift unless appointments are made with an outside adviser and you start having meetings where everyone has a voice at the meetings to explore what everybody wants. Because the first question is: what do you want? What do you want for your lifestyle? What do you want for your income stream? Where do you want to live? What kind of role do you want on this farm?" she says. "It's not that complicated, but farmers are highly overwhelmed because they're avoiding conflict and they don't want to have the tough conversations."

Reminding the parties involved in a farm business that succession planning is not estate planning can help move the process along as well.

"Farmers get confused that estate planning is the same thing as succession planning," Froese adds. "Estate planning is for when you're dead, succession planning is for the transition for labour, ownership and management of the business that you're in now. And so a lot of people are procrastinating because they think succession planning is about making a will — which you should have — but a will is part of your estate planning."

Brown also stresses that wills don't stand on their own where farm businesses are concerned, so buy-sell agreements are a must.

"It's essential, and you've got to know what triggers it, who has the option to buy and in what order, how will the assets be appraised, what are the interest rates — and you never enter an agreement about shared assets without a way to exit it, without a way to amend it," says Brown.

Simon Ellis says that while it's still far

too early to know if his son or any future siblings will be interested in farming, he is working to be prepared for all possibilities.

But he believes it's also important that kids have the opportunity to explore life off the farm before deciding to commit to agriculture.

"As he gets that experience and knowl-

edge, and then gets to the age where he wants to start making decisions he'll have that information for himself to be able to decide whether he wants to farm or not," says Ellis. "Hopefully he would decide to come back to the farm, but we certainly don't want to pressure him to come back because it's not an easy business to be in." **CG**



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Deciding on AgriStability

AgriStability has never been popular with farmers, and there's a burgeoning lobby to get it improved. But keeping your farm enrolled still looks like the right move

BY MARIE SMITH

If you ask farmers what they think of AgriStability, chances are you'll hear grumbling, some of it pretty loud. But as farm groups gear up to negotiate with the federal government over the next round of Growing Forward programs, it's time to examine what's actually working, what's not, and what's misunderstood about the program.

What's certain is that AgriStability isn't winning any popularity contests. For instance, in a survey this spring by the Agricultural Producers Association of Saskatchewan, farmers in that province ranked AgriStability lowest among the federal government's suite of business risk programs.

Fewer than 20 per cent said AgriStability is actually benefiting their operations.

Worse, 35 per cent said they had already opted out.

"Governments have indicated that they have no desire to return to the days of ad hoc programs. But given the participation level in AgriStability, there's certainly going to be a call for that if market shock occurs," says Dennis Thiessen, a grain farmer from Steinbach, Man., who also chairs the safety nets committee of the Grain Growers of Canada.

In 2011, 88,492 producers were enrolled in AgriStability, according to the federal government. By 2013, enrolment had dropped to 74,121 (Agriculture Canada doesn't yet have numbers for 2014 or 2015).

The federal government says the drop is partly due to farm consolidation and market conditions, along with business decisions made by farmers.

Thiessen, however, points out that while participation rates in AgriStability are declining, AgriInsurance and AgriInvest participation rates are solid, even though both programs require farmers to invest considerable dollars.

That's because those programs are predictable and bankable, he says, adding "They provide peace of mind to farmers."

The feds' numbers confirm that AgriInvest has held steady. Over the same time period, enrolment went from 110,483 to 105,566 producers, a relatively small drop the feds attribute to consolidation.

Why exactly are so many producers giving AgriStability a pass? What needs to be done to fix the program?

And, is withdrawing from the program in a farmer's best interest?

Country Guide spoke to farmers, accountants, and farm group leaders to find out.

YES, IT'S COMPLICATED

Norm Hall, president of the Agricultural Producers Association of Saskatchewan, says one issue is what will happen to the farmers who have left AgriStability when the bottom falls out of the market.

But he's also concerned about how well enrolled farmers will be covered.

"AgriStability is a misnomer now," says Hall. With the drop in reference margins, it's AgriDisaster, he says.

Whether or not farmers will see a payment under the program depends largely on their reference margins, calculated by subtracting allowable expenses from farm commodity sales. Under the first Growing Forward framework, reference margins were based on an Olympic average, determined by taking the last five years' reference margins, dropping the highest and lowest margins, and averaging the remaining three. Farmers received a payment once their reference margin dipped to 85 per cent of that historical average.

But when the Growing Forward programs were renegotiated in 2013, the AgriStability payment trigger was dropped to 70 per cent.

"And the other change, which turns it into a real wild card for producers, is they have this limiting of the margin," says Steve Funk, director of farm income pro-

Farm participation keeps dropping, and more farmers like Dennis Thiessen of Grain Farmers of Canada say AgriStability can no longer claim to eliminate the need for emergency federal programs when prices fall



grams at Meyers Norris Penny (MNP). The limited margin caps the reference margin to allowable expenses included in the margin. Farmers must use whichever margin is lower — either the limited margin or the original Olympic average.

Producers confused by these rules are in good company.

While it's possible to estimate the size of the payment a farm might receive under AgriStability, it's not easily done. Many farmers and their accountants have been unable to accurately forecast payments, says

Ben Le Fort, senior farm policy researcher with the Ontario Federation of Agriculture (OFA).

OFA surveyed its members, and found 85 per cent of respondents said the program is difficult to understand. Even more doubt that their bankers understand the program either, or that their bankers would give them a better borrowing arrangement for participating.

"If you have inventory adjustments or you change your production in any way, it really throws off some of the numbers," says

Le Fort, who adds that not knowing what circumstances will trigger a payment and how much they might receive makes it more difficult to make long-term plans.

"Farmers understand that numbers have to be verified, and that's the nature of the program," says Thiessen. "But it's still frustrating for farmers."

And the changes to reference margins hit some farm operations harder than others.

Cranberry farmers, maple syrup pro-

CONTINUED ON PAGE 24



How much have farmers withdrawn from AgriInvest?

2011: \$451,582,756
2012: \$510,232,417
2013: \$529,023,780

How much have farmers paid into AgriStability?

In 2013, the producer contribution rate was reduced to reflect the changes to coverage brought in under Growing Forward 2.

2011: \$45,944,440
2012: \$49,029,731
2013: \$43,043,061

How much have farmers received from AgriStability in payments?

2011: \$624,075,057
2012: \$530,009,189
2013: \$295,049,125

ducers, and organic farmers are a few examples of operations more likely to be limited by the rule changes because their expenses are relatively low compared to their allowable income, Funk explains.

There are also geographical divides. In Saskatchewan, for instance, farmers in the south tend to be affected more than their northern counterparts.

"North is canola-wheat country, and south is lentil-durum country. And lentils don't take fertilizer," explains Shea Ferster, business adviser with MNP in Saskatoon.

By contrast, Ferster points out, crop rotations in the south tend to be pulse-heavy. Those pulses cut fertilizer requirements, and the seed also costs less than canola. All that adds up to lower costs for southern Saskatchewan farmers, making them more likely to fall outside AgriStability's limited margin.

Another source of frustration for farmers is that AgriStability discourages diversification on the farm, says Thiessen. For example, with a mixed farm, if either the grain or livestock side drops off, the overall farm is less likely to see a payment than farms that focus on one or the other.

Indeed, Hall says their survey shows that this is how farmers see it too, with more mixed farms appearing to pull out of AgriStability, along with smaller farms.

Funk agrees that mixed farms tend to qualify less often for AgriStability than farms that aren't diversified. When they do qualify, they also might receive less benefit. But that's not to say that they'll never qualify for money, says Funk.

"We have some very large clients across the firm that are well diversified and we often see them qualify" he says.



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SHOULD YOU DROP AGRISTABILITY?

In general, producers aren't participating at the levels that they should. Some of them have gotten out of the program. And I think it's a bad decision for a lot of them," says Steve Funk of MNP.

People tend to look at the business risk management programs in isolation, Funk says. But asking whether or not a farm should enrol in AgriStability is the wrong question, he argues. Instead, farmers should ask how they can combine the available risk management programs to maximize their coverage at a reasonable cost.

Like some other advisory services, MNP's accountants can show clients how much of their margin would be protected in various scenarios, so they can compare options.

For example, if you have a 30 per cent loss, how much of that loss will be covered through AgriStability alone? Or AgriStability with crop insurance? Or Global Ag Risk Solutions (GARS) instead of the Growing Forward programs? And what happens when you switch between the conventional and limited margin?

MNP also accounts for the costs of the programs. For a typical 5,400-acre Saskatchewan farm that we used as an example, AgriStability costs totalled \$1.17 per acre. That broke down to \$0.62 per acre in government fees, with the balance in accounting fees (MNP puts together the application and forecasts expected benefits for clients).

That's a pretty typical cost for AgriStability. Ferster estimates that a 5,000-acre farm would pay between \$1 and \$1.50 per acre to participate in AgriStability. Fewer acres doesn't drop the accounting fee significantly, he adds, because putting together

the application and forecasting the benefits takes a certain amount of time no matter the farm size.

The bottom line is that when they are used together, crop insurance and AgriStability will cover most of the losses for this farm. Ferster and Funk say they haven't seen many of their clients withdrawing from AgriStability, especially once they've learned how the different programs work together.

But are there scenarios where it makes sense to opt out of crop insurance and AgriStability and to pay into GARS instead? Ferster says he hasn't found a better answer than "it depends." Until you run the scenarios, you won't know which options are best, he says.

Typically GARS competes better for a farmer who hasn't been using crop insurance, because they're then dealing with area averages rather than the farm's average, Ferster adds.

GARS is also worth a look when AgriStability doesn't provide a lot of coverage. Funk

had a client whose \$900,000 margin was being capped at half a million.

"That's pretty severe limiting," says Funk. That client was pondering whether AgriStability was still worthwhile. But when Funk crunched the numbers and did some forecasting, the eligible margin was heading back to \$800,000 in the near future.

"Just because you're limited one year doesn't mean you're limited to the same extent the next year," Funk says.

He also adds it's usually worth staying enrolled in the program, because dropping out and re-enrolling takes as much work or more.

As for the grain farm Funk used as an example during the interview, the limited margin would have dropped their AgriStability benefit by \$6 per acre.

"Is the program still beneficial? You bet it is," says Funk.

CONTINUED ON PAGE 26

AgriStability and AgriInvest by the numbers

How much money have farmers contributed to AgriInvest?

In 2013, the government's contribution was cut from 1.5 per cent to one per cent of allowable net sales. Producers started cutting their contributions to the programs as a result.

	2011	2012	2013
Value of producers' AgriInvest deposits	\$346,266,208	\$385,396,515	\$264,557,580
Value of matching government contributions	\$346,266,208	\$385,396,515	\$264,557,580
Total AgriInvest deposits by program year	\$692,532,416	\$770,793,030	\$529,115,160
Accumulated program account balances (calendar year)	\$1,256,395,934	\$1,574,099,720	\$1,918,133,561

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WHAT FARM GROUPS WANT

All of the farm groups contacted for this story want AgriStability strengthened rather than scrapped.

"It's a known commodity," says Agricultural Producers Association of Saskatchewan (APAS) president Norm Hall. "You don't have to guess what sort of ad hoc program is going to come out, or demand some sort of ad hoc program."

On everyone's wish list is returning payment triggers to 85 per cent of the reference margin. And everyone would like something done with the limited reference margin. OFA's Le Fort would like to scrap that cap altogether, calling it a "double whammy" that cuts the likelihood of a payment and adds complexity to the program.

"We don't mind if there's a cap. But the one that they've got with eligible expenses is the wrong one because there's unintended consequences there," Hall agrees.

Although it's difficult to change program rules midstream, the Grain Growers of Canada want the federal government to take another look at how AgriStability accounts for certain farm expenses, Thiessen says. For example, custom work, whether it's work done by or for the applicant, is a messy area.

"There are different ways of calculating that in the costs. And they don't always make sense," says Thiessen.

Hall is also keeping his eye on the big picture when it comes to business risk management programs. There are all kinds of demands on the next policy framework, including trade and research along with business risk management.

Other groups, such as food processors, are also looking to Growing Forward for dollars that they used to access under Industry Canada, Hall says, then asks: "Will the government be willing to put more money into the total of the next policy framework, or are we expected to reduce something else to fund this extra demand?"

Given the falling participation rates in AgriStability over the last 10 years, "a simple return to the 85 per cent coverage rate" may not be the best solution, says Thiessen. He suggests "a deeper dive" to figure out what the issues are in the program, and to find workable solutions to those issues.

The Grain Growers of Canada wants an advisory committee to do that deep diving. Thiessen says they want representatives from national commodity associations on the committee. Provincial associations should



The knocks against AgriStability are well founded, Thiessen says. The program is complex, it penalizes diversification, its margins are unrealistic, and it is too hard to predict. Added to that, lobbyists say, is the increasing risk that the funding will be syphoned off for food processors

also be at the table to address regional gaps in the program suite, he adds.

There was also a general feeling among the farm groups that the program needs to be more user-friendly and transparent. One complication is that AgriStability works on an accrual basis, while many farms operate on a cash basis, Hall says. Timing is also an issue, he says. Farmers can see payments from AgriInvest and AgriInsurance within 60 days, he says, but AgriStability takes six months, a year, or more.

Ontario's OFA wants the government to encourage new farmers to enrol in AgriStability. The first five years are the riskiest phase, says Le Fort, so he would like program fees waived for those farmers.

Of course, AgriStability isn't the only program potentially up for revision. Even farmer-favourite AgriInvest could use a few tweaks, according to farm groups who want the government contribution bumped from one per cent of allowable net sales back up to 1.5 per cent, restoring it to 2013 levels.

"We're also asking them to encourage some investment from the program," says Le Fort. Right now, when farmers with-

draw funds from AgriInvest, that money comes from the government-contributed portion, triggering taxes. Le Fort wants farmers to be able to withdraw first from their share of the contributions to avoid those taxes.

"Under our recommendation it would be more like a TFSA," he says.

"AgriInvest has been a good tool for small bumps in the road, as long as you had some good years prior to build up a bit of an account," says Thiessen. "AgriStability is for the big bumps."

And if there's one thing you can count on in agriculture, it's big bumps. Thiessen thinks the next one might be around the corner. Global stocks of wheat and coarse grains are building, causing prices to drop significantly, he says. And overall commodity prices are higher than they would be in Canada due to the weak dollar and low oil prices.

"When oil prices recover, and the dollar recovers with them, that's when we're going to see significant market shock."

And he worries that's when we'll find the programs are lacking. **CG**



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Counting the full value of farming

After years of talking, ALUS enviro-payments are finally going mainstream, with 722 farmers already getting cheques

BY ANGELA LOVELL



To get an idea of a farm's financial health, we check the balance sheet. It's straightforward. On the one side are liabilities like loans and outstanding bills to suppliers. On the other are assets like inventory, cash, land, buildings and equipment. Then you simply subtract the liabilities from the assets to find net shareholders' equity, or net worth of the operation.

In fact, financial institutions rely heavily on the balance sheet — rather than statements of revenue and expenses — to make lending decisions, with the upshot that the less you owe, and the more your farm assets are worth, the more you can borrow.

Of course, when you really need that loan is when self-financing is less of an option, i.e. when your debts are already substantial, and your farm equity still needs time to grow.

So wouldn't it be nice if you could talk your bank into lending you more because your management practices are bumping up the asset value of your land?

In other words, wouldn't it be great if your balance sheet could reflect the things you are doing to build soil health, sequester carbon, improve drainage/water quality, maintain grasslands or wetlands, and so much else besides?

The idea of "full-cost accounting" is far from new. But now it's gaining traction among farm groups, and even among governments and private industry.

Full-cost accounting considers the environmental and social costs and benefits of activities that are usually seen as externalities. For example, short rotations might improve a farm's near-term profitability by allowing more acres for high-priced crops, even though the practice will eventually limit your future choices and potentially hurt soil quality, thereby cutting yields no matter what you grow. There can be negative environmental impacts too, which could also devalue the asset over time.

On the other hand, management practices that build soil organic matter or that sequester carbon over the long term could either directly generate extra revenue (for example, if a price were fixed on carbon) or would increase the value of the land asset itself, increasing overall profitability and value of the farm.

The surprise, it seems, is that the environmental impacts might get on your balance sheet first.



Studies prove that Blain Hjertaas's cattle management is sequestering 25 tonnes of CO₂ per hectare every year. Now he may get paid for it.

“It’s not just a handout of cash, it’s not a subsidy,” says IISD researcher Darren Swanson. Instead, he says, the move to pay farmers to solve environmental problems is “an efficient way to manage resources.”

THE REWARD FOR ECOSYSTEM SERVICES

In order for full-cost accounting to become an accepted practice, there has to be not only general recognition from governments and the public that the ecosystem services farmers provide are of economic value to society as a whole, but there must also be mechanisms to generate tangible revenue or other value such as tax incentives that reward farmers generating them.

Although we aren’t yet seeing full-cost accounting appearing on producers’ books, it’s a concept that’s certainly not going away any time soon, says Darren Swanson of the International Institute for Sustainable Development (IISD).

It has taken time to get even this far, admits Swanson, who in 2004 co-authored one of the first papers exploring the concept of full-cost accounting for Agriculture and Agri-Food Canada (AAFC).

“We see more studies in terms of the valuation of ecological functions and services,” Swanson says. “There is considerable promise for the payment of ecosystem services, and I think it’s just a matter of time for both government and the general public to become comfortable with payment for those services. It’s not just a handout of cash, it’s not a subsidy, it is an efficient way to manage resources and mitigate costly environmental impacts. Market-based approaches will be the future of handling some of these issues.”

MARKET-BASED SOLUTIONS

Some of those market-based mechanisms are already beginning to take shape, and at the forefront is ALUS Canada, which is providing farmers and ranchers payments for the ecosystem services they produce on their land.

“Currently we are paying our farmers and ranchers per acre based on land rental rates, so we are identifying the cost to produce ecosystem services,” says Bryan Gilvesy, executive director of ALUS Canada. “Our role is to go out in the world and find out what they are really worth. We are already discovering that they are worth at least the cost to produce them, and hopefully more.”

The ALUS program is snowballing across Canada. Six provinces, 19 different communities, and 722 farmers and ranchers are participating in a total of 18,200 projects.

Nine of those communities joined just this year, and Nova Scotia will do a pilot project next year.

Beside the direct income derived from the program, producers are finding ALUS is adding value in other ways. “A large number of the producers in the ALUS Canada system are self-marketing their products, and they are finding added value for the products from their land because they are differentiating themselves by participating in the program,” says Gilvesy.

What’s important for farmers to under-

CONTINUED ON PAGE 30

stand is the ecosystem services they produce have potential value to corporations that are increasingly required to prove their corporate social responsibility, to report on the environmental impact of their activities, and to adopt full-cost accounting principles.

“ALUS Canada is trying to define the value of ecosystem services in the marketplace,” says Gilvesy. “That’s where it’s heading.”

From that, it is just one short step to adding some real numbers to your balance sheet.

No one is actually predicting when it will happen, but what’s certain is that ALUS is determined to provide producers with more options to increase short-term income and create long-term value for their farms.

“A year or two ago the only option a farmer had to increase revenue or the value of the land was to grow more crop,” says Gilvesy. “What ALUS Canada is bringing to the conversation is that, for the first time, a farmer has the choice to look at a natural area, and say I can clear it and produce more bushels of crop, or I can produce ecosystem services to create more value.”

A DOLLAR VALUE FOR CARBON

The value of sequestering carbon on farms has been the subject of debate for decades but many observers feel we are now moving closer to putting a dollar value on it in the marketplace.

“The agricultural community is waking up to the fact that when they sequester carbon there are going to be markets where they will get a cheque for it,” says Gilvesy. “At the same time, they’re building soil organic matter (SOM), and their soil becomes more productive. So a clear relationship will develop in terms of how much SOM you have and how that increases the value of the land.”

Some producers, like Saskatchewan cattle producer, Blain Hjertaas, are already preparing for the day when carbon is worth dollars in the marketplace, and he knows exactly how much he will have to sell. Hjertaas is involved in a study co-ordinated by soilcarboncoalition.org, which is measuring carbon change over 10 years at around 300 farm sites in North America, 30 of which are in Western Canada, including at Hjertaas’s farm near Redvers.

Hjertaas has an intensive grazing management system which increases soil organic matter and maximizes carbon sequestration. Hjertaas calculates that his land sequesters 22,800 kilograms per hectare of CO₂ annually. Other Saskatchewan cattle producers have shown even higher carbon



“Carbon is worth a lot of money to society,” says Hjertaas. “Farmers should be seeing some of that value.” Now, initiatives like ALUS are making those payments more likely.

sequestration rates — up to 48.85 tonnes per hectare a year.

“The goal of this initiative is to prove to society that this kind of farming sequesters a lot of carbon, and that is a very valuable ecological service to all of society that I am not getting paid for,” says Hjertaas. “Carbon is worth a lot of money to society, and farmers should be seeing some of that value because we can reverse carbon emissions by putting it back into the soil where it can do some good.”

New research is also showing how grain farmers can create value through adapting their management systems. Dr. Stuart Grandy’s team at the University of New Hampshire is providing a new understanding of how organic matter forms. The work is showing that longer, diverse rotations which include cover crops such as clover build soil microbial communities and quickly generate organic matter.

In a trial involving an organic and conventional rotations, both converted 55 per cent and 45 per cent respectively of carbon

inputs into sequestered, stable, soil carbon that can remain in the ground for a very long time.

NO LAND WILL BE SOLD WITHOUT A SOIL TEST

Here’s a thought experiment. If we applied full-cost accounting to the last 100 years of agricultural production, what would the environmental cost be of the loss of organic matter in our soils?

Manitoba Grazing Club co-ordinator, Michael Thiele says he’d like to know. “That loss of organic matter has affected our ability to hold water and nutrients, our ability to grow nutrient-rich food, and our ability to have a resilient system when it’s hot, or cold, or dry or wet,” he says. “It’s hard to put a dollar value on those things. It’s not just about the pounds of nitrogen, or the bushels per acre, or the pounds of beef per acre. Full-cost accounting is much more than that.”

Thiele believes we’re moving toward a day when land values will be determined by what’s under the ground, rather than

what's on top. "I can see that in the future. No land will be bought and sold without a soil test that indicates the state of the soil biology, and the SOM and carbon content," says Thiele. "Land which has been managed to increase these things will be worth more. There's no doubt about it."

Maintaining grasslands and forages is another ecosystem service that various groups and governments are seeking to value. A 2012 report — The National Forage and Grassland Assessment — concluded the economic value of forage crops in Canada was \$5.09 billion, and that forages underpin our dairy and beef industries, which together contribute \$11 billion in direct value to Canadian farmers and generate over \$50 billion in economic activity.

Provincial studies in Alberta and Saskatchewan estimated the value of indirect benefits, such as environmental enhancements, could be worth at least as much as the direct benefits.

"If you take into account some of the initial estimates that have been made on the value of ecological goods and services provided by forages and grasslands, it is as much or more than the farm gate value of the forages," says Henry Nelson, vice-chair of the Manitoba Forage and Grasslands Association (MFGA) and co-chair of the Canadian Forage & Grassland Association (CFGA) environment committee.

"If we were being paid so much a tonne for the carbon we sequester, these forages and grasslands would be worth double — around \$10 billion to \$12 billion. It demonstrates that forages and grasslands are a significant contributor to our economy," Nelson says. "But they're not a cash return, because those returns come back through livestock sales and dairy products that we sell."

Forages are being left out of the picture with the economic system we have in place today, and Nelson says that is probably a big factor in why we are losing so many of them, which is creating more negative externalities that will eventually have to be accounted for by society one way or another.

"It will cost us due to flooding and droughts because the land doesn't have the capacity to hold water, and our infrastructure can't handle the volumes," Nelson says. "Then we are spending a lot of money through AgriRecovery and other programs to assist farmers."

Nelson adds that forage groups are working to document these grassland values and to get that information out to the gen-

eral public so they understand the value of maintaining these natural resources.

"We want to do the analysis to show that although it seems more attractive to work these crops up, this is what it is actually costing us," Nelson says. "Then we want to look at some policy alternatives and market instruments that will help to reduce the loss of grasslands. But it's got

to be programs that are revenue based." It squares with Gilvesy's thinking. "Dollars are the only metric we have," he says. "As corporations do more full-cost accounting and understand their landscape impact, they are looking for solutions to mitigate them, and ALUS is representing the farmers of Canada as an obvious answer to help support them to achieve those goals." **CG**

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On your family farm, is it time to transfer the books from Mom to the next generation? These seven steps will help you put things right

BY MAGGIE VAN CAMP / CG SENIOR EDITOR

Sometimes it's a job that gets assigned by default. After all, how many farmers really want to volunteer for a job that involves sitting at a desk entering data, paying bills and sending out invoices?

Sometimes, too, there can be an older generation that doesn't want change. Managing the farm books is their last bastion of control, or it may be the ultimate test of how much they trust their successors.

And on many farms, there may be a different kind of inertia. Life is already busy, so if the older generation has been doing a good job, why change?

On more of today's farms too, there's a new question that's getting asked as well. Why does the new daughter-in-law have to be the person who takes over? Would she be more valuable contributing in other ways? Is there someone else who has the skills?

Regardless, on almost any farm, the person who keeps the books can find themselves in a difficult position, particularly if the farm is multi-generational. It's definitely a job where emotions can unexpectedly flare up, which means the person doing the books needs good communication skills for steering through. Sometimes too, of course, cash management is a friction point during succession.

Long-time farmer and farm financial adviser Len Davies knows the quandaries well, having often dealt with clients who admit to him, "We know we should transfer the business but if we do, we'll feel of no use any longer."

In Davies' experience, when the founder finds something on the farm that only he or she is responsible for (and the successor is okay with that arrangement) then letting go of integral jobs is easier.

Traditionally, too, the job of doing the farm books has been the responsibility of farm women. For some mothers, in fact, it's their only remaining connection to the business, and they will not willingly let it go.

"This is hard to deal with since the dads can still hop on the tractor and do something else, but a mom who gives up bookkeeping is giving up her link to the farm," says Davies. "It has to be handled carefully."

Paul Reeds is a regional program lead for the Ontario Soil and Crop Improvement Association and when he conducts Growing Your Farm Profits (GYFP) workshops, he hears lots of similar comments about Mom or Dad not turning over the books.

"In a transition, there's sometimes a worry from the senior generation that they will no longer have a place in the new farm business," says Reeds. "So they hang on to tasks."

On the other hand, says Brenda Stefanson, Saskatchewan Agriculture's regional farm business management specialist in Watrous, for some it's a lack of trust. They think no one else can do the job as well. "It comes down to how much the mom and dad trust whoever is going to take over. Sometimes if that person is a daughter-in-law, there are some trust issues and some power struggles within the family."

"There is no one solution," says Margaret May, also a regional program lead for OSCIA. "Every farm family will do something a bit different, and as long as it works, it's all good."

Here are seven ways that might help kick-start the transfer of the farm books to the next generation:

CONTINUED ON PAGE 34




Control of the books doesn't have to be a question that holds the farm back. Instead, it can help you tackle the big issues that will fit the farm for the years ahead – as long as it's approached with honesty and foresight

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1. JUST ASK

Harmony on the home front is often better if everyone is honest about which roles are ones they still want to embrace, and which tasks they would rather not do. So why not ask?

The parent may be just waiting for the chance for someone to offer to take over. Sometimes all it takes to stimulate the transfer is just talking and asking about how the transfer would free up some time to do many of the things they've always wanted to do.

"My guess is she (Mom) can find lots of things to do to occupy her time!" says May.

Often it's just out of kindness and wanting to help out that the job of bookkeeping falls to the domain of the mother. "Mom does not believe the next generation has time to do the books too. To her, the others are already so busy," says May.

In other cases, controlling the books can also mean controlling the cheque book and farm expenses. Maybe the older generation is embarrassed, or doesn't want to have to ask the next generation for personal draws. Setting out a schedule of draws or paying them outright can quickly solve that issue.

2. TRAIN SOMEONE ELSE

Often, the reluctance to change comes for a concern over competency, particularly when the ones taking over are just starting to learn. On many farms, Mom has done a great job on the books for decades and the next generation does not have the skill... yet.

Training or supervising their replacement is often the stepping stone to a smooth transition and retirement out of specific jobs. "I have seen moms actively training the replacement with good results," says Stefanson.

Also, asking the older generation to be the backup and adviser sometimes provides assurance, which will go a long way to resolving this barrier, says Reeds.

3. GO ELECTRONIC

In some cases, bringing in new computer technology and accounting software is a surefire way to get the

older generation to back away and let the younger generation handle it.

Who-does-what transitions often happen when a change is made in the system. Investing in a new computer and immediately sending someone for training might kick-start the changeover.

Before you take this step, though, talk to your accountant to ensure the new format of the books works for them. Sometimes they have a certain program they prefer.

Note that after completing the GYFP workshop, you can get funding to cover half the cost of courses to train the new bookkeeper and to cover half of the cost of new software programs.

"Sometimes the older generation wants to pass the record-keeping duties on, but there are no takers," says Reeds. "There's no system and no one wants to pick up the shoebox full of invoices."

4. SHIFT FROM TAX FILING TO FINANCIAL MANAGEMENT

Record keeping can be seen as a boring or thankless task or worse, and the person is blamed when the business is not doing well. Moving from a tax-filing mindset to financial management might up the motivation to transfer.

"Record keeping, cost-of-production tracking and projections should be seen as an exciting way for the whole farm management team to forecast the farm business's future and test 'what if' scenarios for better business success," says Reeds.

The incoming management might also want to change accountants, or at least get another opinion. This will sometimes instigate a change in how the farm's expenses and income are recorded and how that data is utilized.

Getting a farm financial assessment to generate a snapshot of the business and perhaps evaluate cost of production might also spur the transfer of bookkeeping duties.

"Talk, talk, talk about the kind of information you want to get out of the books," says May.

5. MOVE THE OFFICE

Changing the office location to the next generation's farm or at least

out of the house might be the turning point to making this transition. Sometimes convenience is a factor, and setting up a new farm office can really help create more efficient systems (or at least it forces you to get the filing done).

It's also a clear message of change. But be careful to fully discuss this move well before you plan to do it. "Incoming management should take over the books when all of the management team decides it's a good time," says May.

6. HIRE A BOOKKEEPER

"If the expertise is not available within the family, then it may be something that should be hired out," says May.

It's like all of the other jobs on the farm. The person needs to like it, as well as have an aptitude for it, in order to make it work.

Some farm families are unaware or closed to outside help. However, in most areas, great farm record keeping, accounting and business planning assistance is available, says Reeds.

Most farm families who have opened themselves up to outside assistance find that it's not a cost, but a net benefit. "They receive professional cost-of-production and business analysis and tax strategies, and best of all it is done on a timely basis so the information is useful," says Reeds.

7. BIT BY BIT

In some cases, Mom is good at the books and enjoys doing them, and it works well to have her continue. This might be a good arrangement during the preliminary transition so the next generation can take on more management of the operation without taking on the books too.

Then Mom gradually decreases how much she does and the next generation moves into the role. Some families even set a schedule to transfer the duties, says May.

Sometimes the work is broken down into chunks. By starting with payroll or the cropping sector, the new person slowly moves into the role and the change is incremental so doesn't threaten the older one or overwhelm the younger one. **CG**



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How healthy is your farm?

These examples show how standardized financial statements can be a powerful source of insight into your operational management

Three articles in this space over the last year focused on the management information to be obtained from standardized farm accounting statements. This month, we illustrate it here with two farm examples, concentrating on the operating (profit and loss) statement.

The organization of our operating statements is based on three principles:

1. Revenue should be only from farming operations. Crop insurance payments count, but other government payments and revenue generated from non-farming activities go at the end under "Other Income."
2. Managing operations is different than managing capital, so the costs of each should be evaluated separately. We regard leasing or rental costs as costs of capital and include them with depreciation/amortization and interest.
3. All farm operations have three categories of cost:
 - Raw and intermediate products that are converted into final products: seed, fertilizer, feed, chemicals, medicines (and crop insurance premiums). These are Cost of Goods Sold (COGS).
 - Direct operating costs (DOC) of machinery and equipment, transportation, and operating labour.
 - Operating overheads (OH), including management

Our CTEAM participants often express frustration that they don't understand how well they are doing. Their accounting statements focus on taxes... not on information to evaluate or help improve their management

and office salaries, general utilities, banking charges, professional fees, and property taxes.

Our CTEAM participants often express frustration that they don't understand how well they are doing. Their accounting statements focus on taxes, no two statements are alike, and/or they focus on government programs, not on information to help evaluate or improve their management.

The table on page 38 contains actual formats for two farms (the numbers are not from any actual farm). The first column summarizes the operating statements each received, and illustrates the problem.

In Farm A's operating statement, costs are organized into seed and seedlings, allowable and non-allowable expenses. The latter two reflect definitions in government programs but have nothing to do with management. This format also doesn't separate capital and operations, and bears no resemblance to the cost categories above. Also, the farm owner has an agricultural business in addition to the farm that is included with farm revenue.

On the surface, it would appear that Farm A is relatively profitable with Earnings before Taxes (EBT) of \$600,000 on sales of \$3.4 million.

Farm B's operating statement is closer in line with the principles outlined above: "Other Expenses" toward the end is essentially amortization and interest i.e. capital expense. Farm B seems less profitable with EBT of only \$200,000 on sales of \$3.2 million.

The second column has the two farms' data rearranged in our standardized format.

FARM A

The non-farm income, as well as some government payments, are taken off the top line with its business costs, and the net is in the "Other" category. So "Sales" represent revenue (\$2.7 mil.) of the farming operation. Deducting COGS (seed, fertilizer and chemicals) gives Gross Margin of \$1.7 mil. Top farms expect gross margin of at least 65 per cent of sales, therefore COGS should be under 35 per cent. At 63 per cent and 37 per cent, Farm A has problems with some or all of: yields are not high enough; selling prices are too low; or crop inputs cost too much.

Direct Operating Costs for Farm A are 26 per cent of sales, again higher than the benchmark of 15-20 per cent. Subtracting DOC from Gross Margin gives Contribution Margin of \$37 per cent, under the 45-50 per cent we would normally expect. This suggests that machinery and/or labour costs are also too high.

Overhead costs are 11 per cent of sales, within the 10-15 per cent benchmark. Subtracting Overheads from the Contribution Margin gives Earnings before Interest, Taxes, Depreciation/Amortization (EBITDA), which should be 35 per cent or more of sales. Farm A's 26 per

CONTINUED ON PAGE 38



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cent is well below top farms. Farm A's operations generate \$700,000 on sales of \$2.7 mil. At 35 per cent, it would generate almost another \$250,000.

Space doesn't allow showing the balance sheet, but A has a lot of debt: interest is \$200,000 while depreciation and rental payments are \$700,000, leaving a negative net contribution from the farming operation. A's side business, government payments and other investments provide the profits.

The Current and Debt/EBITDA ratios show A's financial tightness. At 1.2, the current ratio is less than the normal 1.5-2.0 range, meaning current assets barely cover current obligations. Debt/EBITDA means that if A used operating earnings from the farm to pay nothing but loan principal, (no interest, taxes, new investment, land or machinery rental, or owners), nothing else could be paid

or purchased for 8.13 years. This is a highly leveraged position. Adding \$250,000 to EBITDA would bring these ratios to 1.5 for current, and 4.8 for Debt/EBITDA.

FARM B

Farm B's financials required less adjustment to get to the standardized statement. A small amount of government payments went to "Other Income." Seed, fertilizer, chemicals and crop insurance payments were aggregated into COGS, resulting in costs of 29 per cent of sales and Gross Margin of 71 per cent, well above the 65 per cent benchmark.

Direct Operating Costs at just under 25 per cent are above the benchmark range and Overheads at 13 per cent are in the range. Farm B needs to concentrate on reducing some combination of machinery operating or labour expense.

At 35 per cent, Operating Efficiency is at the standard. Focus on Direct Expenses would improve it further.

Farm B has an interesting balance sheet. It has only a little bank debt. The remainder is family debt for which no interest is required. However, it rents a large portion of its land and a little of its machinery, to the tune of \$900,000 annually. This cost sticks out like a sore thumb, taking up most of its operating income. Management needs to reduce this cost.

Because of the healthy operating earnings and the structure of the balance sheet, both the Current and Debt/EBITDA ratios are very healthy, suggesting one potential way to reduce the rental cost is to consider a larger ownership position.

CONCLUSION

These two examples show the management information that can be gleaned from standardized financial statements from which benchmarks can be gleaned. In their raw form, the examples provided little of value, but the standardized format allows the identification both of issues, and what needs focus.

Farm A has problems with both operational management: too little revenue is generated from the expenses on plant material and direct operating costs, probably because of too much labour cost. On its own the farm faces restricted strategic options because of its low returns relative to debt.

Farm B has relatively good operational management, but needs to improve capital management and reduce its direct operating expenses. Its balance sheet provides flexibility to deal with this.

Those who use this approach quickly see its value in evaluating and making better management decisions. **CG**

Larry Martin is a principal in Agri-Food Management Excellence, which runs the Canadian Total Excellence in Agricultural Management (CTEAM) program.
www.agrifoodtraining.com

FARM A (\$ MIL)					
	Standardized			Ratios	
Sales Commod	\$2.8	(+)	Commod	\$2.7	
Contract	0.4	(-)	COGS	<u>1.0</u>	COGS % = 37%
Other	<u>0.2</u>	(=)	GM	\$1.7	GM % = 63%
Total	\$3.4	(-)	DOC	<u>0.7</u>	DOC % = 26%
Costs		(=)	CM	\$1.0	CM % = 37%
Seed and seedlings	\$0.3	(-)	OH	<u>0.3</u>	OH % = 11%
Allowable	\$1.1	(=)	EBITDA	\$0.7	Op Eff = 26%
Non-allowable	<u>\$1.7</u>	(-)	Interest	<u>0.2</u>	
Total	\$3.1	(=)	EBIT	\$0.5	
Other income	<u>\$0.3</u>	(-)	Capital	<u>0.7</u>	
EBT	\$0.6	(-)	Net farm	-\$0.2	Current = 1.2:1
		(+)	Other	<u>0.8</u>	Debt/EBITDA = 8.13
		(=)	Net EBT	\$0.6	
FARM B					
Sales Commod	\$3.25	(+)	Commod	\$3.15	
Cost of production	<u>2.4</u>	(-)	COGS	<u>0.9</u>	COGS per cent = 29%
Gross margin	\$0.85	(=)	GM	\$2.25	GM per cent = 71%
Admin	<u>0.35</u>	(-)	DOC	<u>0.75</u>	DOC = 24%
Operating earnings	\$0.50	(=)	CM	\$1.5	CM per cent = 48%
Other expenses	<u>0.25</u>	(-)	OH	<u>0.4</u>	OH = 13%
EBT	\$0.25	(=)	EBITDA	\$1.1	Op Eff = 35%
		(-)	Interest	<u>0.05</u>	
		(=)	EBIT	\$1.05	Current = \$4.5:1
		(-)	Capital	<u>0.9</u>	Debt/EBITDA = 1.6:1
		(=)	Net farm	\$0.15	
		(+)	Other	<u>0.1</u>	
		(=)	Net EBT	\$0.25	

PG. 42 Hybrid wheat gets closer to achieving its promise.

PG. 46 “Killing it with kindness” may defeat wheat blight.

PG. 48 MRLs were created to regulate trade. So why are they fuelling new health scares?

CROPS GUIDE



Wheat's turn to shine

Despite shrinking government support in recent years, there have been remarkable research payoffs, and new investments promise even more

BY ANGELA LOVELL

High prices have made some of the advances in canola yields look pretty good in recent years, masking the fact that average Prairie wheat yield increases have been even higher. But with new private and public research investments and recognition that it's not just a necessary part of the rotation, wheat is starting to grab more of the spotlight it deserves.

“Over the last 20 years we’ve seen a lot of growth in oilseeds and pulses, and now we see a tremendous opportunity for wheat going forward,” says Tom Steve, general manager of the Alberta Wheat Commission (AWC). “That’s why we are investing over \$1 million of producer funds each year into wheat research and market development.”

A big factor as to why wheat is getting so much attention for research investment is the incredible advances in wheat genom-

ics. Curtis Pozniak and his team at the Crop Development Centre (CDC) at the University of Saskatchewan led a global initiative which sequenced the bread wheat and durum wheat genomes in 2014.

“We’re excited about what it means in terms of Canadian capacity for genome-assisted, varietal development,” says Harvey Brooks, general manager of the Saskatchewan Wheat Development Commission (SWDC).

This genomic research is paving the way for marker-assisted breeding techniques to speed up variety development. It is contributing to the established public and private investment in breeding programs, which includes producer checkoff dollars from wheat commissions which have been established in Manitoba, Saskatchewan and Alberta.

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“Wheat wants to grow on the Prairies; it fits into the climate and soils that we have. If you do the right things you can do well with wheat.”

— Kevin Auch, Alberta Wheat Commission

RESEARCH REMAINS A PRIORITY

There is general recognition among researchers, governments, corporations and growers that agronomic research capacity has been declining in Western Canada, and wheat has been affected. As a result, there are several projects underway at public research centres, universities and independent breeding facilities across Western Canada. Many are still in their infancy, but it means growers can look forward to plenty of new agronomic information, as well as new varieties that offer better yields, increased tolerance to pests and diseases, and are better adapted to extreme weather. That could include a hybrid from Bayer's new \$24 million, wheat research facility south of Saskatoon.

Governments are investing in wheat, as are producers themselves. The wheat research cluster has received \$25.2 million under Growing Forward 2, and core breeding and research programs at AAFC facilities and universities in all three provinces have received an additional \$12.2 million of farmers' checkoff dollars through the Western Grains Research Foundation (WGRF).

Although there is some co-ordination and co-funding of research by the three Prairie wheat commissions, each province has also established its own priorities, with fusarium head blight management and prevention near the top of the list for all three.

The Manitoba Wheat and Barley Association is involved in more than 20 research projects, and is also working directly with farmers and agronomists in on-farm trials.

“There is good research going on at universities and private companies in Canada, and we will continue to support and encourage that. On-farm trials are a way for farmers to assess ideas on their own

land with their commercial scale equipment, so we have started an on-farm research program,” says Lori-Ann Kaminski, research manager for MWBGA.

“We started this year with nitrogen use efficiency trials. Some of our new wheat varieties have a higher yield potential, so we wanted to support some of the plot research work with on-farm trials to try and understand where that sweet spot is for nitrogen to target high yields and protein,” Kaminski says their research is trying to find a way to help farmers make the call when it's economic to add nitrogen to increase protein levels based on weather and price cues during the growing season.

NOT “JUST” ROTATION

Recent years of relatively low prices have prompted some farmers to dismiss wheat only as a requirement in the rotation. But researchers and agronomists now say that wheat is more than a necessary evil.

Kaminski says wheat and barley in rotations will become increasingly important to combat weed resistance.

“Wheat and barley, as small grains, are very competitive. They're well adapted and give us an opportunity in the rotation to potentially control some weeds that are getting out of control in other crops.”

“Everybody can't go out and plant all their land to the crop that has the highest expected return in any particular year; we need a balanced rotation,” says the SWDC's Brooks. “Clearly there are rotational issues such as herbicide resistance and disease that will become increasingly important as we go forward. It's our job to make sure that wheat figures more competitively into that calculation and keeps pace with other crops in terms of yield, quality and hardiness.”

The AWC's Auch agrees.

"Wheat wants to grow on the Prairies; it fits into the climate and soils that we have. If you do the right things you can do well with wheat."

Doing the right things includes choosing varieties with good genetics, seeding at the right time and putting the right amount of fertilizer in the right place, says Auch.

"By having a good, diverse crop rotation I'm also rotating my pesticides and herbicides," he adds. "I don't use a lot of insecticide, and I'm not seeing some of the resistance that we're seeing across the Prairies to wild oats and other weeds because I've got a good, healthy rotation."

OTHER RESEARCH PRIORITIES

Saskatchewan grows most of the durum wheat in Canada, so it's not surprising that the SWDC and SeCan are jointly investing up to \$3.5 million in the CDC's durum development program over the next ten years.

"We're trying to catch up on durum in terms of some disease resistance, particularly to FHB, and try and get higher yields, maintain the desirable end-use traits that are prized by users around the world, and make sure that producers can grow varieties that are more resistant to some of the pathogens and pests that they see out in their fields now," says Brooks.

The AWC is funding a project with Alberta Agriculture & Forestry looking at the impact of fertilizer and fungicide rates and timing on yield of different varieties of wheat, as well as assessing the effect of plant growth regulators to improve standability.

Other research priorities include disease and pest resistance to things such as wheat midge, as well as developing varieties with better cold tolerance.

AWC is also partnering with Canterra Seeds and AAFC's Lethbridge Research Centre to develop improved varieties of Canada Prairie Spring Red wheat.

"It's the first partnership of its kind which matches private sector and producer dollars with public investment," says the AWC's Steve.

Canterra also has a new cereal breeding and development partnership with French farmer co-operative Limagrain, and will build a facility in Saskatoon.

The newly formed Cereals Canada acts as a co-ordinator and facilitator for the cereal industry to come together on initiatives of common interest to the whole value chain.

There is a strong focus on market development and support. Cereals Canada participates — along with the Canadian Grain Commission and Canadian International Grains Institute — in annual, new crop missions worldwide.

"We bring the entire Canadian value chain to meet with our customers, provide them with technical information, and get their feedback on things that perhaps maybe we can do better," says Cereals Canada president Cam Dahl. **CG**

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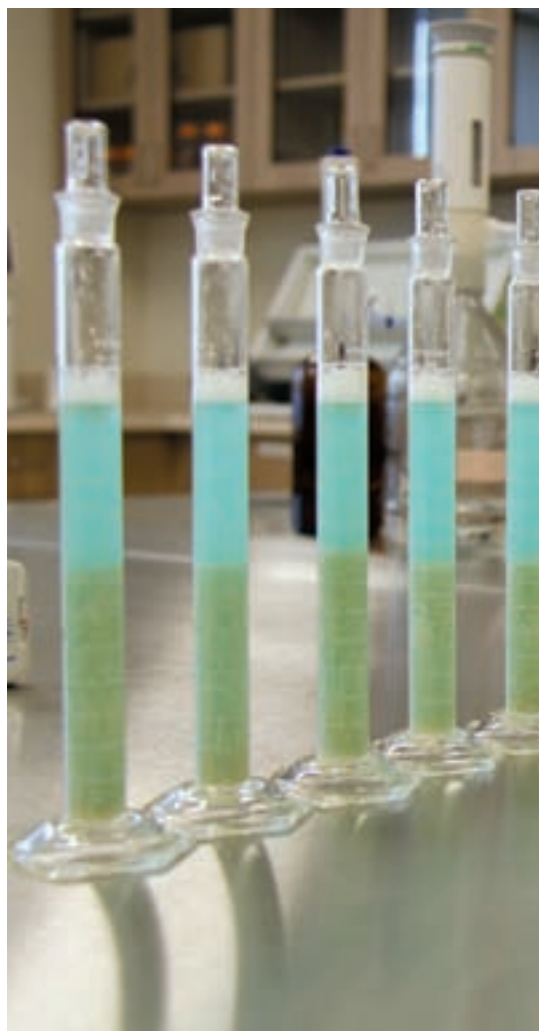


HYBRID WHEAT

gets some real vigour

Will hybrid wheat finally live up to its promise, and will that be enough to encourage farmers to pay extra for the seed? Some big players bet they will

BY MARIE SMITH



It's a typical June day in central Saskatchewan — a little windy, with sun trying to push through the clouds. A busload of people is touring the research plots at Bayer CropScience's new wheat-breeding centre, near Pike Lake, south of Saskatoon. The bus includes wheat breeders, farmers, and executives — plus a little girl sitting with her parents and grandparents, her Barbie's feet poking through her knit bag.

The bus rumbles past a yield-trial block. Tom Zatorski, a wheat breeder with Bayer, jokes that it's a little early to host a wheat field day, as the young wheat plants look like grass.

At first glance, these rows don't look much different than any other wheat trials, but then we come to more advanced lines that are producing hybrid seed. The blocks are alternating male and female strips, explains David Bonnett, who leads Bayer's hybrid wheat-breeding program in North America. The male strips look uniform, but the female strips are more variable, as some were seeded later.

"Here we're producing around 1,000 new combinations that we'll be testing next year, in addition to the ones that we already produced in previous seasons," Bonnett says.

WILL FARMERS PAY?

Bayer plans to have a marketable hybrid within eight years, and the German multinational isn't the only seed company with its eye on hybrid wheat. Carlos Iglesias, Syngenta's head of wheat breeding in North America, expects to launch the first hybrids by the end of this decade, according to an article on the Syngenta website. DuPont Pioneer's website says hybrid wheat is in the proof-of-concept phase.

This isn't the first time seed companies have attempted to launch hybrid wheat varieties. Australian farmers had access to hybrid wheat in the 1980s, and in the '90s, Monsanto had a hybrid wheat program which wasn't overly successful.

Bayer staffers will be testing early-generation lines of wheat for quality. Pictured is a sedimentation test in Bayer's quality testing lab near Pike Lake. Gluten proteins are extracted in solution, where they react to lactic acid. Typically a higher sedimentation volume corresponds to a greater loaf volume.

Convincing farmers to trade traditional inbred lines for hybrids may not be an easy sell. They will need to see consistent yield gains and profit before they pony up for hybrid seed each year.

Of course, they've paid for years for hybrid corn, soy and canola, and Bayer is betting big that they'll do the same for wheat. Over 10 years, the company will be investing \$1.9 billion into wheat globally, says Marcus Weidler, head of seeds for Bayer in Canada. The centre near Pike Lake is part of a \$24-million investment into Canadian breeding efforts.

During the first stages of a hybrid wheat program, "the hurdles are much, much higher," Weidler acknowledges, requiring a larger initial investment.

One challenge is that wheat doesn't lend itself to hybridization.

Breeders must develop a female line that doesn't produce pollen, and a male line whose pollen travels far enough to fertilize the female line.

But there are benefits, too. Bonnett cites higher, more stable yields and increased vigour. And breeders can advance varieties more quickly in a hybrid program, Weidler says.

FOCUS ON YIELD

Despite shifting from a line breeding to hybrid program, in some ways their breeding targets remained relatively unchanged, Zatorski says. The main goal is still to produce a very high-yielding variety. "And most importantly, a stable-yielding wheat."

Yield protection is important, too, says Bonnett. Wheat breeders are looking for resistance to everything from stripe rust to fusarium.

"We have access to useful resources, genetics, for those traits. And really good selection methods and environments to bring that all together," Bonnett says.

The 480 acres Bayer purchased near the South Saskatchewan River is an asset in itself. It is, as Weidler says, "a beautiful piece of land." Agronomist Arling Kemppainen explains that it's a clay loam that holds moisture, yet is well drained.

Each quarter has centre-pivot irrigation, allowing Bayer employees to irrigate for even germination and disease work. And it's a short drive from Saskatoon, giving Bayer access to the University of Saskatchewan's talent pool.

Bayer also has a greenhouse at Saskatoon's Innovation Place, where the first crosses are made.

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The greenhouse is also used to increase seed and get three growing seasons out of the year. Zatorski adds they can also send material to New Zealand in the winter to speed the process.

Wheat breeders have a small amount of seed to work with when they first sow it in the fields — about 1,000 kernels or 20 grams, Zatorski explains. Once it's in the field, the goal is to not only create genetic diversity but also produce more seed so they have enough for yield testing across Western Canada.

Although Bayer waited until this spring to officially open the centre at Pike Lake, the wheat-breeding program is already underway. Last year the company's hybrid production blocks produced hybrid seed to grow in yield trials across Canada.

QUALITY

Yield and disease resistance aren't the only traits wheat breeders are trying to incorporate into hybrid varieties. Between quality labs in Nebraska and Pike Lake, Bayer employees will be testing thousands of lines a year. Rhett Kaufman, Bayer's wheat quality manager, says early-generation material is tested for protein, loaf volume, gluten strength and falling number.

Kaufman says the goal is to



Rhett Kaufman, wheat quality manager, talks about the quality testing Bayer does for early generations of new wheat lines in Saskatoon. Bayer tests for everything from protein to falling number to gluten strength.

weed out poor performers before doing yield trials, allowing breeders to focus on parental development for hybrids during yield testing.

Asked whether the Canadian grading system creates more challenges for him and the wheat breeders, Kaufman answers yes and no. While varieties are scrutinized a bit more, there's a clear target, he says.

"If it falls within that window, it's going to be in that class," he says. In fact, they're using the Canadian grading system as a model for their other North American programs, he says.

As the open house wraps up,

delegates sit down for lunch under an open tent. Much like the bus, each table is a mix of people — farming families, agronomists, researchers from public and private industry. Throughout the day I've also noticed high-level bureaucrats, executives, and politicians from the federal and provincial governments, including Saskatchewan's official opposition.

It's perhaps the best indication of how important wheat and agricultural research are to this province, which Weidler calls "the heartland of wheat production," and to Western Canada as a whole. **CG**



In the field at Bayer CropScience's new hybrid wheat-breeding station south of Saskatoon in June. In 2016, Bayer had 6,000 plots at this station.



Randy Dennis (l), chief grain inspector for Canada talks to farmers attending the grain grading seminar in Yorkton, Sask.

PHOTO: CIGI

Getting the scoop on grain grading

Farmers get a better understanding of frost damage, colour, mildew, sprouting and other downgrading factors

BY ELLEN GOODMAN / CIGI

Farmers in Saskatchewan and Alberta recently had the opportunity to learn hands-on about how their grain is graded after delivery to their local elevator.

In July, grain-grading seminars were held for farmers in Yorkton and Swift Current, Sask. for the first time as a joint effort between the Canadian International Grains Institute, Canadian Grain Commission and Saskatchewan Wheat Development Commission (Sask Wheat), says Dean Dias, Cigi's director of value chain relations.

A workshop was also held in Vermilion, Alta., hosted by the Alberta Wheat Commission. AWC conducted its first grain grading session for farmers in Olds in 2015.

"Organization was done by Cigi, and the CGC was invited to conduct the grading demonstrations and brought in samples showing the different grades and degraded wheat," says Dias. "CGC staff were brought in from Weyburn and Saskatoon for the Saskatchewan seminars and Calgary for the Alberta workshop."

He says that in Saskatchewan, in addition to hands-on grading demonstrations, presentations covered an update on Sask Wheat and Cigi activities, and the CGC's wheat class modernization initiative.

Plans for the grain grading workshops have been

ongoing for a couple of years, says Dias, adding that more workshops will be held. "Producers have been asking a lot of questions about grain grades. The biggest concern has been that at harvest the grain looks great but when they take it to the elevator they aren't getting the grade they expect."

Dias explains that the process is not just about the grades but how the grain affects the quality of flour and end-use products, and that a certain amount of damage can cause performance problems. Cigi technical staff gave presentations explaining the effects of degrading factors on end-product quality.

John Wozniak, a farmer who is also a director with the Alberta Wheat Commission, says he took the workshop because he wanted to find out why he thought his grain looked better than the grade assigned at the elevator.

"After 32 years of grain farming I never questioned the grading system till last year," he says. "Now I understand because they look at factors like frost damage, colour, mildew, sprouting — there's a whole combination of things, like weather patterns that can affect it. You can have light frost (damage) but buyers may not want frost at all because of the way it affects the quality of the dough."

Glenn Tait, a farmer and director with Sask Wheat, says he also wanted to know more about grain grading and what to look for in his samples.

"We've all got a biased opinion of our own grain samples," Tait says. "We want to be able to tell what the grading or downgrading factors are so if a sample looks a little rough we know why it can still make a No. 1 or understand if it has quality damage that isn't immediately evident. We should be trained in what to recognize."

He says that farmers should also be reminded that they have the option to appeal a decision on the grade of their grain made at the elevator with the CGC.

Randy Dennis, chief grain inspector for Canada, says the workshops provided producers with invaluable information. "The producers will now have a better understanding of how quality is assessed in the grading system, how to recognize and assess individual grading factors, the importance of and manner in which to collect a representative sample of their grain, and knowledge that there is an arbitration method if there is a disagreement on grade, dockage, etc. when they deliver to the primary elevators."

"What tied a lot of this together were Cigi staff explaining the relationship between grading factors and the impact on milling and baking, essentially demonstrating there is sound reasoning why our system operates the way it does." **CG**

Row upon row of FHB

At this ‘nursery’ at Carman, Man., researchers simulate exactly the conditions wheat farmers fear — warm, humid and loaded with fusarium spores

BY CLARE STANFIELD / FOR WGRF

“It’s incredibly labour intensive,” says Anita Brûlé-Babel of the FHB screening process. She should know.

A professor at the University of Manitoba, Brûlé-Babel established the FHB screening nursery at the University’s Carman location back in 2001 and has managed it ever since.

“It’s much more efficient to do disease screening in a nursery like this, rather than have each breeder set up their own screening program,” she says. “And it’s much better to do it in an environment conducive to FHB because if you don’t have a good nursery with good infection, you don’t get reliable information.”

The nursery serves public spring and winter wheat breeding programs across the West and Brûlé-Babel says it has three areas of focus: gathering fusarium susceptibility data for variety registration; conducting replicated research trials and screening breeding lines for FHB.

“This is early-generation material and each breeder has a quota as to the number of lines they put into the nursery,” says Brûlé-Babel. “They want to know what the reaction is to fusarium, we send them the data and they can decide what lines they want to keep in their programs and what lines to get rid of.”

“Gathering data” sounds simple enough, but think about this: in 2016, Brûlé-Babel and her team tested 25,000 individual lines in the FHB nursery. They are grown in single-row, one-metre-long plots, and for every 75 plots there is a block of five check varieties with known resistance levels (R, MR, intermediate, MS and S). “We make sure we’re evaluating against known standards,” she says.

“We grow the disease inoculum in the lab, measure the concentration of spores and use a backpack sprayer to inoculate plots,” says Brûlé-Babel. “We spray at flower and again three days later.”

To ensure conditions are perfect for disease development, the plots are mist irrigated — 10 minutes per hour for 12 hours — shortly after they’re treated. Plants are checked 18 to 21 days after inoculation and rated for disease incidence and severity, plus the team does DON and FDK analysis.

The work is constant — 25,000 lines and three seeding dates means plot rows are all heading and flowering at different times.

And the work is only increasing with more plots

being added almost every year — a significant indicator as to how important the FHB nursery is to Canada’s wheat industry and why WGRF continues to fund the project. “They were the first funders of the co-ordinated nursery in 2001,” says Brûlé-Babel. “Without the consistent WGRF funding, this nursery wouldn’t exist.” **CG**



In 2016, Brûlé-Babel and her team tested 25,000 individual lines grown in single-row, one-metre-long plots. For every 75 plots there is a block of five check varieties with known resistance levels.

PHOTO: ROGER LARIOS

WGRF is a farmer-funded and -directed non-profit organization investing in agricultural research that benefits western Canadian producers. For 35 years the WGRF board has given producers a voice in agricultural research funding decisions. WGRF manages an Endowment Fund and the wheat and barley variety development check-off funds, investing over \$19 million annually into variety development and field crop research. WGRF is the largest producer funder of research in Canada.



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*The face and voice of soil conservation in Canada
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Bringing Soil to Life: Jocelyn Michon shares the secret to his consistent yield success

Montreal-area farmer Jocelyn Michon was the Soil Conservation Council of Canada's 2009 Conservation Hall of Fame inductee.

Michon stopped plowing in 1993 and started using cover crops in 2003. He found that it improved both his soil and his pocketbook. He has increased his soil organic matter from 1.5 to 3.0-4.0 percent depending on the field, and estimates that going no-till makes him an extra \$100,000 a year in savings, by reducing equipment, fuel, maintenance, labour and fertilizer costs.

Michon grows 600 acres of corn, soybeans and vegetables; he can double-crop green beans after peas. He applies chicken litter into a living cover crop every six years and his mix consists of buckwheat, faba beans, oats, forage peas, phacelia, oilseed radish, flax, sun hemp, camelina, lentils, sunflower and mustard.

Last fall, he had an overwhelming mass of cover crop growth, and rolled the crop at the end of September as it flowered. By planting time the residue had all but disappeared. "It's all down here," Michon laughs as he stoops down to examine the surface of his soil, just littered with earthworm middens (plant residue and castings at the burrow entrance). I have 20 to 30 middens per square meter."

"Textbooks say that with the one tonne of earthworms I have per hectare, I could reduce my nitrogen rate by 60 units (lbs/ac)," smiles Michon. "I have actually reduced it by 63 units, so that's pretty close".



He then quotes Ray Archuleta, Conservation Agronomist at the NRCS USDA: "It's not the fertilizer, but the eco-system that feeds the plant." This has been Michon's experience over the years. He has reduced nitrogen and phosphorus applications by half, and potash by a third.

He has custom built his strip-till unit, a 'Strip Till Light', to get into residue ahead of the planter in the spring. The unit consists of shark-toothed trash whippers, coulters that go only two inches deep and tines on the back to make just a bit of dust behind the planter. He has also innovated with 'bio strip-till', in which he plants twin rows of faba beans and oilseed radish in the fall directly where the corn will grow the following year.

He plants soybeans into cereal rye in twin rows with smaller machinery and an RTK system to control his traffic, aiming to plant on the corn rows from the year

before. Grain buggies stay along the alleys and out of the field. Compaction is causing serious problems for water infiltration in the area, he notes.

"Dig first and figure out what the problem is," says Michon. "If it is compaction, you might have to run a sub-soiler, use smaller equipment or grow cover crops for a few years before you can stop tillage."

Michon is a former President of *Action Semis-Direct*, a group of 100+ no till farmers in Quebec, and he works closely with Odette Menard from Quebec's agricultural ministry, who was the SCCC's 2006 Conservation Hall of Fame inductee. He encourages farmers to 'go slow and go smooth' when transitioning their systems. Although other fields in the area have suffered with too little or too much rain, Michon's uniform and consistent yields are proof that his no-till system is improving his soil.

Another big hurdle

With MRLs, the problems begin when a test used for regulating trade gets treated as a verdict on food safety

BY RALPH PEARCE / CG PRODUCTION EDITOR

In the past 25 years, agriculture has seen a full gamut of new programs from environmental farm plans to neonicotinoid-use restrictions in Ontario. Some are relatively farm friendly, some less so.

Like them or hate them, they're all meant to be in the name of sustainability, traceability and food safety and security, which are under the watchful gaze of an increasingly urban population.

Now add one more set of guidelines to that list: maximum residue limits (MRLs). Unlike the others, which are imposed at the farm level, MRLs are creating confusion on an international stage and have garnered more attention in light of recent trade agreements. In spite of the potential benefits of the Trans-Pacific Partnership (TPP) and the Comprehensive Economic and Trade Agreement (CETA), there is also the opportunity for trade disruptions from MRL-based disputes.

There are two primary issues. One is the establishment of tolerance levels for registered chemistries, and the other is the backlog of registrations before Codex Alimentarius, a combined agency of the World Health

Organization and the United Nations' Food and Agriculture Organization (FAO).

The first issue brings into play the science of detection, which has become finer and finer over the past 30 years, so we can often measure in parts per trillion today, not just parts per million.

Despite that evolution, however, many of the countries Canada trades with still apply strict zero tolerances, making trade standards unpredictable and a stumbling block in trade relations.

The second component involves Codex and its near-four-year backlog, which can also create significant barriers to trade. In that four-year period, countries might be trading commodities based on mutually agreed standards, yet Codex could establish a different MRL, thereby putting their inventories at risk.

It's also worth noting that the maximum residue limits play a larger role in trade relations and negotiations on the horticultural side of agriculture. Pulses are also affected, and there's a greater potential for disagreements with some cereal and canola crops.

Part of the challenge in dealing with this issue is the perception that it relates to food safety, which is incorrect.



IT'S ABOUT TRADE, NOT SAFETY

"When we look at the issue in terms of actual trade impacts, it's not that significant," says Pierre Petelle, vice-president of CropLife Canada. "We're not seeing a lot of interventions internationally in terms of ships being turned around or stopped. That said, there have been some cases, and there is growing concern about some export markets' willingness to defer to Codex, for example, or other established MRLs, and wanting to establish their own."

Petelle points to MRL discrepancies in wheat and canola over the past 12 to 18 months, which suggest that no crop is immune.

What's needed most is to find a balance between trade risks and having a dialogue that assesses actual food safety. Unfortunately, that doesn't happen as a general rule of thumb, but case by case and crop by crop. To maximize the value of this process the dialogue must include the chemistry developer right from the outset. That approach is favoured over a "do nothing" default, and for very good reason.

"If we take a position of 'Don't use these products — period — until all of the export markets are fully established with MRLs,' we could have a tremendously negative impact on innovation and new chemistries coming to Canada," notes Petelle. He refers to that as an "innovation chill" to be avoided not just because of the money invested by chemical companies but because of the potential impact on growers' access to new technology.

Says Petelle: "It's finding that balance between managing the risk on the export side and not stifling innovation and growers' access to new solutions."

Petelle acknowledges that MRLs can and have been used as a non-tariff trade barrier, and it's possible this

When we look at the issue in terms of actual trade impacts, it's not that significant."

Pierre Petelle, CropLife Canada



will continue, with some countries rejecting a boat-load initially and then offering to buy it later, but at a reduced price.

Meanwhile, the reputation of Canadian agriculture is called into question.

Petelle also says the confusion created by the misperception of MRLs as a food safety issue is one of the biggest challenges facing agriculture. He cites one case where media backlash and public misunderstanding hindered efforts to modernize or harmonize the establishment of MRLs with another country such as the U.S., yet it had nothing to do with food safety.

TRADE AND EXPORT DEPENDENT

Chris Davison agrees this MRL confusion puts Canada's export-dependent agriculture at risk. As such, there's a need to pursue MRLs and import tolerances as they are required, and to reduce trade barriers for growers and exporters. That's accomplished through the efforts of developers and registrants of products,

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“We could have a tremendously negative impact on innovation and new chemistries coming to Canada.”

Pierre Petelle, CropLife Canada

as well as the collaborative efforts of grower groups, government agencies and other stakeholders within the value chain.

“A second factor is that we’re obviously operating in a very complex trade and regulatory environment,” says Davison, head of corporate communications for Syngenta Canada. “With MRLs specifically, this is illustrated by the fact that not all countries set MRLs at the same time — or at all. So we continue to work with a variety of stakeholders to establish and harmonize MRLs wherever possible.”

One factor in that scenario is the changing landscape in which MRLs are being established or modified around the world. Another is the fact that a pesticide may have a different registered use pattern in different parts of the world due to differences in geography and climate, plus dietary and cultural preferences that might determine the crops that can be produced.

“To build on it even more, the definition of a residue for a given pesticide may differ among countries, and there are also different methodologies for calculating MRLs,” says Davison. “The bottom line coming out of that is that MRLs for the same pesticide and commodity combination may differ among countries and regions, ultimately resulting in a barrier to trade. But the message has to be reiterated that MRLs are standards intended to facilitate international trade in agricultural commodities — full stop.”

WHAT’S NEEDED?

The call to action now is to work towards harmonization for MRLs. Davison believes more harmonization is possible, but it’s going to require the participation of all stakeholders. It’s not a matter of saying one sector or one crop is more important than another; it comes back to that trade component, where Canada is so reliant on trade and “getting along” with other partners.

“Where maybe it gets some more attention in different markets is that Canada is dependent on export markets, and different crops have different export markets,” says Davison. “Some of them have a lot more markets that are smaller, some have bigger markets, but fewer. So it’s not that one is more important, just that not all crops go to the same markets.”

From Petelle’s perspective, discussions must continue, and the companies that develop the chemistries and technologies must be at the table. There, they can provide the detailed, science-based information on the chemistry’s application, its active ingredients, how it breaks down and the methodologies for detection and in what parts of the plant it can be detected.

Petelle also says government must participate too: “The Canadian government can play a key role in this process, both from a harmonization and technical level, and from a trade level trying to get some recognition early on in trade discussions, whether they’re bilateral or multilateral.”

The notion that MRLs affect only horticulture crops or IP soybeans and other pulses ignores the impact on herbicides and fungicides available to cash croppers.



The government could also be a little more strategic and perhaps better co-ordinated, although Petelle believes there's sufficient support from Agriculture and Agri-Food Canada as well as Foreign Affairs. And he praises the efforts of the Pest Management Regulatory Agency on the technical side. Yet questions remain about who's representing whom at the international level.

There is also the issue of the federal government dropping its subscription to an international database that provided organizations such as the Ontario Fruit and Vegetable Growers Association and Pulse Canada with up-to-date MRL tolerances in different countries. That occurred in mid-2014. In the spring of 2015, the MRL working group (under Pulse Canada's lead) pooled some of its own funds and purchased a subscription to a database that provides all MRLs from every country that has such standards. It also offers market intelligence about proposed changes, unpublished changes or speculative information from all of the participating countries.

The other fly in the ointment is the backlog within Codex's harmonization process. Some of the hurdles include funding or human resource gaps within the agency's structure. Solving those issues will not be quick or easy.

But Codex needs to make other changes too, Petelle says. "For example, many countries got involved in global joint reviews of chemistries several years ago. You had Canada, U.S. and Australia as the countries — and then sometimes a new country could be part of that, and they would review the dossier together and one country would have the lead."

Yet trying to get Codex to recognize the co-operative work of agencies that negotiate with such openness is often the difficult part.

"Recognizing that there are efficiencies to be gained from acting more like a peer review of existing work, rather than starting from scratch with the raw data every time — that would demonstrate some forward movement and recognition of the same people," says Petelle.

It wouldn't make Codex into a rubber stamp. The agency would still do a thorough peer review, and it would be done at a point that's well advanced instead of opening up the raw data every single time.

And there are some signs of progress: Petelle notes there's an MRL calculator at the Organization for Economic Co-operation and Development (OECD) level.

But agriculture says more can and should be done. **CG**



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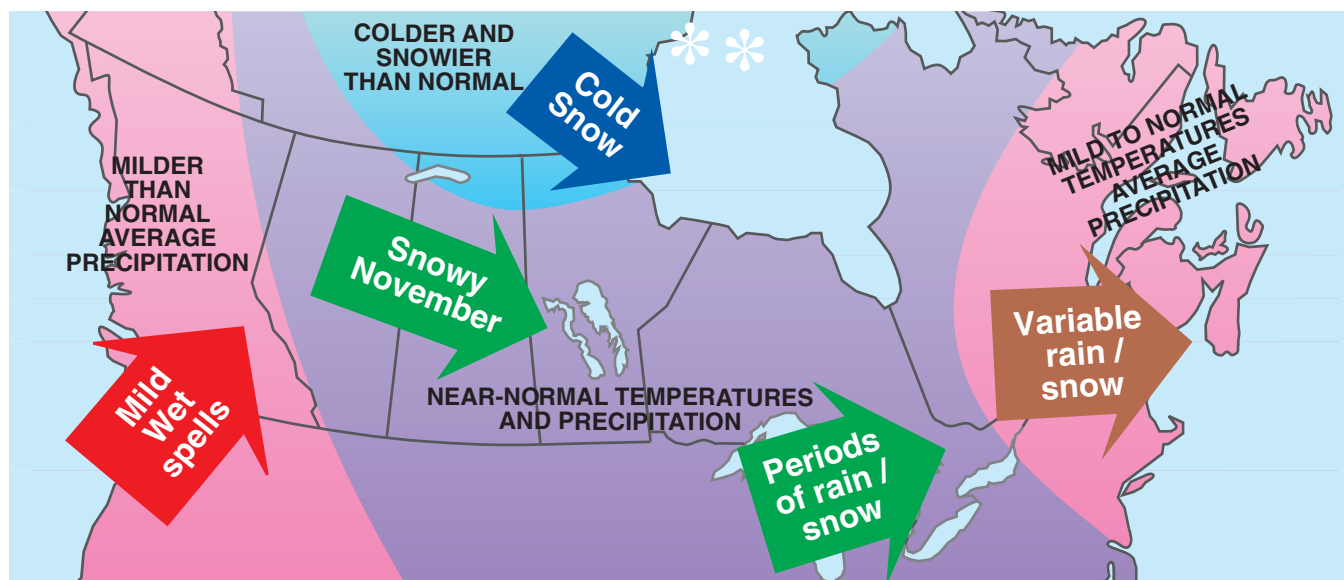
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NEAR NORMAL Milder than Normal Cooler than Normal



British Columbia

- **Oct. 16-22:** Changeable weather and fluctuating temperatures this week as fair skies alternate with rain, possibly heavy south. Occasional rain or snow elsewhere with frost at higher levels and inland. Windy.
- **Oct. 23-29:** Temperatures vary but trend to the mild side. Generally fair but expect heavier precipitation on two or three days in the west. This will fall as heavier snow in the mountains and north. Some frost likely inland. Blustery at times.
- **Oct. 30-Nov. 5:** Often wet on the coast with temperatures seasonable to milder than normal. Intermittent snow in the mountains and east, chance heavy in a few localities. Cooler north with some heavier, wet snow.
- **Nov. 6-12:** Cooler air moves in with blustery winds. Sub-zero lows in many northern and eastern regions and at higher levels. Periodic coastal rain changing to snow inland with a chance of heavier precipitation.

Alberta

- **Oct. 16-22:** Variable conditions as mild and cool air masses collide. Windy at times. Intermittent rain or snow on a couple of days, chance heavy in a few regions. Sub-zero lows central and north.
- **Oct. 23-29:** Unsettled as disturbances move by creating a few mild, fair days, followed by occasional rain or snow in the south. Windy from time to time. Intermittent heavier snow and colder north.
- **Oct. 30-Nov. 5:** Snow is common on a few days, mixed with rain south. Heavy amounts in a few regions at higher levels and north. Occasionally windy. Temperatures vary and often lean to the cool side.
- **Nov. 6-12:** Colder air advances southward under blustery winds. Look for a few higher wind chills. Occasional snow on several days, heavy in a few regions. Some drifting snow mainly in the south.

Saskatchewan

- **Oct. 16-22:** Near-normal temperatures are common under sunshine but expect occasional rain activity on a couple of days. Blustery at times. Cooler in the north with some heavier rain or wet snow.
- **Oct. 23-29:** Unsettled as cool and mild air bring variable temperatures. Occasionally windy. Fair on many days but expect periodic rain on two or three occasions in the south changing to wet snow in the north.
- **Oct. 30-Nov. 5:** Snow falls in many areas but is mixed with rain in the south. Chance of heavy precipitation. Cooler overall in spite of a few milder days in the south. Gusty winds from time to time.
- **Nov. 6-12:** Expect occasional snow on a couple of days this week, heavy in a few areas and mixed with rain in southern regions. Blustery at times with cooler temperatures bringing a few higher wind chills.

Manitoba

- **Oct. 16-22:** Seasonable to occasionally mild temperatures dominate the week in the south. Generally fair apart from rain on a couple of days. Often blustery. Unsettled north with heavier rain or wet snow.
- **Oct. 23-29:** Expect heavier, wet snow in northern regions on two or three days changing to intermittent rain in southern areas. Windy conditions cause variable temperatures at times trending to the cool side.
- **Oct. 30-Nov. 5:** A disturbance brings fluctuating temperatures from mild to cool and a few windy days. Fair skies will alternate with rain in southern regions turning to snow in central and northern areas.
- **Nov. 6-12:** Snow is common in all areas this week, heavy in a few regions and mixed at times with rain in the south. Gusty winds bring cooler temperatures with a few higher wind chills.

National highlights

October 16 to November 12, 2016

Milder-than-usual temperatures are expected to prolong pleasant weather in British Columbia and also in eastern Quebec and Atlantic Canada where, apart from a couple of unsettled, wet spells, near-normal precipitation can be anticipated. For the rest of the country, however, cold and snow are poised to press southward out of the Arctic. Some of these inclement conditions will reach the Prairies and northern Ontario and western Quebec by early November before they plunge even farther south as the month progresses. Despite these outbreaks, however, overall temperatures and precipitation in these areas should average close to normal during this period.

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

CAFA's Farm Succession Update - The Prairie Sweep

**BY LIZ ROBERTSON, M.A.,
CAFA EXECUTIVE DIRECTOR**

We have all read the statistics about the average age of farm operators (54 years), about how few farm families or businesses have a written farm succession or transition plan (< 25%), how much wealth is going to be transferred (\$billions) and the horrific family disputes that result from poor planning.

What can be done to change those statistics to improve the odds of successful farm transitions either within the family or to someone else?

CAFA's Farm Succession Update: The 3 Circle Model.

CAFA's preeminent Farm Succession Update series will be held in Saskatoon, SK on November 3, in Niverville, MB on November 10 and in Red Deer, AB on February 9, 2017.

The 3 Circle Model looks at the interdependence of the Family, Ownership and Management circles and how they overlap. It captures the complexity of family businesses to help recognize the strengths and challenges each brings to the farm.

Featuring presentations by some of top farm advisors from the Prairies, the day is intentionally designed as professional development for farm advisors, by farm advisors. Continuing professional development credits will be



awarded by the Law Societies, the Financial Planners Standards Council, Advocis and the Insurance Councils.

CAFA's first Farm Succession Update was held in May in Guelph, ON and the conversation around the room was that the room should have been filled with farmers. Those words demonstrate the great value of the information provided and of the in-person networking - sharing ideas, knowledge and experience.

CAFA's Saskatchewan Farm Succession Update features Jim Snyder, BDO's National Director for Agriculture, Chris Corbett, a CAFA National Director and Senior Marketing Advisor with FarmLink Marketing Solutions. The Family Circle will be covered by Don McCannell, President, My Farm Group, Mel Annand, lawyer, lecturer and farmer and Mike Pylypchuk, the Provincial Business Management Specialist, Ministry of Agriculture. The Management Circle speakers include Paul

Hammerton, Farm Management Consultant with MNP, Kim Gerencser, President of K. Ag. Growing Farm Profits and Morgan Knezacek of AgVantage Management Group and Kristjan Hebert, Hebert Grain Ventures. Lunch keynote speaker is none other than Warren Kaeding, MLA Melville-Saltcoats and proof that farms can be transferred successfully. The day wraps up looking at ownership with presentations by Crystal Taylor, a lawyer with Felesky Flynn LLP, Kelvin Schultz, President of Wheatland Accounting and Stuart Person, Partner with MNP LLP.

CAFA's Manitoba Farm Succession Update features Les Kletke as master of ceremonies with a welcome from CAFA National Chair, Amanda Hammell of RBC in Walkerton, ON. Frank Wiebe, a well-known and respected farm accountant from Winkler will introduce the 3 Circle Model. The Family Circle features an all-star line-up of talent including Elaine Froese, Farm Coach, Shauna McCarthy, lawyer with Brown Law Office and Val Monk, Val Monk & Associates. The Management Circle's speakers include Victor Bergmann, Partner Deloitte, Gordon Daman, President, Red River Group and Joerg Zimmermann of GlobalAgAdvisors. The day winds-up with a review of the Ownership Circle featuring Mona Brown and Andrew Winkless of Brown Law Office, Spencer Schellenberg, RBC Dominion Securities and Gemma Brown, SNJ LPP.

Details on the Red Deer Update will be available soon.

To see the complete agenda visit the CAFA website at www.cafanet.ca or contact CAFA at 1-877-474-2871.

SAVE THE DATE

Saskatchewan Farm Succession Update: Thursday, November 3, 2016
Smiley's Buffet, Saskatoon

Manitoba Farm Succession Update: Thursday, November 10, 2016
Niverville Heritage Centre, Niverville



For Manitoba vegetable grower Rolland Jeffries, Kelly Beaulieu's company can create a market for vegetables that used to get rejected because of size or blemishes.

Picking up business

New food-processing technologies are creating a new era of opportunities, including for crops that just get plowed under today

BY REBECA KUROPATWA



Today, over a third of horticultural products are left to rot in the field. But Beaulieu sees a profit opportunity, and is looking at pulses next.

Behind the scenes in Canada's food-processing industry, countless entrepreneurs are conjuring up new business opportunities by making more efficient use of our crops, including through improved processing and the use of previously wasted portions stock.

Watching over and assisting many of these developers is Roberta Irving, who is in charge of business development at the Portage la Prairie Food Development Centre.

With her comprehensive background as a dietitian, plus her sales and marketing experience in food production and the food industry, Irving has been the go-to person in the field for the past six years.

Although it has clients from across North America and the world, the centre is part of Manitoba Agriculture and its primary mandate is to help farmers and food companies develop new uses and markets for the province's commodities.

"It's interesting because of trends," says Irving. "We'll see ebbs and flows."

SMALL COMPANY PREPARES FOR MAJOR GROWTH

The Manitoba company Canadian Prairie Garden Puree Products Inc. (CGP), is gearing up for a major growth spurt, with the introduction of some further specialized equipment that will allow it to process pulses.

The company is led by its founder and chief operating officer, Kelly Beaulieu, an agronomist by trade with a background in R&D and agriculture.

Beaulieu started with the fact that from 30 to 60 per cent of the vegetables grown in Manitoba get discarded in the field — a reality that did not sit well with her.

"The reason for this was that they were visually imperfect — the wrong size, had a little blemish, discoloured, or just something really insignificant to the quality of the product itself," says Beaulieu. "Farmers are forced by the retail market to sort that product into only blemish-free ones — the perfect-size ones."

But this means that a third to almost two-thirds of their crops get plowed down

or fed to cattle, with little if any return to the inputs and effort that the farmer put into growing them.

Beaulieu felt producers would jump at a secondary revenue stream for this “imperfect” product. She began by looking into setting up a quick-freeze plant that could be used around the world, providing a market option for crops conceivably worth billions of dollars.

But Beaulieu found that the freeze concept was impractical, so she continued her research, which eventually led her to focus on steam infusion technology, developed specifically for processing purées and pulse crops.

“We have a game changer in the industry, because of this development,” says Beaulieu.

“In Manitoba, something like nine million pounds of carrots are discarded in the field. But that can now change. We can now peel them, clean them up, remove blemishes with the steam peeler, put them through a grinder and our steam infusion cooking process, and — in nine seconds — they are fully cooked to sterile.

“From the time the product is cleaned and put into our system, it’s approximately two minutes of time in our equipment. Then, it goes into our pouch — a bag-in-box pouch that is flexible — so, it replaces tin cans and the like. The purée and the pouch are shelf stable. It will last and retain qualities and nutrients for two years at room temperature. That’s the product that we’ve developed.”

Thanks to the rapid cooking and cooling, the technology retains all the freshness and nutritional qualities.

Recently, Beaulieu and company have begun working with protein-rich pulse crops, says Beaulieu. “Our equipment is well suited to process pulses, and also does things like hummus starters. So, a hummus manufac-

turer could buy our drums of hummus starter, the chickpea purée, and it’s ready to use.

“Our competitors in the industry for that product have to bring in product from offshore. It comes in big tin cans, so they have to open every tin can and discard the can. It’s packed in brine, so it’s salty. Then, they have to grind and work with that product.

“The alternative is our product. With that, all they need to do is slit the bag open, then it’s immediately usable. The bag is even recyclable.”

Now, CGP also has a navy bean product that is being put into a myriad different formats, Beaulieu says. “This is a great way for CGP to provide some value-added products instead of selling raw foods right here in Manitoba.”

There is no shortage of potential end-users for the products — from any large kitchen to food manufacturers — with 33 different types of CGP purées. The majority of the purées is vegetables and pulses, but the company also works with saskatoons.

BUYING FROM LOCAL FARMERS

“We like to buy local, as there is a lot of variety here, a lot of opportunity, and it’s better for the environment to package something where it’s grown,” says Beaulieu. “We have this in mind with everything we do — reducing the environmental footprint of our plant.”

While CGP has bought products from Ontario and a few from the U.S., the vast majority of what the company processes is grown locally.

With a current capacity of about 27 million kgs annually, the plant runs at



“We have a game changer in the industry because of this technology,” says agronomist turned entrepreneur, Kelly Beaulieu. Starting with vegetables like carrots, her company is now targeting major pulse crops

CONTINUED ON PAGE 56

Trait Stewardship Responsibilities Notice to Farmers

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about 3,400 kg per hour, despite a footprint of less than 7,000 sq. ft. and low water and power needs.

“That was one of the things I put into place when I built the plant,” says Beaulieu. “It had to meet environmentally friendly standards. I wanted to decrease our waste, to look at it from a level of not only how farmers could reduce their waste streams, but also at the consumer level. If people are buying a frozen product, five to seven per cent of that product is immediately wasted in the plant... Not in our plant. With our product, there’s no waste.”

Beaulieu sees huge need for the technology ahead. “Our product removes the seasonality supply of freshness and nutrition,” she says. “In 2050, we’re going to have something like 9.5 billion people on the planet. We have to find the means to better utilize the food resources we currently have. Technology advancements in food processing are going to be one of the methods that will give us the opportunity to utilize and better distribute all the food we already have.”

Growers are very interested in working with CGP, as the company offers another revenue stream for product they would normally discard or have very low opportunity to sell.

“We actually have been holding back on what we can pack, because we have too many farmers coming to us,” says Beaulieu. “But, I don’t discourage the farmers. We want them all when we open the second plant. Our dream has always been to have several of these plants and to utilize all the waste product out there.”

CLEAN LABELS

But the big trend now is what’s called the clean label. For instance, the centre has done intensive work on the use of flax to replace gum-type binders, taking advantage of the adhesive strength of flax, and there’s work underway to replace nitrates with celery powder.

For example, four years ago, energy bars were really popular, and Irving says the centre helped clients develop products for that market. Some were pulse based. Others were pea and lentil based.

“These developers are always asking for clean labels, and they want this because that’s what consumers want,” Irving says.

“Consumers are looking for labels they can easily read and know what all the ingredients are.”

The challenge is that while to consumers this might seem a simple — you might almost say a “natural” — process, it can actually be incredibly complex.



Vacuum-packaging produced and quality-assurance tested to strict standards gives food processors easy ways to use crops that used to be left to rot in the field.

Each ingredient in their favourite products is there for a critical function, Irving points out. And, without these critical ingredients, the product simply would not taste, feel or store the same.

Thus the hunt is on to find better replacements, which might be better because, for instance, an ingredient might contribute to more than one function, in the way that salt, for instance, is both a preservative and a taste enhancer, and sugar can be both a sweetener and a binder.

“For the last couple of years now, we’ve been doing more with plant proteins or plant fibres,” says Irving. “There’s really an appetite for plant-based products, as some people are trying to go more without meat. Historically, if you had a non-dairy product or you wanted a meat substitute, there were very poor ingredients out there as substi-

tutes. But now, because of new technologies, plant proteins are really front and centre, being used as ingredients to create really good-tasting products.”

In the non-dairy category, almond milk is an example of a product that probably wouldn’t have been commercial in any sort of big way until now. And, in the meat substitute category, the U.S.-based company, Impossible Foods, is using a technology of plant proteins to create meat substitutes.”

Already, Impossible Foods has created a plant-based burger that acts and tastes like an authentic beef burger, including the “plant blood,” mouth feel, and sizzle you would get from a regular burger, which means their business target can be the huge audience of meat lovers, not the smaller audience of purist vegans.

Closer to home, Irving is working with

“Now, because of new technologies, plant proteins are really front and centre,” says the development centre’s Roberta Irving, adding crops are being used “as ingredients to create really good-tasting products.” For more farmers, that’s expected to produce more opportunities to launch new enterprises

Canadian pioneers in this new field, such as Manitoba Starch. “It gets clean potato water from McCain here in Portage la Prairie and extracts the starch,” explains Irving. “There is this huge trend looking at using waste products in the processing industry.”

Another company Irving has worked with is Shape Foods out of Brandon, Man., which has developed a way to make shelf-safe flax oil. “It’s developed a processing technology so its product has a 24-month shelf life, which is unheard of in the industry,” says Irving. “If you don’t open it, it would be shelf stable for 24 months. If you open it, you put it in the fridge.”

Pulses are getting attention too. “Historically, using pulses in the food industry has been difficult because of their strong smell and taste,” Irving says. “But lately there’s been more technologies developed through extraction — like taking the fibre out of peas, beans, and lentils, and using it

in breads. It can even be used as a coating for chicken nuggets. We did a study here and were able to replace 50 per cent of the white flour in a chicken nugget coating with pulse flour.”

There are even bonus benefits to using pulse flour, Irving says, such as better colour, faster browning, less fat needed for cooking, and better crunch.

There are all kinds of good reasons to use pulses in other products and, with the possibility of using extraction processes, the possibilities may well be endless.

“You’re starting to see more pulses going into breads, because you can still put them in and have a light, airy texture, which is what people want in bread,” says Irving.

On the horizon, Irving envisions further use of supercritical food extraction to extract proteins and other ingredients from produce such as spinach, kale, and locally grown fruit, like sea buckthorn, some of which could be sold to high-value markets, like the cosmetic industry. **CG**

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The SLOW DEATH of THE GREEN REVOLUTION

Even as the negative impacts of the great Green Revolution pile up, there is hope

BY NICOLAS MESLY

It saved one billion people from starvation. It won a Nobel peace prize for its founder, and it transformed India, all by discovering new varieties of high-yield rice and wheat, and new ways of growing them.

Yet today, 50 years later, the Green Revolution is sputtering. Those high-yield crops have touched off ecological disasters, and the countries that were saved from hunger are now struggling with dietary deficiencies.

But perhaps the revolution will get a second chance, if developing countries change their agriculture policies.

"The next Green Revolution has to preserve our natural resources," says Dr. Rajan Aggarwal, soil and water specialist at the Agriculture University of Punjab (PAU). "We have achieved yields of wheat and rice of six tonnes per hectare, but at the cost of our water table."

It takes eight hours driving north from India's capital, New Delhi, to reach Ludhiana. The city is home to the world-famous Agriculture University of Punjab (PAU), often called the Mother of the Green Revolution.

The university is linked into an international group of plant breeders and agronomists called the Consultative Group for International Agricultural Research (CGIAR). Together, starting in the 1960s, they produced a kind of space race of their own, doubling and tripling

the yields of wheat and rice in developing countries, based on work at research centres in Mexico, U.S., India, Pakistan and Philippines.

Eventually known as the Green Revolution, this scientific effort was largely financed by the American government and by private foundations such as the Rockefeller Foundation. But there was never any doubt that it was political too. During the years of war in Viet Nam, the West did not want to see India topple into communism and into the arms of China.

Despite all those good intentions, after two generations, the problems are becoming clear.

Those high-yielding cereal varieties can only produce their yields if they're matched with dangerously high fertilizer rates and unsustainable quantities of water.

As a consequence of the revolution, more than 12 million pumps now suck up so much underground water during the region's paddy season, they effectively make Punjab the world's largest artificial lake.

At the start of the revolution, Dr. Aggarwal tells me, the water table was 10 metres down. Today it is a perilous 30 metres.

Unless something changes, the outlook is bleak. Rice cannot be grown without water.

For Aggarwal and his colleagues, it has set off a push

Haridenyat Gill is investing C\$100,000 in a modern greenhouse to produce organic vegetables. He admits that it is hard to wean himself from the highly subsidized wheat and rice production.





Water is vital not only to agriculture production. It is a source of intense conflict in India between farmers, between farmers and cities, between states and between its neighbouring countries such as Pakistan and Bangladesh.



India subsidizes the manufacturers of nitrogen fertilizers so they can offer lower prices to farmers. Farmers don't like the system, but fear that if they lobby for reform, the government will simply use it as an excuse to cut ag spending.



In the photo are some of the 8,000 farmers who buy their seeds at the Faridkot agriculture fair, near the Pakistan border. The varieties are developed by the breeders at the Agriculture University of Punjab (PAU). These farmers could buy Bt cotton — the only GMO allowed in India — but Sukhjot Singh, a farmer interviewed at the fair, says it isn't really an option, since it costs 200 times more than non-GMO seed.

to grow earlier varieties of basmati rice that would mature in 100 days, down from 130 to 140 days for conventional rice varieties. The change would save a substantial quantity of water.

Plus, for about C\$27,000, farmers can buy a laser-guided grader to level their fields, cutting their water needs by 15 to 25 per cent. The effect, the researchers say, has been “miraculous” and already, a third of the state's paddy acreage has been levelled with the locally made machine.

Irrigation technology is evolving too, with more farmers turning to drip systems.

The numbers, however, quickly get very large. The university's ultimate goal is to reduce water consumption so that monsoons will recharge the aquifers, but with 40 per cent of the Punjab's arable land being irrigated, an even more radical change may be needed.

According to former PAU dean Dr. S.S. Johl, the Green Revolution achieved its goals by transforming the Punjab into a rice producer. Until then, its big crop was wheat.

Now Johl, an internationally known and respected agro-economist, is denouncing government subsidies that make rice production possible by encouraging what he calls “the pillage of underground water.” Producers don't pay for the water, he points out, and they also get heavy subsidies for urea and diesel, as well as having guaranteed prices for wheat and rice.

The result, Johl says, is an artificial economy with insane competition to build bigger and faster pumps.

EXCESS NITROGEN

Last March, I drove the road from Ludhiana to Bathinda and on to Punjab's capital, Chandigarh, with wheat fields changing from green to gold. In three weeks, thousands of combines would harvest the precious grain.

But as I drove by, I regularly saw huge circles of flattened wheat, as if herds of elephants had slept in the fields. In Canada, this would be a sign of severe rain or hail, but I'm told that nothing of the sort has happened here.

“The lodging is due to overapplication of urea,” explains Sukhdev Singh Bhangu, marketing manager for the Indian Farmers Fertiliser Cooperative (IFFCO).

The Green Revolution wheats were bred with short straw to resist bad weather, but excess nitrogen can overpower that dwarfing trait, so the stalk can become too weak to hold the head.

Again, if we were talking about Canada, the concern would be grain quality, and how to get those heads into the combine. Here in India, however, the problem is rats, plus birds too. A lot of the crop will be lost before the farmer can get to it.

IFFCO controls a quarter of India's fertilizer market, Bhangu tells me, and the giant co-op does try to educate its 50 million members on urea rates. But the fertilizer is so heavily subsidized by New Delhi, it costs less than salt.

Narendra Modi, India's acting prime minister, has tried to re-structure the subsidies. Instead of giving the money to the fertilizer companies so they can lower their prices, he wants to give the money directly to farm-

CONTINUED ON PAGE 60

Now, the government subsidizes the cost of urea. Instead, farmers would like to be paid the subsidies directly, so they can decide how best to invest

ers, who can then choose whether to spend the funds on fertilizer or on other farm expenses.

You might think farmers would jump at this. Instead, they're nervous about whether they'd ever actually see the money.

"I am against it. I prefer that the subsidy stays with the manufacturers because I don't want to wait a month or more before being reimbursed by the government," says Haridenyat Gill, a grain producer I met on his farm near Lidhuana.

Just back from Israel, the

36-year-old entrepreneur was building a brand new greenhouse to produce organic cucumbers and tomatoes under drip irrigation.

Gill is investing C\$100,000 in this project, and he says he knows this means he is taking a huge risk to produce these perishable products. But, with the subsidies he gets for the cereal side of his operation, it's a reasonable risk, he says. Without them, the risk would simply be too great.

Yet the problem runs deeper. In this climate, the decades of big, urea-driven crops have burned the soil's organic matter and depleted other nutrients all over the country. In fact, India now returns even less grain per unit of applied nitrogen than China, getting only half the yield bump that farmers in North America would see.

This is why, last February, Narendra Modi launched a vast program

called the National Soil Card, with 2,000 dealerships being equipped with soil labs in the next three years.

Under the plan, each producer will get an individualized soil card, showing their need for nitrogen, phosphorus, potash and micro-nutrients, together with a ranking of the soil's organic matter.

"It is a win-win situation as producers will use less urea and help soil health recovery, and the government will save huge amounts of subsidies," says P.K. Joshi, director South Asia, International Food Policy Research Institute (IFPRI), based in Delhi.

Some 140 million soil cards have already been issued by the Ministry of Agriculture of India.

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sive dependence on chemicals,” says Vibha Varshney, editor of the magazine *Down to Earth* published by the Centre for Science and Technology, in Delhi.

Crop rotation, building up organic matter, and growing nitrogen-fixing crops are some of the ways to do this, Varshney says.

In other words, in order to preserve the gains of the Green Revolution, it's time for farmers to ease up on their use of the revolution's biggest successes. That won't be easy, says Varshney, who says it will take government policy to get farmers to put more of their land into lentil crops, which he calls the all-time champions in the field of ecology and climate change.

Easy on water, lentil crops would regenerate the soil with fixed nitrogen and diminish the use of urea.

Even though India is already the world's largest lentil producer, the

droughts of 2014 and 2015 cut production. This was good news for Canada, which supplies 40 per cent of India's lentil imports.

But Indian soils need lentils, and so does India's population, especially since lentils are rich in iron and would help solve the iron deficiency in the national diet that has been exacerbated by the Green Revolution.

“This sustainable or second Green Revolution must also consider the food deficiency of India's population. Nearly 90 per cent of pregnant Indian women suffer from anemia,” says A. Kishore, director of sustainable agriculture and climate change, IFPRI.

Will Narendra Modi's government push these changes? How far will it go? How fast? And how much of the Green Revolution's benefits will still be left?

It remains to be seen. **CG**

India quick facts

- India population will outnumber China in 2050, reaching 1.3 billion.
- India has almost as much cultivated land as the U.S.
- India has more than 120 million farmers. Three-quarters own less than one hectare.
- Agriculture accounts for 17.4 per cent of the country's GDP.

India, an agriculture powerhouse

- India is the world's largest dairy, lentil and spice producer.
- India is the world's second-largest producer of wheat, rice, cotton, sugar cane, aquaculture, goat and sheep meat, and fruits and vegetables.
- India is the second-largest exporter of beef after Brazil.

(Source: FSUSDA, World Bank)



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We've been misinformed

Put this eight-page debunking handbook on the top of your reading list, and let's stop making consumer misinformation worse

BY GERALD PILGER

What works on your farm

Dr. Jason Lusk is a food and agricultural economist at Oklahoma State University, and he researches what we eat and why we eat it.

Lusk is concerned about the disparity between the beliefs of farmers and researchers versus the general public. He believes the problem is that two trends have emerged at the same time. First, North Americans have become less trusting of institutions. Second, there is a much greater diversity of information available to consumers, so people seek out what they want to hear rather than facts.

Lusk says there used to be a shared assumption that the experts have all the knowledge, so if the experts simply presented consumers with the information, then everything would come out right. But today, he says, that is not nearly as effective.

Instead, Lusk applauds farmers who actually engage consumers in conversations on a one-to-one basis about food safety and environmental concerns over modern farming practices.

Lusk urges farmers to listen to the concerns of consumers and respond by explaining how you actually address those concerns on your farm. For example, if in a conversation a consumer says, "I am concerned about..." the farmer's response should be, "I am concerned about that too, and this is how we handle that on our farm..."

This response can apply to any issue from environmental concerns, to GMOs, to antibiotic resistance, to pesticide use.

Lusk says while science is important, it is not always persuasive. Responding to consumer concerns by quoting the latest scientific journal to justify a farming practice likely will not work. Instead, farmers should tell their own story and focus on why you do what you do.

The good news is that farmers are finally recognizing the damage that misinformation is doing to our industry, and we are responding to it.

The bad news is that the way we respond may actually be increasing consumer opposition rather than alleviating it. We've been misinformed about fighting misinformation.

Agriculture is not the only industry to be threatened by misinformation. It is merely the latest, so it is important to look at how misinformation has affected others and how they have responded.

A good case study is the controversy about vaccinations and autism. The claim that vaccinations cause autism was first made about 18 years ago based on a single study of just 12 children in the U.K. Further clinical studies refuted the correlation, the medical journal that published the original study retracted it, and the doctor involved in the study lost his licence to practise medicine.

Yet today an estimated one-third of U.S. parents believe that vaccines are linked to autism, which is why measles, once nearly eradicated, have returned.

In this case, the response to misinformation has been totally ineffective.

There are a number of reasons why people cling to misinformation and why they do not want to give up their opinions, even when those opinions are scientifically discredited.

First, no one likes being wrong, so people will seek out information (i.e. misinformation) which proves they have been right all along. This is "confirmation bias."

Also, it is often easier to get misinformation that reinforces your beliefs than it is to search out the truth about an issue or practice. This is particularly true if the misinformation is delivered by social media you subscribe to or by a public figure such as an actor or politician, and it is especially easy to fall for individuals who portray themselves as informed outsiders who are willing to challenge the corrupted establishment or corporate system, which they claim is only interested in profits, not the consumer.

CONTINUED ON PAGE 64

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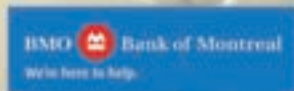
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Getting it right

A useful summary of the strategies that can be used on your farm can be found in a 2012 news release from the University of Michigan entitled “New study analyzes why people are resistant to correcting misinformation, offers solutions”:

- Focus on the facts you want to highlight, rather than the myths.
- Make sure that the information you want people to take away is simple and brief.
- Consider your audience and the beliefs they are likely to hold.
- Strengthen your message through repetition.
- Provide people with a narrative that replaces the gap left by false information.

Colorado State University has also published a fact sheet entitled Nutrition Misinformation: How to Identify Fraud and Misleading Claims. It lists the top 10 red flags for misleading claims in nutrition.

1. Recommendations that promise a quick fix.
2. Dire warnings of danger from a single product or regimen.
3. Claims that sound too good to be true.
4. Simplistic conclusions drawn from a complex study.
5. Recommendations based on a single study.
6. Dramatic statements that are refuted by reputable scientific organizations.
7. Lists of “good” and “bad” foods.
8. “Spinning” information from another product to match the producer’s claims.
9. Stating that research is “currently underway,” indicating that there is no current research.
10. Non-science-based testimonials supporting the product, often from celebrities or highly satisfied customers.

Here’s why to worry about how you correct those anti-farm myths. If a falsehood is repeated just three times, up to 40 per cent of people will remember it and believe it to be true

It adds up to this. Confirmation bias can rarely be overturned with facts, data or evidence. People will simply discount all the evidence that disproves the misinformation they are using as the basis of their world view, and they will embrace any “information” they have found or heard that supports their world view and beliefs.

Research has actually studied the conundrum that this produces. Our efforts to use verified facts, research and data to set the record straight can actually cause people to deepen their belief in the misinformation that we are trying to attack.

This is known as the “backfire effect.”

Then it gets worse. Once the misinformation is firmly entrenched, we tend to look at and treat those holding such beliefs as idiots or a radical fringe, and this polarization further divides and encourages those who believe in the misinformation to spread their misbeliefs, thereby greatly reducing the

chances of correcting the misinformation in the future.

Another trap we fall into when attempting to refute misinformation is by repeating that misinformation when we try to refute it. Every time misinformation is repeated, there is the possibility you are introducing that misinformation to people unaware of the misinformation in the first place.

Research has found if a falsehood is repeated just three times, up to 40 per cent of people will remember it and believe it to be true.

Possibly the step which most people ignore in fighting misinformation is to provide any alternative to the misinformation.

THE DEBUNKING HANDBOOK

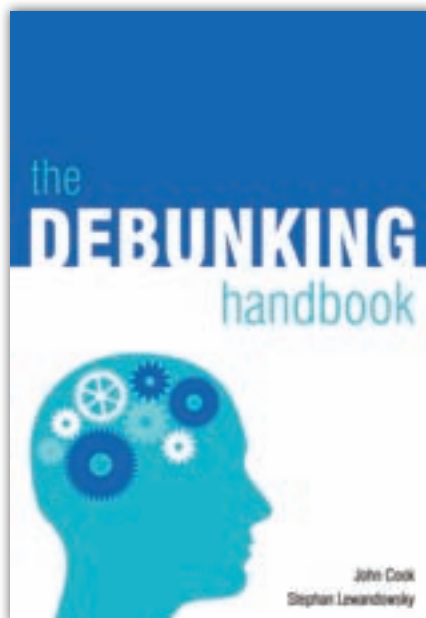
Dr. Stephan Lewandowsky, University of Bristol, U.K., says providing a narrative is a critical step. “It is not enough to debunk the myths, you need to provide an alternative that will fill the gap if misinformation is to be accepted as untrue. Explain the false information and the agenda of those pushing it. The most effective way to reduce the effect of misinformation is to provide an alternative explanation for the events covered by the misinformation.”

According to Lewandowsky, the other critical step is: “beware of a person’s world view. For example, understand that those opposed to GMOs have natural, environmental, and purity goals. You cannot attack these values. Instead you have to deal with the science behind GMO.”

In the case of GMOs, given the resulting increased use of glyphosate, and now the development of glyphosate-resistant weeds, Lewandowsky suggests farmers acknowledge that GMO crops have resulted in excessive use of glyphosate which has resulted in development of glyphosate resistance. He says a GMO supporter who begins a conversation with someone opposed to GMO by conceding this point will improve trustworthiness of the GMO proponent and make the person opposed to GMO more willing to reconsider their GMO position.

When asked who are the best to address misinformation about GMOs, Lewandowsky replied: “Those who people trust. Not Monsanto! Instead it should be independent university scientists who are not funded by corporate interests. It should be farmers who use GMO technology.”

Lewandowsky says farmers who address a misinformation issue like GMO should



focus on discrediting misinformation with friends and family first. He recommends talking to those who are on the fence about an issue like GMOs rather than those firmly opposed to the technology. "There is very little to be gained by trying to change the position of hardcore believers in misinformation."

However, Lewandowsky says it is very important to expose those hardcore believers and the reasons they have for promoting misinformation. Are they promoting misinformation for personal financial gain, for the fame, or perhaps for political reasons?

Lewandowsky has written *The Debunking Handbook*, an eight-page guide to why people believe misinformation and how best to debunk misinformation. He opens with:

"Debunking myths is problematic. Unless great care is taken, any effort to debunk misinformation can inadvertently reinforce the very myths one seeks to correct. To avoid these "backfire effects," an effective debunking requires three major elements.

First, the refutation must focus on core facts rather than the myth to avoid the misinformation becoming more familiar. Second, any mention of a myth should be preceded by explicit warnings to notify the reader that the upcoming information is false. Finally, the refutation should include an alternative explanation that accounts for important qualities in the original misinformation."

The Debunking Handbook should be read by everyone interested in challenging the misinformation that plagues the agricultural industry. It is online at www.skepticalscience.com/docs/Debunking_Handbook.pdf. **CG**

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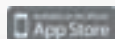
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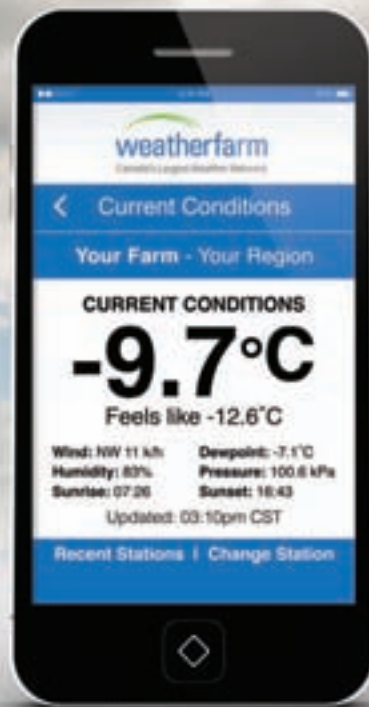
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A backstage pass

Join me on this tour of engineering facilities with a group of senior managers actually willing to talk about product design

BY SCOTT GARVEY / CG MACHINERY EDITOR

When I walked through the front door at SeedMaster's Regina manufacturing plant, Cory Beaujot, the company's marketing and communications manager was waiting for me. I had been invited to the factory to meet senior management and hear about the new technology the brand is introducing for its 2017 model year seed drills.

They had made one other enticing offer to get me there. I was going to get a chance to walk through the company R&D shop to see what their engineers are working on.

I've been through a few R&D shops at various machinery manufacturers over the years, and it's always fascinating to see the birth of technologies that eventually appear on new equipment.

The trouble is, the companies usually hide the really interesting stuff first.

Or I might get invited into a shop to see something that is about to make a splash in the market, but only on the condition I keep quiet about it until the company kicks off its big product launch.

Sometimes I even have to surrender my camera before putting on the standard issue safety glasses and heading out the back door of the office area into the plant.

But this day at SeedMaster, things were quite different. Armed with my camera, I was allowed to look at the products under development and the testing procedures used to evaluate them. And company management was willing to talk about the results from testing their new systems — and those from competitors.

Before setting foot in the R&D shop, however, I was taken upstairs to the engineering offices to meet Daniel Michaluk, one of the engineers working on refinements to the brand's new UltrPro II on-frame seed metering system. Sitting at his desk, he gave me an overview, using the CAD image on his computer.

"We're into the final development stages of getting this product into the market," he said as he rotated the image on the screen. "It's gone through a few iterations already, and we're at a stage where we're pretty happy with how it's performing. We've done a lot of field testing and we're doing some bench testing to finalize some of the roller shapes."

As we spoke, a 3D printer was humming away behind us, creating one of those rollers so it could be taken to the R&D shop for evaluation.

"With these new meter developments, we've made the meter suit the grain," added Norbert Beaujot, company president, as he showed me one of the prototype meter rollers hot off the printer. Using a printer to create prototypes for testing saves the company the expense of paying for injection moulds before finalizing a design.

And metering is big. In fact, Beaujot thinks all seeding equipment manufacturers will be focusing on metering going forward. "It doesn't take much to be throwing away \$15 per acre on seed," he said.

"One of the toughest things in the air drill or any seeding or fertilizer application business is that the input companies will come up with a new product, and they test it in a plot seeder to make sure it actually works," added Trent Meyer, director of sales and marketing. "We don't get a heads-up that next spring there's a new product that meters differently... we get the first call when it can't be metered."

"We went right back to the basics," said Norbert about the new metering system. "We had limitations before in the quantity of product we could put through



Engineer Daniel Michaluk shows an original engineering design on computer for a new metering system the company has just introduced.



Company president Norbert Beaujot, explains the workings of a mock-up of a new metering system inside the R&D shop.



Inside the R&D shop the performance of a variety of distribution towers is evaluated.

Seed metering is expected to become a key competitive issue for seed manufacturers, says SeedMaster president Norbert Beaujot. “It doesn’t take much to be throwing away \$15 per acre on seed.”

the venturi system. We designed it right from scratch so we could put the bigger peas and beans through it at high rates.”

With so many senior managers walking with me, I couldn’t help but try to get an insight into some of their design decisions. Why, for example, were they one of the air drill brands sticking with hydraulic meter drives rather than moving to electric?

“We’ve been using hydraulics because it’s dependable and very precise,” explained Norbert. “We’ve looked at electrics a bit, but there’s been struggles out there with electrics. So until we see a clear view of that going forward, the farmer doesn’t need any more complexity at seeding time. The hydraulic system we use has been very, very reliable.”

Added Trent, “The thing with hydraulics is we’ve finally just got a fleet of tractors out there that can handle the flow that we need for our drills to be effective and run properly. Now, to ask tractor manufacturers to supply power to 30-, 40- or 50-drive motors really creates another limitation, rather than basing it on the hydraulics and sticking with what we know.”

“When you think about it, you’re using

an engine to create hydraulic power; you’re using that hydraulic power to run a generator to create electricity to run a meter,” Norbert added.

“You lose (efficiency) every time (power flow changes types),” said Daniel.

Down in the R&D shop, the first setup we walked past was a test rig used to evaluate distribution towers. What engineers learned from testing a cross-section of towers currently used on drills in the market played a key role in development of the new “tunable” type the company just introduced for its Nova air carts.

“(With the test rig) we can vary the speed and control the airflow through there and set up any kind of manifold system you want and run a test for so many minutes,” Daniel said, as he explained how it worked. “We can play with all the different variables you can think of, see where variation is occurring. We can tweak it a little and isolate that variable when we’re doing catch tests.”

“The thing we found, though, with everybody’s towers, is they’re so unpredictable,” explained Norbert, as he walked up to one of the test stands and moved one of the

seed tubes up and down. “If this hose happens to go up a little bit, it will get less seed going through it than the one beside it going down. So many of those things you just can’t control. It’s great that it’s nice and flexible, but it changes the metering characteristics in a big way.

“We were holding the hoses higher or lower and tilting the manifolds 10 degrees and analyzing it,” he continued, explaining the various testing processes. “If you’re working a sidehill, you get less uphill than downhill. All these things add up.”

“We tested our own product in the same way,” said Trent. “Now that we have that precise knowledge we can do something about it.”

“With the growing acres of farms and the increased price of seed,” added Cory, “why leave anything to chance? Why not try and refine it as much as possible?”

All of that takes time, though. Getting a product like the company’s tunable distribution towers or its new UltraPro II metering system from Daniel’s computer screen, through testing in the R&D shop and finally to a market-ready feature takes time.

“It’s always hard to define: where does R&D stop and where does true production start?” Norbert said. “It takes about a year. It often starts with filing for patents.”

“Conceptually, some of the main ideas tend to come out fairly quickly at the patenting stage,” Daniel added.

After a new feature passes muster in the R&D shop, it’s sent off for field trials. Much of that occurs at the company’s own test farm a couple of hours down the highway from the plant.

“It’s a huge part (of the R&D process),” Norbert said. “You need the farm for testing and trying things. We want to see parts of it through a seeding season so we can say it’s market ready.”

The farm is also a place to analyze drill performance and brainstorm new ideas.

“A lot of ideas tend to come out right after seeding,” he added. “Because, it’s at seeding you’re finding problems and you’re more likely to come up with solutions.”

“Even if it’s not a problem, how can we do better?” added Trent.

“All that innovation starts on the farm,” echoed Cory. “Like being able to look back and wonder how accurate our specific manifolds were. It’s a constant evolution of things. You need to always be challenging yourself.

“Nothing is ever perfect. If you think it’s perfect, you’re moving backwards.” **CG**

If the roller-coaster goes on too long

If it sometimes feels like your roller-coaster never really stops, maybe you suffer from cyclothymia, a mild version of bipolar disorder.

You wouldn't be alone. I have met dozens of producers who have this disorder, and who come to see it as the source of their misfortunes. Obviously, they consult me when they're "down" because, on the most beautiful days, well, everything is great (from their point of view).

If the person is lucky enough to be surrounded by people who love them and understand the situation, the damage can be mitigated. For example, a partner may be there to prevent them from making mood-driven decisions that they would later regret. Often, however, the partner becomes exhausted acting as the buffer.

Cyclothymia is a mood disorder characterized by periods of mild elation and mild depression that are not related to life circumstances. "He just woke up this morning feeling down and doesn't want to invest anymore," a partner might say. "Yesterday, he did not understand why I did not agree to invest in the new project. He can cycle through these emotions even in the same day. I often think he has two personalities."

In fact, this instability of mood is a mild form of bipolar disorder (formerly known as manic depressive disorder). Although less severe, cyclothymia can significantly impact a person's relationships and finances. Extreme and unexpected mood disturbances prevent the individual from functioning normally. In "up" periods, it's like the person is wearing rose-tinted glasses. Everything is great. In low periods, however, they can feel quite depressed and unable to accomplish their tasks.

Between one and two per cent of the population suffer from manic-depressive disorder. However, if we include all mood disorders (severe and mild), this represents six to eight per cent of the population. But

it's also important to know that we find mood disorders represented even more highly among entrepreneurs and managers.

People suffering from cyclothymia would not be diagnosed with bipolar disorder because their condition is not as severe. However, their symptoms will gradually harm them and those around them.

SYMPTOMS: THE LOWS

- Difficulty making decisions, problems concentrating, and poor memory recall.
- Guilt, self-criticism, low self-esteem, pessimism, and self-destructive thinking.
- Constant sadness, apathy, hopelessness, helplessness and irritability.
- Quick temper, poor judgment and lack of motivation.
- Social withdrawal, appetite change and lack of sexual desire.
- Self-neglect, fatigue, insomnia, and sleepiness or too much sleep.

THE HIGHS: HYPOMANIC EPISODES

- Euphoria.
- Unhealthy optimism, inflated self-esteem and arrogance.
- Rapid speech, interrupting others, and racing thoughts.
- Aggression, hostility and lack of consideration for others.
- High energy levels — a person can work long hours without getting tired.
- Risk-taking behaviours, such as driving fast, spending money and increasing sexual activity.
- Highly goal oriented.
- Decreased need for sleep, tendency to be easily distracted and an inability to concentrate.

A person need not exhibit all the symptoms to be diagnosed. Moreover, the severity of the problem has to be considered in relation to the pain that it causes to the individual and his environment. Of course, when someone is at the top of the roller-coaster, it feels great.

We all experience cycles in our

energy levels, mood, and ambition. However, when someone struggles to recognize himself in his way of thinking, feeling and acting from hour to hour or day to day, it's a sign that this variation has reached a level we should be concerned about.

Some people avoid seeking treatment because a certain degree of hypomania (i.e. the "highs") may help them succeed in life. This high phase is associated with creativity, investment and expansion. The person may also be highly convincing, charismatic and productive. The problem is that in periods of mild depression, the individual no longer has the physical and psychological ability to support her projects.

It is crucial to recognize if you suffer from a mood disorder. If you have doubts about yourself or a member of your family, consult your doctor or psychologist. Because the mood swings are not as dramatic as in bipolar disorder, cyclothymia often goes under the radar and is undiagnosed, but getting help can significantly mitigate its relational and financial consequences.

If you feel that your life is like a roller-coaster, go see a specialist — a little bit of a roller-coaster can be great, but too much will give you nausea and make you really sick. And someone else will have to clean up the mess. **CG**



Pierrette Desrosiers, MPS, CRHA

is a work psychologist, professional speaker, coach and author who specializes in the agricultural industry. She comes from a family of farmers and she and her husband have farmed for more than 25 years. Contact her at: pierrette@pierrettedesrosiers.com. www.pierrettedesrosiers.com

'You are what you eat' applies to cattle too

The right forage makes a difference in dairy and beef operations

By Trudy Kelly Forsythe

Feed represents 30 to 50 per cent of production costs for a typical lactating dairy cow or feedlot finishing diet, and slightly less for a growing and gestating diet. It makes sense then that feed testing should be the centrepiece of all ration planning, for both feedlot and dairy operations.

Daniel Scothorn with Scothorn Nutrition in Nova Scotia says testing feed allows producers to target specific needs at different stages of development, ensuring animals with high-nutrient needs receive the highest quality forage, while lower quality forage goes to animals with lower nutrient needs.

"Cows fed a well-balanced diet will most importantly be healthy, but will also grow and milk more," he says, explaining an optimal ration is best formulated using nutrient concentration determined from feed analysis. Proteins, starches, calcium and phosphorus, as well as vitamin and moisture analysis, need to be part of the overall picture.

How to test

Hay bales are tested with a hay probe. Scothorn recommends probing five to 10 per cent of the bales in a lot then sending a composite result to the lab. A best practice is to sort and stack hay by fields, grass-legume type and cutting. Each lot should be analyzed separately, or a composite created to reflect the feed-out strategy.

Other feeds, such as silages or haylage, should be tested similarly, with samples taken from the entire silo or stack, not just the surface. Differences in starch levels in corn silage are common within a single field, let alone between multiple fields or varieties.

Near infrared reflectance (NIR) spectroscopy, a rapid, reliable and low-cost computerized method, is one option to accurately analyze feed nutrient content. Another alternative is wet chemistry; it can take more time and cost more. Feed company reps, consultants and provincial extension agents can do feed testing, or there are a number of U.S.- and Canadian-based labs. These resources can also assist with ration planning.

When to test

Scothorn recommends testing hay in the fall when it is put up to ensure proper allocation based on quality. "For example, if a dairy farm has low-acid detergent fibre (ADF)/high-energy silage, but also an allotment of high-ADF/low-energy silage the better feed should be saved and allocated to lactating animals, whereas the high-ADF silage should be fed to dry cows or heifers."

Ration planning

Feed testing is key when planning rations. It allows the best allocation of forages for the various requirements of cattle based

on ages or production levels. Nutrient concentration can vary, especially in forages. Alfalfa hay, for example can have proteins from 10 to 25 per cent, whereas grass hay will contain between four and 18 per cent protein.

Once feed inventories are complete, estimate the feeding period and total number of animals to be fed to calculate rough estimates of what will be required to optimally feed the herd. Amounts required will also vary depending on weather conditions and potential waste.

A computerized ration balancing program allows for the evaluation of a variety of feed options, and in turn, optimal economic performance.

Regional differences

Scothorn does note that there are different considerations based on a farm's location. "Field sizes tend to differ in parts of the country," he explains. "For example, in the Prairies, fields vary from 160 to 640 acres. This will often have less variation if it makes up a pile of silage compared to other parts of the country where field size may only be 10 to 20 acres in size. Therefore, if the farm has several small fields, then more testing should be conducted in order to get an accurate representation of the feed."

BUILD your kids' math skills

To excel at farming, your children will need better math skills than they may be getting at school. Here's how to help

Despite the billions of dollars spent on education each year, student math test scores continue to fall in most of Canada. The alarming statistics don't bode well for the success of future generations. Like reading, math is a fundamental skill, necessary for success in life and work.

John Mighton who established JUMP Math, a tutoring program now being used by more than 170,000 students across Canada, the U.S. and other countries, insists that any child can learn math.

Contrary to the popular notion that only those who are gifted in math can do well in it, Mighton believes every student can do well if they are taught in the right way and if they are given the opportunity to practise in order to consolidate what they learn.

"Math is easier than it appears," Mighton says.

Mighton insists that kids are born with wonder and curiosity, and they enjoy solving problems. "They lose that wonder and curiosity... it's our job to keep it alive."

Mighton's own personal success in math came late in life. Although he loved math as a youngster, he was convinced by his teachers that he didn't have the necessary aptitude to have a successful career in math. So he pursued his love of theatre instead and eventually went on to win the Governor General's award for one of the plays he wrote.

Despite the award, it was difficult

to make a living writing plays so he always had a part-time job to keep himself afloat financially. It was after he convinced a woman to hire him as a part-time math tutor — despite not having a degree in math — that he rediscovered his love of math.

After years in the trenches, working with struggling students and finding ways to improve their math scores by leaps and bounds, Mighton founded the JUMP Math tutoring program. Although he had nearly failed calculus in his first year of university, Mighton later went on to get an advanced university degree in math and now is a math professor at the University of Toronto.

His struggles with math make him an ideal candidate to found a math tutoring program, says Mighton.

Mighton had several tutors working with him, and while he was very pleased with the progress his students were making, he realized it would be more efficient to develop resources for teachers to help them in the classroom.

Mighton sees many problems with the way math is being taught in schools. Too often kids believe early on that "they aren't good at math." It's a catch-22, he says. "The more a child falls behind, the more anxious they get, the worse they will do."

He adds, "If a teacher makes the students feel comfortable they will do better."

Part of the problem is that teachers don't actually know how to improve their teaching. "Teachers are my heroes but many admit they don't have enough training to teach math," asserts Mighton.

It's also difficult for teachers to help individual students when there are 25 or more students in a class. "Students need more guidance than they are getting in school," says Mighton.

Another part of the problem is that math is like a ladder; if you miss a step it's hard to go on to the next level, says Mighton. "Children stop paying attention because they don't think they can do it."

Kids also suffer from cognitive overload. "They are being asked to

learn too many things at once," says Mighton.

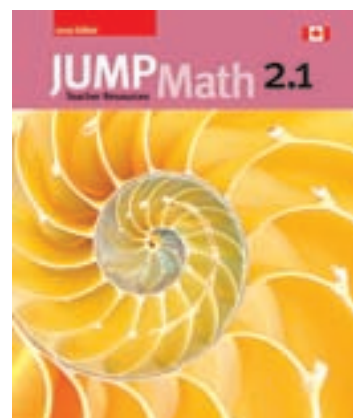
The JUMP Math program uses a system of guided discovery. It allows students to discover math concepts independently in manageable steps while the teacher provides sufficient guidance, examples, feedback and scaffolding for all students to work towards their full potential.

And it works. An independent study showed that students using the JUMP Math program progressed at twice the rate of the control group. JUMP Math is a complete package of resources intended to cover the curricula for Grade 1 through Grade 8.

Parents can also help their children develop fundamental math skills at home. Play board games or card games that involve numbers. Show how you use math skills when baking or calculating crop yields or production per cow. Practise counting and go through the times table at home to reinforce fundamental skills. (For more suggestions for what parents can do to help, see the sidebar.)

JUMP Math is a registered charity which operates as a social enterprise deriving most of its income from sales of print and digital program resources, and from teacher professional development. Income from sales is reinvested into the organization to further JUMP's mission of encouraging an understanding and love of math in students and educators.

By the way, Mighton was appointed an officer in the Order of Canada in 2010 for his work with JUMP Math. **CG**



Help your children develop fundamental math skills at home



John Mighton, PhD and founder of JUMP Math tutoring program, offers these at-home suggestions:

1. Play games involving numbers, i.e cribbage, Monopoly, and snakes and ladders.
2. Modify the "Go Fish" game. Instead of seeking out matching pairs, the goal is to try to get pairs that add to 10. For example, if a child has a one, they must ask for a nine to make a pair that adds to 10. Then change the target number to numbers other than 10. If needed, you can give the student a list of numbers that add to the target number.
3. Make it relevant to kids. Show kids where math can be used such as measuring, cooking, baking, building, and calculating speeds and distances travelled.
4. Help your kids develop a learner mindset. Reinforce that everyone can learn math.
5. Watch your words. Avoid saying, "I wasn't born with math ability."
6. Show them that perseverance and hard work pay off. Students who believe that success depends on innate ability do poorly compared to those who believe that success depends on effort.
7. Reinforce numeracy skills at home by practising multiplication times tables and counting. Research has shown that extensive practice is needed to master new skills and concepts. Students who haven't mastered basic number facts have trouble seeing patterns and making estimates and predictions.
8. Resources for parents and teachers for Grade 1 to Grade 8 are available on the JUMP Math website with a free account at [//jumpmath.org/jump/en/teachers_guides_intro](http://jumpmath.org/jump/en/teachers_guides_intro).

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A CASCADE you don't want

You may think of a cascade as a soothing brook bubbling over some rocks, but a prescription cascade is not as pleasant. The term refers to the treatment of the side-effects of one drug when a new second drug is prescribed. These side-effects can be mistakenly identified as a new condition, and of course this new condition needs a new drug, making a third drug necessary to counteract the side-effects of the second drug, and so on.

Just like dominoes, these prescriptions cascade, and the result may be a hospital visit or nursing home admission.

**Almost everyone
can benefit from
these measures to
avoid taking drugs
unnecessarily**

At highest risk are older individuals just because they often take more different medications and have more health conditions. Studies have reported that over half of women 65 and older take five or more different prescription medications; 12 per cent of this age group take nine or more.

How common are prescription cascades? No one really knows for sure because they remain unidentified, although you may actually hear news reports about them. For example, a 71-year-old Montreal woman was admitted to the hospital because of a fall. She had been

prescribed an antihypertensive for her high blood pressure; then two diuretics or water pills for edema that may have been caused by the antihypertensive; then a drug to combat her overactive bladder and increased trips to the bathroom; and then finally a drug to ease her dry mouth side-effects. All the medications contributed to her dizziness, thereby increasing her risk for the fall. Luckily, the hospital sorted out her medication regime and she returned home.

Often, when an individual is admitted to a nursing home, all their medications are stopped, then started again one by one. This isn't a cost-saving measure, but an attempt to ensure that the new resident is only taking what they need for their health, as opposed to something to treat a side-effect. As a result, dosages often differ after admission in the hope that side-effects will be reduced.

While the elderly are more often affected, anyone can be at risk especially if they take medications routinely, and almost everyone can benefit from these measures to avoid taking drugs unnecessarily. First, you want to understand exactly why you are taking the medication and what the potential side-effects could be. (Yes, that means you should read the prescription information that your pharmacist gives you!)

Whenever you have a new medication added to your regime, also have your doctor, nurse or pharmacist review your complete medication profile. You're looking for something that you may not need, something that may be causing you

side-effects, or something that may be just as effective in a lower dose. Never be afraid to ask if you could change a drug or its dose. If you see specialists besides your family doctor, make sure that everyone has a copy of your up-to-date medication list. (Don't forget to include herbal remedies, natural products, and non-prescription medications that you take on a regular basis.)

As you age, your body's ability to use medication changes and this may mean you need to lower a drug dose or even stop it completely.

A great resource is the Beers' Criteria. It lists drugs that older adults need to use with caution, together with the reasons why. It's available online and is easily understood.

One class of side-effects that are especially bothersome the older you get are the anticholinergic side-effects, such as dry mouth, difficulty urinating, constipation, blurred vision, drowsiness, or memory lapses. A wide variety of drugs has these side-effects, including antihistamines, muscle relaxants, overactive bladder drugs, antidepressants, antipsychotics, and drugs used to treat Parkinson's.

Ideally you want to take the most effective drugs in the lowest effective doses, especially if you are older. Remember too that knowledge is power when it comes to avoiding side-effects and the prescription cascade. **CG**



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

NEXT ISSUE

Allergies can be life threatening and range from latex gloves and dish detergent to bee and wasp stings. In the next column we'll look at just how common some of these allergies are and the use of epinephrine auto injectors for severe allergic reactions.

Harvest was generally going well at the Hanson farm. The weather was holding up, the equipment wasn't breaking down, the yields and quality coming off were a little better than they'd hoped, and Dale had settled into his role as a trucker. Dale was happy. Until Thursday.

It wasn't even lunchtime when things started to go wrong. Dale had been on the grid road in the tandem truck, halfway out to the canola field, when he'd spotted the moose in the neighbour's field. He pulled over and reached for his phone to turn on the camera.

The moose was somehow both majestic and awkward. Dale snapped photos as it casually cleared a fence, loped a few yards, then stopped to look at Dale as if to say, "How'd you like that?"

Dale was transfixed, zooming in for a closer shot before he heard the honking.

His father Ed had been shuffled out of the combine rotation this season, having not fully recovered from the stroke he'd had in the winter. When Dale's daughter-in-law Elaine climbed up into the cab on the first day of harvest, Ed didn't say anything; he just looked away. Ed was too depressed to crack jokes about the fact that women were running both of the Hansons' combines, since Dale's wife Donna had also taken on the job the year before, and proven to be excellent.

By Week 2, Ed was comfortable enough to make sarcastic comments about how tired he was getting of eating sandwiches for lunch and supper, but Elaine shut that down, telling Ed that the new babysitter had a Crock-Pot full of stew in the house.

Banished from the combine, Ed had taken on the role of gopher, driving to town for parts, moving trucks, and generally helping out anywhere he could. That's how it came to pass that on this Thursday

When life happens all around you

That's when you somehow end up getting in everybody's way

morning, he was in his red truck, delivering Elaine's lunch.

Ahead of him, he could see that Dale had pulled over on the road. Slowing down, he soon realized what Dale was up to, then muttered to himself. "Guy thinks he's David Suzuki. Sitting around enjoying the wildlife while the rest of us work."

But just when Ed pulled out to pass Dale, the Hansons' hired man, Mark, came looming up over the hill from the opposite direction. Mark was in the semi, taking the first load of canola back to the yard.

Dale turned off his camera. Next time, he'd wait for an approach.

A few hours later Dale was in trouble again.

He'd dumped the truck and was headed back to the field when he saw his grandson Connor jumping on the trampoline by the house. "Want to come to the field?" Dale asked. Connor whooped and yelled and climbed up into the truck before Dale had his window rolled back up.

The two had a great time, picking up a load of canola and looking

If you're not too busy taking photographs or kidnapping anybody," old Ed finally said, giving his head a shake, "can you give me a ride to the combine?"

Dale looked up from his phone screen in time to see it. Ed swung close to the path of the grain truck, while Mark edged over as much as he could, although it wasn't all that far, with so little time to plan and a full load.

The narrow grid could barely fit three vehicles. Mark's mirror passed right over Ed's truck.

Then, once Ed was safely past the grain truck, he pulled too quickly back to the right. Dale had about three seconds to picture Ed's truck rolling into the ditch. But Ed held it straight and got it back under control.

Ed honked angrily, and kept driving. Dale turned to see Mark steadying the load safely back in the centre, and keep driving toward the farm.

at bugs in the stubble. Dale took photos of Connor pretending to drive the truck while they waited for a full hopper. Back in the yard, Dale congratulated himself on his safety consciousness, instructing Connor to stay in the truck with his seatbelt buckled while Dale moved the auger and unloaded. "You don't want to lose any fingers, right Connor?" he'd said.

But Dale's great afternoon was the 14-year-old babysitter's worst nightmare.

Allie looked out the kitchen window a few minutes after Dale had picked up Connor. She was calm when there was no bouncing blond boy on the trampoline. She put a sweater on Connor's toddler sister,

CONTINUED ON PAGE 74



REFLECTIONS

BY ROD ANDREWS

RETIRED ANGLICAN BISHOP

still sleepy from her nap, and took Jenny outside. “I think your brother’s in the sandbox,” Allie said.

When Connor wasn’t in the sandbox, or in the treehouse, or riding his bike, Allie started to worry. When he wasn’t in the garden or the shop, panic set in. “Not the dugout. Not the dugout,” she thought to herself as she ran through the yard, dragging Jenny, both of them shouting Connor’s name.

Finally Allie sat down on the step, in tears, and got out her phone. She was about to dial 911, but just as she reached for her screen, the phone rang.

It was Elaine. “Thought I’d check on the kids,” Elaine said. Then she heard Allie sobbing. “What is it? What’s wrong?”

Elaine acted fast, immediately picking up the two-way radio in the combine cab. “Has anyone seen Connor?” she called out to everyone on the farm near a radio.

The seconds of silence terrified her, until a little boy’s voice came over the air. “Hi Mommy.” Connor was still in the cab of Dale’s truck, waiting patiently for his grandpa.

Not even the photos of a very cute Connor enjoying the afternoon in the field could save Dale from a severe lecture on the protocols of taking small children from their babysitters, especially on a farm during harvest. Once the babysitter had calmed down and Connor was enjoying a Freezie, Dale was sent back to work. On his own.

At the end of the day, Ed drove his red truck over to where Dale was unloading more canola. “If you’re not too busy taking pictures or kidnapping anybody, can you give me a ride to the combine? I’m going to bring it home. Donna can come back with you.”

Dale was busy doing the mental math, calculating how many bushels they’d collectively put in bins during the day. When they got to the field, he was still adding seven and carrying the four. At the corner of the field where Donna waited with the combine, Ed got out of the truck. Dale waved him off and turned around to drive home. He got to the corner before his phone rang.

“I could ride with your dad in the buddy seat, but I thought you might take me home,” Donna said.

Dale went back to pick up his wife.

“This has been a terrible day,” he told her. “One thing after another.”

Donna laughed. “Dale! Have you been watching the rest of the country? It’s raining every three hours in parts of Alberta. My cousin at Moose Jaw was hailed out. Jeff’s friend from Rosetown is using a mower to clean up his lentils! Meanwhile, things are going fine here! You’ve had time to look at the wildlife and enjoy your grandson! And now you’re driving me home. Like a date. After years of flooding and hail out here, it’s our turn. Let’s enjoy it.”

Dale grinned, and drove his wife back to the yard. **CG**

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

The engineer on the huge steam engine reaches up and pulls a rope. The whistle pierces the autumn air. It signals a horse-drawn rack to come alongside an antique threshing machine. A belt transfers energy from the tractor to the threshing machine. Pulleys turn. Screens move back and forth. Men in coveralls take up pitchforks and toss sheaves into the hungry machine.

We are gathered in a field near Borden, Sask. This year the event means more to me than re-enacting old-time threshing. I watch “my” first grain crop spill out of the threshing machine into a grain wagon.

In early June, Dave, an antique tractor buddy, volunteered me to seed the crop. “Rod and I will fire up our antique tractors and put the crop in.” Dave pulled a set of harrows. Volunteers hitched my 1945 John Deere AR to a 1943 Massey seed drill, filled the drill with seed grain, gave me a few instructions and sent me off.

My arms were sore by the end of the day. I learned why modern tractors have power steering. I was dusty and my clothes were greasy but I felt good about my efforts. Over the summer Dave and I drove out to check “our” crop. We even circled the field a few times in the air. Dave cautiously pointed out a small area I had missed. Errors are obvious from the cockpit of an airplane.

I have been around farms most of my life, but I had never seeded a crop.

Most of my seeding has been preaching. During my working years it was a weekly routine to prepare and deliver a sermon. As a bishop I served a cathedral and 53 parish churches so I delivered sermons in a variety of settings.

Each July, I am asked to lead an ecumenical worship service at an event called Pion Era at the Western Development Museum in Saskatoon. The service is outdoors unless it rains. I base my sermons on a fictional couple who comes west from England to homestead in the early 1900s.

This year museum staff challenged me to preach about leadership change on the family farm. I described how George, patriarch of the family, farms with his oldest son Alfred. George makes most of the farm decisions, controls the farm finances and is resistant to change. Alfred sees many opportunities to improve the farm. George is devastated when Alfred considers moving to another district to start his own farm. George goes to church and listens to a sermon about change and allowing people to determine their path in life. The sermon gives George encouragement to help Alfred set out on his own.

In August, I was invited to lead a Sunday service in Rosthern, Sask., while their regular minister was on vacation. “The Lutherans will join us because their pastor is also on vacation. Next Sunday we will attend their church.” The necessity of finding practical solutions draws people together.

Some sermons can be too long. John Clarke served as Anglican archbishop in northern Alberta for many years. His cathedral was in Peace River, a long way from his churches in Fort McMurray but close to a town called Grimshaw. One Sunday John began his sermon in Peace River by saying, “As I was driving home from Fort McMurray I was thinking about...” He preached for a long time on a variety of topics. After the service a farmer shook his hand and said, “John, next time start your drive in Grimshaw.”

Suggested Scripture: Psalm 126, Ecclesiastes 11:1-6

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

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