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*Practical production tips
for the prairie farmer*
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LAND MANAGEMENT

NEW TRIMBLE TECHNOLOGY HELPS MANAGE WATER

GPS-guided dozer blades can help contour fields prone to ponding and flooding



Don Neufeld has been using field contouring technology on his southwest Manitoba farm for the past couple of years.

By Lee Hart

After a widely-felt dry year like 2017, many western Canadian producers aren't likely concerned about too much moisture, but the fact is not all areas were dry last year. And the reality also is most producers can remember in the not too distant past growing seasons, that standing and ponded water on cropland was a concern.

Don Neufeld of southwest Manitoba and Randy Pidsadowski who farms north of Edmonton are familiar with cropland water issues. They are working with new technology from Trimble to help contour farmland so ponding water isn't an issue. They aren't draining swampland, but correcting slope or levelling out low spots with pull-type blades behind the tractor, aided by GPS guidance systems, and Trimble software. It is high-tech stuff, but both producers say it is quite easy to use, and as a real bonus, it does what it is supposed to do.

And as with most good things in life that aren't free, or necessarily cheap, they figure the \$45,000-plus cost for the Trimble technology is a good investment. They are able to farm more acres — in wet years they hopefully won't have 10 to 20 per cent of acres not seeded, or alternately they won't be spending \$200 per acre on inputs on areas of fields that later drown out.

And equipment efficiency is another benefit. If they can cover more acres in a day with machinery that has an operating value of about \$300 per hour, that's a savings too. Neufeld estimates on one half section where levelling and contouring elim-

PHOTO: COURTESY DON NEUFELD

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Planning for the year ahead



Leeann Minogue
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In February, Farm Credit Canada's VP and chief ag economist J.P. Gervais spoke on a webinar about the state of the farm economy. It was hard to find a bright spot.

While there are a lot of unknowns around factors like international trade agreements ("We have more questions than answers at this time," he said), Gervais said he thinks it's unrealistic to expect Canadian farm cash receipts to keep growing like they have over the past decade.

As we move into a period of lower cash receipts and higher interest rates, Gervais said farmers' first line of defence will be our working capital – that is, the cash we have available to use when we need it (the technical definition is current assets less current liabilities). Our second line of defence, he said, will be how solid our balance sheets are.

Is he expecting crop price increases? Not really. Any upside, he said, is "going to be limited if it comes at all in 2018, unless there's a disruption, weatherwise."

None of this is the sort of cheerful, happy news I'd like to hear from an ag economist as we prepare to shell out cash for farm inputs to grow another crop.

Gervais said we're going to need a shift in paradigm. With a low likelihood of higher commodity prices, growing our farm incomes will come from increasing volume, not increased prices. This reminded me of that business joke about the factory that was losing \$5 for every gadget it sold. "Don't worry," the boss said. "We'll make it up in volume." That sort of plan isn't what Gervais was advising for our farms, but his talk left me a little uneasy anyway.

MEANWHILE IN MANITOBA

Manitoba's farm commodity groups held their Annual General Meetings at CropConnect in Winnipeg. After complaining about dull winter meetings in my last column, I have to hand it to the Manitoba Oat Growers Association, that brought in a dynamic guest speaker, Colleen Dyck, to talk about how she set up her own business making GORP Clean Energy Bars with oats as an ingredient.

Amalgamation was on the agenda at the sunflower, flax, pulse and soybeans, wheat and barley and corn grower meetings. Representatives from these five organizations are making plans to amalgamate into one big organization with a 15-person board of directors, a professional staff and regional agronomy teams that can cover all of the involved commodities.

Most of the comments from the floor were positive. Having a wide range of crops included would allow the organization to work on research in areas that don't relate to one particular crop, like soil health, herbicide-tolerant weeds and crop rotations. There would be less administration, less risk of relying on just one or two staff members and more opportunity for staff growth. A bigger group may have a louder voice.

A farmer member of the National Sunflower Association raised the concern that smaller crops may fall through the cracks of a larger group. There may be a time when there are no sunflower growers on the amalgamated board of directors. Of course, this is already the case with small-acre pulse crops represented by the Manitoba Pulse & Soybean Growers Association, and things seem to be working well there. And, as was mentioned at the Wheat and Barley Growers Association meeting, they could always form subcommittees within the new organization.

Other farmers wondered if one big organization might see more requests for levy refunds – farmers who have never bothered requesting refunds from five different organizations may decide it's worth their while to bother asking for a bigger refund from just one group. However, the percentage of farmers asking for levy refunds has generally been consistent over time.

While farmers turned out for the Manitoba AGMs, there wasn't a long lineup of people looking to get elected to the boards. In fact, all of the members newly appointed to Manitoba commodity group boards in 2018 were acclaimed – there weren't enough interested volunteers to need elections. That's one problem that amalgamation could solve.

The next step for these five organizations will be regional meetings in the fall where members can review a detailed amalgamation plan. In early 2019, each of these five groups will hold a vote about amalgamation at their AGMs. If you farm in Manitoba, I hope you'll take time to go and make your opinion heard.

Leeann



PHOTO: LEEANN MINOGUE

Biting perch, biting wind

This looks like a beautiful day at Kenossee Lake in southeast Saskatchewan, but when it's -32 C, I don't find ice fishing nearly as much fun as Kim Rathwell did. The perch were biting, but so was the freezing wind. I'm sure the company that made that lawnchair didn't expect it to be used on a day like this!

AG SAFETY

Taking steps to prevent slips, trips and falls

"In theory the prevention of falls is simple. Nearly all falls result from conditions or practices whose hazard is obvious or readily discoverable. In practice, however, prevention is difficult because the detail involved is very great and it is necessary to improve the performance of practically everyone." —From Safety Subjects, U.S. Division of Labour Standards, 1944.

Falls are a serious concern for all seniors, including senior farmers. According to a report published by the Public Health Agency of Canada (PHAC) on Seniors' Falls in Canada, "falls remain the leading cause of injury-related hospitalizations among Canadian seniors." These falls and consequences from these falls involve impacts on physical and mental health and even finances.

The Seniors' Falls in Canada report says that there are complex risk factors that lead to falls and they can be categorized as biological, behavioural, environmental and social. "Each older person may face a unique combination of risk factors according to his or her life circumstances..." Preventing falls isn't as simple as telling someone to be careful; preventing falls requires attention to detail and commitment.

A Canadian Agricultural Injury Surveillance Program report says that between 1990-2000, falls made up a majority of hospitalized injuries among seniors aged 60+. These falls were from machines, from heights and on the same level.

Some of the factors that lead to falls are very complex. However, seniors can be proactive and prevent slips, trips and falls on the farm.

Some solutions that can be implemented on farms: First, address the environment. Environmental hazards can be everything from poor stair design to inadequate lighting to uneven surfaces. It can also be hazards like power cords, spills or a family pet that gets underfoot. Take a look around the farm and identify and address these hazards. It could be as simple as changing a light bulb. However, there are hazards that might be costly, time consuming or even impossible to address. This is where changing behaviour becomes more important.

Behaviours like wearing the appropriate footwear can help reduce the likelihood of a fall. Eating well and drinking enough water are also behaviours that can help prevent falls. Being hungry and thirsty make you weaker, and this can lead to a fall. Making sure that medications aren't interfering with your ability to function also help reduce falls. Talk to your doctor, explain your activities and work with your health-care professional to develop a plan to reduce the impact of medications on your daily activities. And very importantly, watch your risk-taking. The PHAC report says, "For an older person, behaviours such as climbing ladders... paying little attention to the surrounding environment... are all risk-taking behaviours that lead to falls and injuries."

Sometimes seniors take risks they know could lead to injuries. "But I used to do this all the time!" or, "I've done this before!" are comments that seniors make when asked why they take such risks. Biological changes are a part of the natural aging process. As we age, risk factors for falls like balance changes, chronic conditions and vision changes occur. Sometimes these risk factors can be managed, but sometimes, they cannot. A part of healthy aging is creating conditions so that people can make choices and behave in a way that prevents falls — this includes not taking risks that could lead to a fall, an injury, or even worse, death.

A slip, trip or fall can be prevented. It takes attention to detail and the commitment of everyone on the farm to prevent slips, trips, and falls. Environmental factors can be addressed through managing hazards. Biological factors can be addressed by adjusting behaviours and the environment. Remember, this isn't a "one-size-fits-all" solution. Each farm, each senior and each scenario is unique. Protect yourself, your farm and your legacy by taking steps to prevent slips, trips and falls.

Canadian Agricultural Safety Week (CASW) is a public awareness campaign focusing on the importance of farm safety. CASW takes place every year during the third week of March. In 2018, CASW takes place March 11 to 17. CASW is presented by Farm Credit Canada. For more information visit agsafetyweek.ca. **GN**

Canadian Agricultural Safety Association, visit www.casa-acsa.ca.

PHOTO CONTEST

Give us your best shot



This 2017 harvest photo was sent in by Walter Mandel from Glidden, Sask. Walter's comment was, "dry and dusty." Sure looks like it!

We're mailing Walter a cheque for \$25.

Send your best shot by email to leeann@fbcpublishing.com or through Twitter to @GrainMuse. Please send only one or two photos at a time, and also send along some information about where and when you took the photo, or even something about your farm. Photos with larger file sizes look better in the paper.

Q&A WITH CPS



Water Use Efficiency (WUE)

Q: While we have little control over available moisture for crop production, how can it impact the final result? What is meant by the term "Water Use Efficiency (WUE)"?

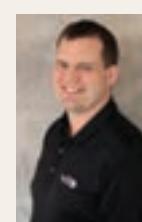
A: When we consider inputs that are essential for crop growth we tend to think of fertility. However, there is one ingredient that every single cropping system is absolutely dependent on — water.

Many factors such as soil texture, crop rotation, stubble management and even stand establishment can all impact how much water will be available to a crop in a given year. A focus on proper stand establishment and maintaining crop residue can help to reduce evaporative losses from the soil, thereby giving the crop more available water.

Water Use Efficiency (WUE) of a plant is defined as the amount of dry matter produced by a plant for a given amount of water. Crop species differ in their WUE, and the timing of moisture stress on a crop has a large impact on end yield. In general, the most crucial period of development where moisture stress can impact yield

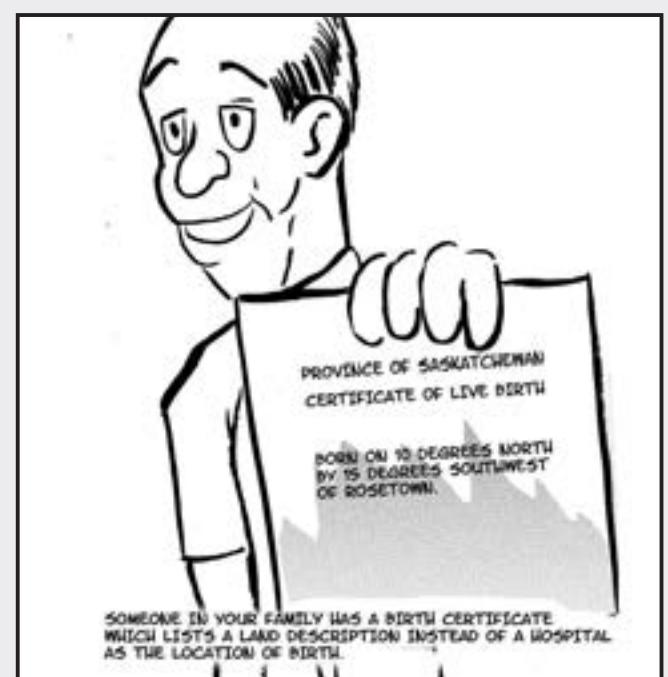
is during reproductive growth. In determinate crops such as wheat, barley and oats flowering occurs over a relatively short period of time, so a short duration of moisture stress can be very detrimental. Indeterminate crops such as canola or pulses flower over a longer period and may be able to recover some yield if favourable conditions return after short-term moisture stress.

In dryland farming operations water is an input that you can't control. While we can't control how much moisture will fall from the sky, there are strategies we can incorporate to maximize our production on a given amount of moisture. When in a moisture-deficit situation, adopt practices that limit potential evaporative or run-off losses where possible. In addition, crop growth factors such as proper nutrition must be optimal so that we make the most of each drop of water. **GN**



Scott Anderson is a manager of agronomic services with Crop Production Services in northwest Saskatchewan.

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LAND MANAGEMENT

► GPS-GUIDED from Page 1

inated standing water, it reduced all field operations — seeding, spraying, fertilizing, swathing and combining — by 27 to 30 hours — which is worth about \$9,000 in equipment time costs, in just one year. These producers are expecting a payback through increased productivity in one to three growing seasons.

DON NEUFELD

KOLA, MAN.

Don Neufeld has been using field contouring technology on his southwest Manitoba farm for the past couple of years and he still can't believe how easy and how "smart" the system is for removing those low-lying areas long prone to flooding and ponding water.

It is not quite as simple as plug in and go, but pretty close, says Neufeld who along with family members crops about 4,000 acres of grains, oilseed and pulse crops near Kola, Man. (that's a small community west of Virden along the Saskatchewan border — some of Neufeld's farmland is in Saskatchewan).

Learning the system involved a couple-hour tutorial with specialists with Rocky Mountain Equipment (RME) to demonstrate how the Trimble field-levelling technology worked. Basic steps involved mounting an RTK GPS tower (tripod) in the field, mounting a Trimble imaging Rover (sensor) on the top edge of the levelling tool (in this case a 24-foot pull dozer blade), programming software so over a given field, for example, he wanted to create eight inches of slope on a quarter section, select auto steer on the tractor and away you go.

"Until you actually see how it works, it is hard to believe how easily the system works," says Neufeld. "Basically you just program in the degree of slope you want and the system takes over adjusting the level of your blade as you go. And you end up with this nice level contoured surface you could drive over with a NAS-CAR."

Neufeld, working with Steve Gillis, a technology specialist with RME, was actually involved in a pilot demonstration of the Trimble land-levelling technology. He first treated a quarter section of cropland along Pipestone Creek on his Saskatchewan farmland. When using the land-levelling equipment he obtains the necessary permits required from provincial water management jurisdictions in Saskatchewan and Manitoba.

"This one quarter section had about 17 areas where water would pond," says Neufeld. "I've been farming in this area since I was 16. At one time, years ago we would get half an inch of rain over 12 hours, but in more recent years we are getting three inches in about 10 minutes. The land has a hard time handling that, and if you have any low areas the water just sits."

Neufeld programmed the Trimble technology to create eight inches of slope over a half-mile. He has some fields where there are just natural water runs where he wants to improve the contour. On this quarter section that sloped toward the river he worked over the full 160 acres. The



PHOTO: COURTESY RANDY PIDSADOWSKI

The Saskatchewan-built Bridgeview transformer blade has a rigid centre section but hydraulically controlled wings on each side.

Trimble Rover sensor was mounted on the top edge of a 24-foot-wide pull dozer, which he pulled with a Case IH Steiger 620 Quadtrac tractor. He made one pass over the area to be treated, with the dozer blade off the ground. That allows the Rover sensor to take a survey or a "read" of the field geography.

Neufeld enters the design or degree of slope he wants over the area on the in-cab Trimble monitor, and then presses Install. With the auto steer activated, once he puts the tractor in gear the technology did the rest. It took about 19 hours of field time to create the desired slope over the quarter section. And during the process, he does have the opportunity to make manual adjustments. Farming in an area where topsoil is a precious commodity he doesn't want cuts made too deep to expose the white clay underneath. In places he used the tractor bucket to scrape a bit of topsoil from other areas to make a fill.

"It is just amazing to see how and how well the system works," he says. "I could have gone out there with a blade myself and tried to fix up a few areas more or less by guesswork." Neufeld, who has been around the construction industry most of his life, says he thought he had a pretty good eye for reading levels, but the Trimble software had a much better read and accurately adjusted the operation of the blade making the necessary cuts and fills to create a proper contour or slope. "It probably reduced my time by 75 per cent if I had tried doing this just on my own, and it did a better job," he says.

On that quarter section, in particular, he says he eliminated the 17 low-lying areas where water would pond and now he's able to crop 156 out of 160 acres. Also, improving the contour doesn't mean water just rushes to the edge of the field and off into the river or neighbouring fields. "I believe creating that more even slope actually improves moisture conservation," says Neufeld. "Water has more chance to percolate into the soil over a wider area."

Neufeld says it is best to do leveling when ground conditions are dry. He's done about one-third of his own farm as well as rented acres and says it can be used on any project where he needs to create a grade — a roadway, or even creating three inches of slope over 3,000 feet of a grain bin yard, for example. He even did some grade work for a local airstrip. The

RANDY PIDSADOWSKI

PIBROCK, ALTA.

Cropland contouring won't change the weather, but Randy Pidsadowski is hoping improving natural watercourses on his Edmonton-area farm will allow him to crop more acres when he does catch a weather break.

He wasn't able to seed about 15 per cent of his grain and oilseed farm at Pibrock, north of Edmonton in 2017 due to wet conditions, and more rain during the growing season only allowed him to get about half of what he did get planted harvested.

So over the past fall of 2017 and early winter of 2018 he's spent about 100 hours so far with GPS and a Trimble land-levelling system improving water runs on his fields hoping to seed more acres this coming spring.

"Our farm has undulating geography," he says. "We have some hills and then some low areas and flat spots. We have some natural watercourse areas where water moves and collects so my hope with this equipment is to improve the contour through these areas so the water moves off the fields." Pidsadowski wants to improve natural water flow while minimizing soil disturbance.

Over the past five years he has been looking for and trying a few approaches to improve water flow off the fields. He has used a dozer blade on the tractor and borrowed scrapers but it was slow work and in some respects hit and miss whether he was creating the proper contours.

After talking to his local Rocky Mountain Equipment dealer and watching a demo on water management options, he opted for the Trimble land-leveling system. Along with that he also bought the second most important piece of the puzzle — a Bridgeview transformer blade.

The Saskatchewan-built land-leveeling tool has a rigid centre section but hydraulically controlled wings on each side, not only for easy transport, but they can also be adjusted to create more of a trough-type pattern when contouring areas of a field.

"I just wanted to improve the natural watercourses in the field," says Pidsadowski. "Depending on the field, a quarter could have anywhere from one to a dozen of these watercourses." In most cases improving the contour or flow involved scraping off about four to five inches of soil for 200 to 300 feet just so water can keep moving.

With support from RME, Pidsadowski set up an RTK GPS tower in a field and mounted the Trimble Rover sensor on the transformer blade. The monitor/controller for the system plugs into the quadtrac tractor console in the tractor cab. He made a driving pass over the area he wanted to contour so the Rover could make a survey. He entered the degree of slope or cut he wanted to make into the Trimble controller, pressed Install and was ready to go.

"A nice feature of the system too is that you can program it to make a four-inch cut, for example, but then scrape it taking off an inch at a time, just to see how it is looking," he says. "The system is very easy to work with, and very precise too."

Buying the equipment in late 2017, Pidsadowski had already used it on about a dozen fields by early 2018. He even found on early-winter days, with no snow on the ground, the equipment worked quite well even when the top layer of soil was frozen.

"I'm pretty happy with how the whole thing works," says Pidsadowski. "It's easy to use, very accurate and still leaves you in control of how much dirt you want to move. On our farm I am just trying to improve the natural movement of water and not trying to create something new and push water where it doesn't want to go."

Pidsadowski figures if the system helps him get 10 to 15 per cent more of his acres in production, the system will pay for itself in one to two seasons.

The Trimble land-levelling system is just one of the water management options that Rocky Mountain Equipment specialist Steve Gillis can suggest. For smaller land-leveeling and contouring projects they have tractors and blades for rent, Trimble systems are also available for rent, and for larger projects they also offer services that involve aerial geographic mapping of your farm with a drone equipped with LIDAR (an acronym for "Laser Imaging, Detection and Ranging"). It provides very detailed geographic information. Contact a local RME dealer or Gillis directly at 306-434-8509 for details. **GN**

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MEET THE NEIGHBOURS

MEET YOUR FARMING NEIGHBOURS

Vickie and Robbie Ripplinger are raising four girls on their family farm



Robbie and Vickie Ripplinger's four girls play a huge role in making the farm run smoothly.

By Christalee Froese

Every farm has its own story. No two farms (or farmers) are exactly alike. Everyone got started in a different way, and every farm has a different combination of family and hired staff who make the decisions and keep things running. But, in general, even after you consider all of the details, Prairie farmers are more alike than different.

This is the story of Vickie and Robbie Ripplinger and their four children.

Please introduce your farm family.

"Our family consists of my husband Robbie Ripplinger and myself, Vickie. We have four girls: Nevaeh, age 11; Kelsey, age eight; Avery, age six and Berkley, age three.

"With four outgoing girls, there's no shortage of future CEOs on our farm," laughs Vickie.

Where do you farm?

"We farm about 14 kilometres southwest of Montmartre, Sask. We are on the original Ripplinger family farm."

What do you grow?

"We grow mainly canola, wheat, durum, soybeans and green peas. We have grown coriander and lentils in the past. We also hay about 100 acres to feed our horses."

"We find that square-bale season builds good character for everyone," says Vickie, referring to the help the couple receives from their four daughters in order to feed the girls' horses.

How long have you been farming? "Neither one of us really ever left our farming roots. I grew up on a mixed farm at Odessa, about a 15-minute drive from here. After high school, I didn't last long off the farm and quickly returned to my calling.

"Robbie was off the farm for a few years after high school and soon was offered to farm in partnership with his dad. His parents moved to town in 2005 and that's

when we moved to the farm. We were married in 2007 and have been full-time farming since."

Who do you farm with?

"You're looking at our crew — it's Robbie and I — all hands on board. The girls honestly play a huge role too. They each have their responsibility to help make our busy seasons run smoothly.

"Robbie's dad passed away suddenly in 2011, leaving a huge void on the farm. We are grateful for the tools, resources and knowledge he passed on to us and we still to use his wisdom daily in our operation."

You could have done anything.

Why did you choose farming?

"Ultimately, the year we had to make the decision was in 2011. We both wanted to continue in farming even though we knew raising a family on the farm was going to come with much heartache, frustration and possibly even failure. But we also knew it could come with much happiness, reward, success and, most importantly, a lifestyle that was perfect for raising a family. We jumped in with both feet and bought the farm and equipment from Robbie's mom in 2011."

What farming season do you enjoy most?

"Robbie enjoys spring. He's a true farmer so he always looks forward to getting back to scratching the dirt. I enjoy harvest and always have. I love the feeling of taking the crop off and seeing the reward of pouring our heart and soul into the land throughout the year. The kids also seem to enjoy harvest as everyone loves combine rides and supper in the field. The older ones really like semi ride and are intrigued with all the new gadgets."

What's the farm implement you can't live without?

"We would both agree that our John Deere high-clearance, 120-foot-boom sprayer is our favourite piece of machinery. We have used it in all four seasons. We use it in spring, summer and fall for burn-down and

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FMC

desiccants, but most recently have been using it to apply fertilizer after harvest for the following crop year. Taking care of the fertilizing in November or December means a greater distance to seeding time in spring and not having to stop as often to fill."

What good decision have you made that turned out well?

"Probably when we purchased a zero-till seeder in 2014. We were seeding with two older and smaller seeders prior to this, which meant two tractors and more labour. We needed to be able to have one person seeding and the other spraying, rolling and keeping the seed-tender trucks full, so we went to one seeder with two tanks and one tractor. The time savings has allowed us to justify the upgrade."

Have you made a decision on the farm that you regret?

"There hasn't been anything that we really regret, but when we look back, maybe we could have bought land a little more aggressively when we started out and the prices were cheaper."

What do you see as the biggest challenge over the next five to 10 years?

"There are many concerns and challengers that we face. Some more important ones that stand out are grain logistics, the passing on of the family farm to the next generation as well as educating the public and keeping an open discussion between farmer and consumer."

What do you see as the biggest opportunity over the next five to 10 years?

"We look forward to sharing the farm with all of our children. It's already exciting to hear them making plans for after high school. We are also excited to try new farming practices and to try innovations that may ease the workload. One thing we've tried is a mapping system for our sprayer, seeder and combine. It's beneficial in the off-season to be able to make use of that information and make better decisions because of it."

What do you like to do for fun or to relax?

"We generally sneak away for two weeks in July to our northern oasis to enjoy some family time fishing and quadding. We also like hunting, snowmobiling and skiing when time allows."

Grainews

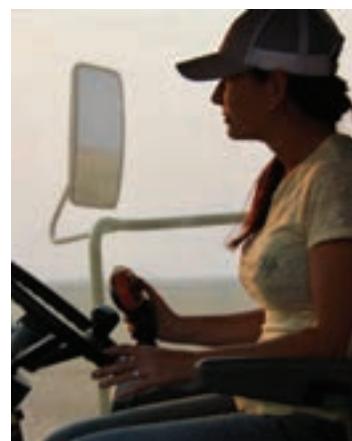
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"The kids and I really enjoy 'horsing around!' All four of the girls are involved in 4-H and barrel racing. They each have their own horse and have learned what it takes to look after them. We try to do as much together as a family as time just seems to be flying by. Our passion is here and we hope our kids will continue on the same journey." GN

Christalee Froese writes from Montemarte, Sask.



Vickie Ripplinger loves the feeling of taking the crop off and seeing the reward of pouring her heart and soul into the land throughout the year.



All four of the Ripplinger girls are involved in 4-H and barrel racing. They each have their own horse and have learned what it takes to look after them.

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Crop advisor casebook

What's causing the extreme stem discolouration in this wheat crop?

By Alaina Stoesz

While checking some crops, Ron, a Saskatchewan producer, was alarmed to find his wheat crop's plant stems had turned a vivid reddish-purple colour within a very short period of time.

It was August 9 when Ron asked me to investigate the cause of the stems' colour change. Ron farms 3,000 acres of wheat, canola, barley and peas, and runs a small cow-calf operation, west of Hague, Sask. I had just visited this field a couple of days ago. The plant stems, at that time, were a normal straw colour.

From the road, the crop had a purplish tinge to it. A closer examination revealed the plant stems were extremely reddish-purple in colour. However, there were some stems that were half straw-coloured and half reddish-purple.

Although they appeared consistently throughout the field, the symptoms were more pronounced in drier areas, such as hilltops.

Only the stems appeared to be affected; the stem joints remained a green colour, and the heads and leaves also looked normal.

"Do you think it could be a phosphorus or potassium deficiency?" asked Ron.

A nutrient deficiency or imbalance generally shows up earlier in a wheat crop, at the two- to four-leaf stages, rather than at the beginning of maturity. Also, the reddish-pur-



From the road, the crop had a purplish tinge to it. Although they appeared consistently throughout the field, the symptoms were more pronounced in drier areas, such as hilltops.

ple colour would be evenly distributed on the plant stem, and not on half of it.

In addition, the leaves and/or leaf tips would exhibit symptoms if the cause was a nutrient deficiency or imbalance. Soil test results also indicated phosphorus and potassium levels were adequate for normal growth and development.

"Could I have made a mistake with the herbicide application timing?" Ron asked.

Herbicide injury due to incorrect timing was improbable because the wheat heads would be kinked by the specific herbicide group that was sprayed. In addition, I recom-

mended the herbicide application at the five-leaf stage, which was well within the timeframe for the crop.

Ron asked me if the symptoms could've been caused by a root disease. After digging up some plants we determined the roots were normal and healthy, and there were no lesions or discolouration at the root crowns.

If not a nutrient deficiency, herbicide injury or root disease, what was causing the reddish-purple stem colouring?

What is causing Ron's wheat crop to develop reddish-purple stems? If you think you know, send your



Only the stems appeared to be affected; the stem joints remained a green colour, and the heads and leaves also looked normal.



Alaina Stoesz works for Richardson Pioneer Ltd. at Carlton Crossing, Saskatoon, Sask.

Casebook winner

Our winner for this issue of Casebook is Shelby Patey. Shelby lives in Crossfield, Alta., and works as an agronomist for Richardson Pioneer in Three Hills. Thanks for entering Shelby! We're sending you a cap and a one-year subscription to *Grainews*.

You could be a winner too. If you know the answer to this issue of Casebook, email me at Leeann@fbcpublishing.com.

Leeann Minogue

CROP ADVISOR'S SOLUTION

Healthy soil is productive soil

By Dayna Elliott

Last July, large, irregular patches of unhealthy plants developed in Ted's canola crop. Ted is a Saskatchewan producer who owns a 3,000-acre mixed grain farm near Elrose. In addition, all canola plants across the field were suffering from moisture stress. These plants exhibited typical drought symptoms, such as pale colouring, shorter stature, minimal plant branching, wilting leaves and trace pod abortion throughout.

However, the plants located outside the irregular patches were healthier than the ones inside the patches. Their flowers were still yellow in colour and the stems and pods were pale green. There was a small amount of purpling on the plants' stems.

As well as drought symptoms, the plants located inside the patches had additional injury signs, such as purpling stems, leaves and pods, cupping leaves and dried up or aborted flowers. Also, the plants weren't branching, and the main stems were much smaller than the healthier-looking plants located outside the patches. There was more happening in this field than moisture stress.

Interestingly, the pastureland located west of this canola field also had large, irregular patches. Inside those patches, the grasses were shorter in stature and had already set seed. Outside the patches, the plants looked healthy and were still in the vegetative stage.

What piqued my interest in the pastureland was a similar plant response and maturity stage within the patches. Also, the pastureland's damaged areas began within the line of site of the canola field's damaged areas.

The soil characteristics of both fields appeared to be similar within and without the patches, which created similar responses in the plants the soil was supporting.

Using satellite imagery allowed me to compare the damaged zones of the canola field with that of the pastureland. GPS data also confirmed my observations on the ground matched those of the aerial maps. The large, irregular patches in Ted's fields were a result of poor soil quality caused by a specific event.

Several years ago, heavy winds blew topsoil off bare areas of Ted's fields. The winds deposited topsoil in some areas while removing it from others. This event played a central role in decreasing the land's soil quality.

The soil located in the damaged areas had low topsoil and organic matter levels, and high compaction; whereas, the soil located outside the patches was richer in organic matter, and had the soil characteristics necessary for better root growth, which permitted access to nutrients and moisture needed for proper plant development.

When I tried to dig into the soil located inside the fields' patches to examine the plants' roots, I couldn't push the shovel into the ground, no matter how hard I tried. The main roots were barely submerged one or two inches below the soil surface, and had grown laterally. Meanwhile, the main roots of plants located outside the damaged areas were three to four inches in length and had secondary branches throughout the soil profile.

Thus, the leaf, stem and pod purpling was caused by phosphorus and sulphur nutrient deficiencies because the plants were moisture stressed and had inadequate root establishment due to poor soil quality.

There was nothing Ted could do that season to help his crop. At harvest, the yield was 25 bushels per acre in the unaffected areas and 15 bushels per acre in the damaged patches. Because the issue stemmed from

soil characteristics and environmental events, yield improvement in these fields will involve long-term commitment to soil, fertility and plant management to increase soil quality.

It's recommended that producers who have soil quality issues manage the stubble in their fields, and always work toward increasing the organic matter on their land where soils are lighter. Organic matter will feed nitrogen back into the soil system. For a healthy, balanced soil system, manage inputs and removals — healthy soil is productive soil.

Additionally, seeding earlier in the spring would allow lighter soils to take advantage of early-season moisture to establish deeper roots.

Finally, the problems producers face in the field aren't always caused by their actions. It is important to examine past applications and field histories. Producers should look at the big picture, as solutions to agronomic issues may not be where they think they'll find them. **GN**

Dayna Elliott, CCA, PAg, works for Richardson Pioneer Ltd. in Elrose, Sask.

WEED CONTROL

In-crop mechanical weed control

Controlling weeds mechanically can help overcome Group 2 resistant weeds in pulses

By Lisa Guenther

Group 2 resistant weeds are an annual problem for lentil producers. But there are a few outside-the-box methods that may give farmers better control than herbicide alone.

University of Saskatchewan grad student Alex Alba led a study looking at three in-crop mechanical weed control methods, including:

1. Tine harrows;
2. Rotary hoe; and,
3. Inter-row tillage.

Alba used each weed control method alone, and in combination with the others. In an interview at Saskatoon's CropSphere, Steve Shirtliffe, University of Saskatchewan researcher, said each one has its own niche.

"The rotary hoe works well controlling weeds when they're very tiny – just emerging or just before emergence," Shirtliffe said.

The harrows are used a bit later in the spring. "It can be a good weed control tool but it can also hurt the crop a lot."

And finally, once farmers can see the crop rows, they can till between the rows. Shirtliffe added that farmers till between rows as narrow as 7.5 inches.

In the end, all of three methods "did a decent job of weed control," said Shirtliffe. "We were getting at least a 50 per cent weed biomass reduction by using anything."

Shirtliffe said that weather would be a big factor on farms. However, Alba's study found that an early rotary hoeing followed by inter-row tillage later in the year consistently worked well, controlling upwards of 75 per cent of the weeds.

In another study, researchers looked at using the rotary hoe with Edge to control kochia. Edge is also known as ethalflurulin, and is a Group 3.

Shirtliffe cautioned that they only had one site year of data for that study. But that limited data did show that fall-applied Edge can work on kochia, as can the rotary hoe.

Researchers are now starting to extend that mechanical weed control work beyond pulses. They are also

looking at how to control weed seeds as more of a remedial action. For example, researchers are looking at clipping the flowers and new pods of mustard and other weeds that top the lentil crop.

"And we've found that it can be quite effective in reducing weed seed production," said Shirtliffe, adding that they only have one year of data so far.

Researchers are also using an implement that wipes herbicide

onto tall weeds. So far, results have been mixed, and it's too early to make recommendations to producers, Shirtliffe said.

However, some products don't work at all, he said, because they hurt the crop. Others "seem to work okay, but we need more research on them to find out," said Shirtliffe. GN

Lisa Guenther is field editor for Grainews based at Livelong, Sask. Follow her on Twitter @LtoG.

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New phosphorus research on the way

Canola removes more phosphorus from the ground than the recommended safe rate

By Lisa Guenther

Farmers face a fertilizer dilemma each spring. The current safe rate for phosphorus in canola is 17 to 22 kilograms per hectare (15.2 to 19.6 pounds per acre). With good moisture, the recommendation goes up to 28 kg/ha (or 25.0 lb./ac.).

But canola typically removes more phosphorus than the recommended safe rate.

Saskatchewan researchers are trying to shed some light on how farmers can meet their canola's phosphorus requirements without damaging plant stands.

Jessica Weber, general manager of the Western Applied Research Corporation, presented preliminary research at Crop Production Week in Saskatoon in January. The research focuses on three questions:

1. Are the current recommendations for sulphur and phosphorous ade-

quate given the yields of new canola varieties?

2. Are there any differences between side-banding and seed-placing fertilizer? Is side-banding phosphorus effective? Is it site-dependent?

3. Are current fertilizer recommendations adequate given today's equipment (knife openers and hoe openers)?

Researchers are running replicated trials at AgriARM sites Scott, Indian

Head, and Melfort, Sask. Fertilizer was both side-banded and seed-placed. Treatments consisted of phosphate only, and phosphate plus sulphate. Researchers applied P₂O₅ at rates of 0, 20, 40, 60 and 80 kg/ha. Sulphate was applied at 15 kg/ha.

Weber and her colleagues collected data on plant density, biomass, days to maturity, yield, green seed, and thousand kernel weight. Weber presented results from two years, but there is one year left in the study.

THE RESULTS SO FAR

In an interview following her presentation, Weber said the results are quite site-dependant. Researchers are interested in looking deeper for trends throughout the province, she added.

At Scott, sulphate applied above the recommended rate created negative effects. But seed placement and fertilizer rate interacted as well.

"So side-banding with those high rates of phosphorus was quite advantageous compared to seed-placed, particularly when you added phosphorus with your ammonium sulphate," said Weber.

Meanwhile, at Indian Head, rate alone had the biggest effect, which was most apparent early in the season. But, Weber said, green seed and yield weren't really affected.

Rates above 40 kg per ha of P₂O₅ produced the greatest yields at Melfort, regardless of placement

Rates above 40 kg per ha of P₂O₅ produced the greatest yields at Melfort, regardless of placement. Treatments with only P₂O₅ did better than treatments with sulphate.

Differences in the soil played a large role, said Weber. Scott has coarse-textured soil, with lots of sandy loam, and low organic matter, compared to Melfort and Indian Head. Indian Head and Melfort also have higher clay content, she added.

The preliminary results show they might need to re-evaluate recommendations, Weber said. Depending on what 2018's trials yield, Weber said they might want to expand to more sites through Saskatchewan, and into Alberta. If that's the case, Weber hopes to see more funding and more interest from collaborators.

In the meantime, what do farmers need to think about when applying phosphate? Weber had three points.

1. Consider the implement. "If you're using a hoe or a knife, or if you're still using that disc drill."
2. Location. Consider the organic matter and clay content of soil. If you're dealing with soil more like Scott, you might see benefits from side-banding.
3. Be careful not to add ammonium sulphate. "We're finding that any addition of that is quite negative in most soils," said Weber. **GN**

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Lisa Guenther is field editor for Grainews based at Livelong, Sask. Follow her on Twitter @LtoG.

INSECT CONTROL

Wireworm populations on the rise

Wireworms are a growing concern for the potato industry. Creative controls are needed

By Julianne Isaacs

Wireworm populations appear to be on the rise in Western Canada.

Wireworm, which is the larval stage of the adult click beetle, affects many crops, including cereals and pulses, but they are particularly damaging to potatoes. Holes created by wireworms can render tubers unmarketable and serve as points of entry for potato pathogens.

This pest has remarkable staying power in fields due to its long life cycle — up to five years, longer than most producers' rotations — and ability to thrive on so many hosts.

And it's hard to pin down due to the sheer number of its species across Canada — around 30, each of which might behave differently.

Few chemical controls are available across Canada. Following the deregistration of lindane several years ago, many producers turned to neonicotinoid seed treatments. But neonics don't kill wireworms, they just keep them from feeding on plants for a time, says John Gavlovski, Manitoba's provincial entomologist, meaning they can return and feed on tubers later in the growing season.

And as neonicotinoids are under review with Canada's Pest Management Regulatory Agency, this option might soon be taken off the table.

One option for control is Thimet 200G, an organophosphate systemic insecticide. But Thimet 200G is restricted, meaning producers who want to use it have to complete a certification and licensing requirement, says Vikram Bisht, Manitoba's potato and horticultural crops pathologist. Manitoba producers have all but ceased using it, he says.

"The processing industry here is having increasing concerns about wireworm," says Bisht.

Currently no large-scale monitoring projects are planned in Manitoba but Bisht says it's on industry's radar. "Unlike PEI, we don't have those high populations, but it's still a growing concern to many of our growers and the processing industry," he says.

Gavlovski says a multi-year project out of Brandon University is set to begin in 2018 to measure the effectiveness of tests used for monitoring wireworm populations.

CREATIVE CONTROLS

With the lack of available chemical controls, some Canadian potato growers are turning to innovative mechanical solutions.

Christine Noronha, an Agriculture and Agri-Food Canada researcher based in Charlottetown, PEI, says many eastern Canadian producers aren't using any chemical controls for wireworm.

"I don't know if it's on the increase or not in Nova Scotia and New Brunswick, but more people are calling to ask what to do about it," she says. "It creeps up on producers because the population increases exponentially,

because the pest has a five-year life cycle. That's what growers are seeing in Nova Scotia and New Brunswick. But it's not at the levels we have here on the island."

Noronha invented the Noronha Elaterid Light Trap (NELT), a pitfall trap that uses light to attract male and female click beetles. Originally designed as a monitoring tool, the trap can also be used for population control.

"In PEI we're catching a lot of females using the trap," says Noronha. "If you catch them early enough you take away egg-laying females. So over time you can reduce the load of females in fields. I'm trying to figure out a way that growers can use it because you cannot mass trap in fields."

Last year the trap was commercialized by a company called Growing Forward Solutions on PEI. Producers

anywhere in Canada can order their own. It hasn't yet been tested on western Canadian click beetle species, but Noronha says she invites producers to collaborate with her on testing the trap.

"I'm more than willing to go out there, show it to them and put it out in their fields. They just have to call me," she says.

Noronha recommends a four-point strategy for wireworm control:

1. Monitoring for adults and larvae to get a sense of population levels;
2. Using a good rotation before potatoes;
3. Trapping every year regardless of crops planted; and,
4. Using insecticide during potato years. **GN**

Julianne Isaacs is a Winnipeg-based freelance writer and editor. Contact her at julianne.isaacs@gmail.com.

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AAFC projects focus on aphanomyces root rot

Good management practices still the best way to control aphanomyces in the field

By Melanie Epp

While improving management practices and reducing risk factors are still the best ways to avoid root rot in pulse crops, Agriculture and Agri-Food Canada (AAFC) researchers hope to find other tools. Syama Chatterton, an AAFC research scientist whose areas of expertise include diseases in pulse crops and soil borne diseases, is working on research projects that focus on minimizing root rot.

Currently, Chatterton has a number of research projects in the works, spanning from lab-based, fundamental research to field trials. In terms of field trials, she is looking at how the most common cultivars perform in high-risk fields. For this project, researchers chose 20 of the most prominently grown cultivars to see if some could stand up to root rot better than others.

"What we found is that all cultivars are equally susceptible to aphanomyces, but some of them still yielded better than others," she said. "It tends to be the newer cultivars that have just been released that probably have a higher yield potential anyway."

In another trial, Chatterton and her colleagues assessed seed treatments to see if available treatments have the ability to provide long-term protection.

"What we saw is that they do what the label claims, for the most part," she said. "They give you early-season suppression or early-season control. But we didn't see that that lent to any long-term growing season benefits."

COVER CROPS

Chatterton is also involved in a cover crop project. The idea is that brassica cover crops, as they break down, produce bio-fumigants that may have the potential to speed up decay of the resting spores in the soil.



Aphanomyces disease symptoms in the field.

PHOTOS: SYAMA CHATTERTON, AAFC

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There is good evidence to show that mustards produce bio-fumigants, but Chatterton and her team want to know if it's cost-effective and feasible for growers. More importantly, they want to make sure that it will fit with their practices.

"It's more of a feasibility research project," she said. "We just want to look and see if it has potential for a solution."

The project started in 2017, but already the researchers have run into a few snags. Typically, peas come off pretty early, leaving room for a cover crop to establish before winterkill sets in.

"This year was not a great year because we planted some of our mustard species in August, but we didn't get any rain until it snowed in October," she said. "So unfortunately, not the best year to embark on that research."

"We ended up with really tiny plants, then it snowed and the ground froze," she continued. "I'm not sure that anything's going to survive that."

Chatterton plans to try again in the spring, planting the peas into a living brassica cover crop, but says the crop's success will depend on spring moisture levels.

ROTATIONS

In the future, Chatterton would like to look more closely at the impact of rotations. Until now, it has been assumed that the more peas and lentils you have in a rotation, the higher the likelihood of disease. "But it's never actually been studied, and there are some questions coming up," said Chatterton.

Growers want to know, for instance, how often you need to have peas and lentils in the rotation. They'd also like to know what happens if you replace peas and lentils with a non-host pulse crop, like fava beans or soybeans. Will that help to reduce the inoculant potential? Or will they still act as reservoirs for inoculant? Soybeans, explained Chatterton, are resistant to aphanomyces to the point where they would be considered a non-host. Information on fava beans, however, is somewhat conflicting.

"The ones we've tested seem to be very resistant," said Chatterton. "But there's older literature that says fava beans are susceptible. I suspect it has to do with different cultivars. There have been a lot of changes in fava bean cultivars over the past 10 years or so."



On the left is a fusarium infection, starting from the point of seed attachment. The plants on the right are infected with aphanomyces root rot. There is complete root system browning and decay of the outer root layer.



From left to right: Control pea, aphanomyces on pea, control lentil, aphanomyces on lentil.

Chickpea also shows resistance to aphanomyces. "We will maybe see a little bit of infection, but we don't see new spores being produced in the root," she said. "So that would say that it wouldn't be increasing if you grow chickpea instead of a pea, but we want to verify that in the field."

In the meantime, University of Saskatchewan breeders are working on new resistant cultivars. Some partially resistant germplasm lines

have been jointly released by the U.S. and France and are now available for breeding programs. Researchers are trying to use rapid generation breeding to incorporate partial resistance into Canadian-adapted cultivars quickly and efficiently.

Breeding does take a while, said Chatterton, so it could be another five to six years before new cultivars are available to growers. And, even when these varieties do become

available they will only offer partial, not full resistance. Improving management practices and reducing risk factors is still the best way to avoid root rot.

"If partially resistant varieties become available they will have to be managed quite closely, so that we don't overcome that resistance that we have," Chatterton concluded. **GN**

Melanie Epp is a freelance farm writer.

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Biostimulant market taking off

The biostimulant market is growing fast. Find out what biostimulants do for plants

By Angela Lovell

Five or six years ago few people had heard of biostimulants, which were only being used in some high-value, horticultural crops. Today, the biostimulant market is one of the fastest growing, global agri-input sectors, increasing by 12 to 15 per cent annually.

Biostimulants is a rapidly growing field right now in agriculture, largely because these molecules or compounds or organisms that are naturally found within the agro-ecological system appear to have lots of benefits for plant health," says Mark Belmonte, who is doing genetic research into biostimulants at the University of Manitoba.

Biostimulants are natural

micro-organisms and nutrients derived from all kinds of different natural substances. They stimulate plants' natural biological processes to help them cope with stress and allow them to reach their maximum genetic potential in terms of yield and quality.

HELPING PLANTS COPE WITH STRESS

Stress is the number one cause of

yield loss. "When you put the seed in the ground, whether it's a canola, wheat or soybean seed you are currently only extracting about 10 to 15 per cent of the potential yield," says Kip Workman, sales and technical manager for Stoller Enterprises, an international manufacturer and distributor of biostimulant products with an office in Regina, Sask. "As the stresses start to eat away at that seed, whether

it's cold soils or not enough light, or not enough water the yield potential for the seed keeps going down. What we're trying to do with biostimulants is extract more of that potential out of the seed by reducing the effects of the stresses that it's under."

The term "biostimulant" is fairly new, although these types of natural inputs have been used for hundreds of years by farmers and horticulturalists. We're just beginning to understand their basic mechanisms. Biostimulants are a huge area of research, says Balakrishnan Prithiviraj, associate professor at the Department of Environmental Sciences at Dalhousie University.

Plants have hormones, just like humans

"A biostimulant changes the physiology of the plant in a way that makes it more resilient to abiotic stresses such as water, heat, drought and salinity," says Prithiviraj. "It acts as a priming agent for the plant so that when there's stress, the plant that is treated with the biostimulant is much more responsive and tolerant to these stresses. It's a complex product and I think that is a benefit because it is able to elicit quite a number of different properties in the plant that makes it more useful for the plant, rather than having one chemical which affects only a specific pathway and is thereby effective only against a specific stress or property."

HOW BIOSTIMULANTS WORK
Belmonte and his team at the University of Manitoba are doing genetic research in canola using natural, plant-derived biostimulants, with the aim of determining what mode of action they have. "By understanding the mode of action of these biostimulants, we can better understand how the plant is responding to these additives," says Belmonte.

They've found that applying biostimulants on canola increases growth in the root system and provides increased plant vigour, so plants are much better able to withstand adverse environmental conditions and disease.

PLANTS HAVE HORMONES TOO

Workman had never heard anything about plant hormones when he went through the agriculture program at university. It wasn't until he began marketing biostimulants that he realised there is a huge lack of information about this area of plant science.

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Plants have hormones just like humans, and in times of stress they produce stress hormones instead of growth hormones. Stoller's flagship biostimulant product, Bio-Forge tricks the plant into thinking it's not stressed, says Workman. "If the plant believes it's not stressed, it goes back to producing growth hormones," he says. "Then we have a product called Stimulate, which is a combination of auxin, cytokinin and gibberellin acid. Those are the three main plant growth hormones, so that's a supplementation of growth hormones the plant would be producing on its own already. It's essentially the equivalent to human growth hormones for plants."

Belmonte's team has also discovered that certain biostimulants increase plants' photosynthetic capacity. "Depending on the biostimulant, we see greener, darker plants, which are more vibrant," says Belmonte. "Not only were the genes that are associated with photosynthesis increased within the leaves, but we also saw a corresponding increase in photosynthetic rates, which, of course, leads to increased plant production."

There are many categories of biostimulants, including metabolites and microbes, botanical extracts from plants like seaweed, amino acids, proteins and cytokinins, which makes them hard to regulate. Because there is concern about the flood of products claim to be biostimulants, international regulators, including the U.S. Environmental Protection Agency are consulting with scientists around the world to try and draw up legislation to regulate the registration of biostimulants. It's not an easy task. "Regulators will have a hard time because of the complex nature of the product," says Prithiviraj. "Biostimulants have thousands of different compounds in them and it becomes difficult to quantify those chemicals."

WHAT'S THE PRICE?

There is a perception that biostimulants are expensive, but Workman says an application of Bio-Forge, depending on the commodity, is \$2 to \$5 an acre. He recommends that growers begin with a seed treatment. "One of the main stresses that we have in Western Canada is at seeding. Either it's too hot, too dry, too wet or too cold, so Bio-Forge applied on the seed helps to help mitigate some of those early season stresses and help that plant get up out of the ground quicker and develop a root system quicker," says Workman. "That's where we see a lot of the best benefits because it widens yield potential early on. The quicker we can get that plant up and out of the ground, the sooner it'll start producing its own energy so there's more yield potential there if we can get a healthy start for those plants."

Biostimulants can also be foliar applied, can be mixed in the tank with herbicides or fungicides so the grower can make one pass over the field, and are designed to be complimentary to these traditional inputs and help them work better.

The market for biostimulants is growing fast, and more and more farmers are using them on field crops such as wheat, barley, canola, soybeans and corn. "Biostimulants hold great promise from the results that we have seen with increased germination and crop establishment in wheat and barley," says Prithiviraj, who has done research using a biostimulant derived from seaweed extract in cereals and canola. "What we discovered was that the biostimulant increases the amylase production (required for germination) in the seeds and metabolizes starch much faster leading to faster establishment and healthy seedlings."

THE PROOF IS IN THE GROUND

Because there hasn't been a lot of information or research until recently about plant hormones or how biostimulants work, Workman says a huge part of his job is educating growers. That involves a lot of patience because biostimulants aren't a one-shot wonder solution to increase crop yields, but rather a long-term program that shows results over time.

"A single application of 250 ml/acre is not going to save your crop and give you the crop of a lifetime. It's a systems approach program," says Workman. "It's not a standard program for each crop. It's

not going to be a standard year, the weather is different each year and from field to field. We have to make recommendations based on what's happening in that field at that time and it takes a long time to educate dealers and growers on the technology."

Workman says the easiest way to prove to growers that biostimulants work is to have them try it on plants that have physical damage from something like hail or herbicide injury. "If you can smell something like fresh cut grass after hail, that is the stress hormone ethylene escaping from the plant," says Workman. "When we spray the Bio-Forge on you can

start to see the repair the next day. The plant will start setting new buds and sending out new branches and that's what convinces growers."

OPTIONS FOR GROWERS

"Biostimulants do not replace other inputs, but they make them work better," says Prithiviraj. "They are like an insurance policy. When there's a stress, plants that are not treated with biostimulants are going to feel the brunt, but those that are treated — they're going to be safer and pro-

See BIOSTIMULANT on page 16 ▶

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► BIOSTIMULANT from Page 15

duce better yields. Heat stress is a big issue right now across the Prairie provinces and biostimulants can be a game changer. I see great potential and believe these products are going to have a greater impact not only on high-

value crops but also in field crops in the near future."

Getting a better understanding of the different biological process than biostimulants can affect in plants will eventually provide more options for growers in terms of the formulations of biostimulants and the prescriptions for using them.

"I think we're going to be able to make much better predictions as to when these products need to be applied, how much of the product should be applied, and what the expected results would be on the cropping system," says Belmonte. "It's providing growers with a non-traditional option

for crop production and crop protection. Today's growers love information and they want to know as much as possible about their farming system works and to have this type of tool in their toolbox adds a lot value. So, the grower can make a much more informed decision as to the type

of product that they want to apply onto their field and how that would affect their soil health over time." **GN**

Angela Lovell is a freelance writer, editor and communications specialist living and working in Manitoba. Find her online at www.angelalovell.ca.

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Biostimulants: A Grower's Experience.

Saskatchewan grain farmer, Sean Edwards first tried biostimulants on his crops about five years ago. He wanted to grow healthier plants with less fertilizer and reduce his fungicide use. "We were fairly wet and we had a lot of sclerotinia on our canola and fusarium on our cereals, and root rot in our peas was bad," says Edwards.

He began by applying a biostimulant product called Bio-Forge, manufactured by Stoller Enterprises Ltd, as a seed treatment. "It worked well, we had healthier plants and we didn't have the disease that we had before."

Edwards, who farms 5,000 acres of cereals, oilseeds and pulses at Nokomis, Saskatchewan now says he doesn't even spray for sclerotinia on canola any more.

SOIL HEALTH AND ROOT STRUCTURE

He's also noticed improved soil health and root structure. "We are noticing overall root structure improvement in the ground. The root systems on our plants are bigger, and on our soybeans there are more nodules, and they're healthier looking," he says. "The first year, when we went out to dig plants up to check, the first thing we noticed was that on the check strip with nothing, we had to stand on the shovel to get it to go in the ground, whereas, where we put these treatments on, you could push it in by hand. There's definitely something in the soil biology that's creating a healthier soil."

Edwards uses different Stoller biostimulant and micronutrient products on all his crops and says he has noticed improvements in crop quality — for example higher protein in his soybeans even in a low protein year like 2017 — and an increase in crop yields across the board.

EARLIER, EVEN CROP EMERGENCE

With his farm located in pothole country, Edwards has a lot of rolling land, and says biostimulants have also helped him to achieve earlier, even emergence and a more even maturing crop all the way through to harvest. "Almost the whole field will emerge on the same day whereas before the warmer hilltops might emerge before the sloughs," he says. "Last year, when it was drier, on our canola and even our wheat, the whole field was flowering a lot more even rather than the high spots flowering first

and the low spots flowering three to five days later. It makes it a lot more efficient to harvest, especially when we're trying to straight cut canola. It's much easier to cut the whole field rather than take the dry spots off the top and go back for the low spots later, it's all ready at the same time now."

In terms of saving fertilizer, Edwards is growing more yield with the same amount of nitrogen that

he was using before, but he's using more phosphorus because with higher-yielding crops he has a higher removal rate. "That's just a product of growing more crop, you need more P, but we are using the same 100lbs/acre of N which is growing us another five to six bushels on average across the farm," he says.

RETURN ON INVESTMENT

Edwards admits that the biostimulant

and micronutrient products he uses are an added cost but he looks at the overall return on investment on the whole farm. "We look at, not so much the cost per acre of the product going on, but what we'll get back out of it. If I'm going to put on a \$3 product on and get \$6 out of it or put a \$10 product on and get \$50 out of it, I'll trial them side-by-side and I'll take the \$10 one all day," he says.

Overall, Edwards is convinced that

the improvements in soil and plant health that he gets with biostimulants are paying dividends for his farm. "Last year being as dry as it was, with that better root growth right off the bat, I think that really carried us through," he says. "We grew all our crops on an inch-and-a-half of rain last year and had the best canola yield we've had in a long time." GN

Angela Lovell

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GET IT IN WRITING: wills and agreements

Make things easier for yourself and your loved ones by making the paperwork clear

By Angela Lovell

Laura McDougald-Williams, a partner with Meighen Haddad LLP in Souris, Manitoba, spends a lot of time with farm families trying to help them plan for unexpected events such as death, disability, divorce or disagreement.

"So many times, I wish I'd had a 20-minute estate planning session with people before one of these

events in their lives happens just to reduce stress and save costs," she said in her presentation at the Manitoba Farm Women's Conference (MFWC) in Brandon in November. "Planning ahead can just make it a little bit easier when you're in a difficult time."

THE VALUE OF A WILL

According to information provided to McDougald-Williams by Branstone Financial Strategies Inc., around 70

per cent of Canadians do not have an up-to-date will, and yet an estimated \$1.5 trillion worth of assets are due to be transferred to the next generation within the next 20 years.

Of those who have a will, 99 per cent appoint a family member as executor. Of executors surveyed, 47 per cent recorded administrative complications, 31 per cent, emotional issues and 26 per cent, legal issues. "That's a scary picture of unprepared testators who will trans-

fer a lot of money to do-it-yourself executors who are already having problems," said McDougald-Williams.

A properly prepared will can help overcome these challenges. It can provide choices as to who will be the executor, who the beneficiaries are and how assets are divided up. Not having a will can create unexpected consequences. Family members or next of kin would have to choose among themselves who is going to

administer the estate, which is a potential area of conflict if not everyone agrees upon who is the best person for the job. Without a will, the government has beneficiary designations that can also result in a few surprises.

"If you don't have a will, your spouse, children or next of kin are your beneficiaries, but that can be problematic in the case of a blended family, which is common these days," said McDougald-Williams.

If there is no will and there are children from a prior relationship, in Manitoba, the Intestate Succession Act sets out that the spouse would receive 50 per cent of the deceased person's estate or \$50,000, whichever is more. The children from the prior relationship share the remaining 50 per cent of the estate with the spouse. "That's not always what one wants to have happen in an estate plan," said McDougald-Williams. "Having a will gives you the power to provide direction and that's very helpful to your family."



If you don't have a will, your spouse, children or next of kin are your beneficiaries, but that can be problematic in the case of a blended family, which is common these days."

MCDOUGALD-WILLIAMS.

It's worth getting a professional to draw up a will because, although a holographic will — a will a person hand writes themselves and signs — is technically valid, the problem can come in interpreting it. McDougald-Williams gave an example of a case where two brothers were living together and had another brother living separately. When one of the two brothers living together died, his own hand-written will said, "I leave everything to my brother." But which brother? "The problem with a holographic will is have you clearly given instructions so that an absolute stranger would understand what your estate plan is?" said McDougald-Williams.

REDUCE COSTS AND TAXES

A will can also help reduce estate administration costs and probate tax. "The estate administration costs are probate taxed, so whatever goes into your estate at the time of your death would be any assets that you own in your name alone at the time of death,"

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said McDougald-Williams. "Unfortunately, I've had a few estates where all of the farmland was in the husband's name. The husband passes away and the wife is then left having to probate the husband's will because any land title registry requires a probate on the will to have it transferred over to the beneficiaries."

In Manitoba, probate tax is 0.07 per cent, so on a million dollars of farmland, the probate tax would be \$7,000. In addition, the provincial government has set out a legal tariff that lawyers must charge to prepare the request for probate, which on the value of this farmland would be \$13,000. In the scenario McDougald-Williams gave, the widow would incur \$20,000 of administrative costs just to transfer farmland that she'd been farming for 40 years into her name. Had the farmland been owned jointly, she could have filled out a land transfer form to add her name to the title for less than \$500 and no land transfer tax would have been payable.

DEALING WITH DIVORCE

With the divorce rate in Canada at around 41 per cent, divorce is another situation that can cause serious issues for family farms. With pre-owned assets, such as farmland, any increase in value since the time of marriage is shareable upon divorce. If a spouse or common-law partner (after three years of cohabiting under Manitoba law) is added to the title so the property is owned jointly, upon separation that is deemed to have been an irreversible gift at 50 per cent and the value has to be divided equally between the two owners.

Gifts and inherited assets are generally exempt from sharing upon separation, but the increase in value since time of marriage is sharable. "All of these things can be a great concern to farm families with valuable farm assets because if one partner is leaving the farm, the farm operation may have the cost of paying that person out potentially half of the value of the farm, or half of the value of any increase in the farm value since the time of their relationship," said Mc McDougald-Williams.

Spousal and pre-nuptial agreements can be used to avoid such scenarios and protect family farm assets. "It's a tool we use to clarify that any pre-acquired, gifted or inherited land is definitely kept separate from the family law," says McDougald-Williams. "It keeps that value within the farm family."

"We see so often that if people had a proper agreement in place it would have prevented a dispute or conflict," said McDougald-Williams. "Having written agreements help people communicate better, clarify the intentions of the parties, and it's helpful to use a lawyer. We see problems arising between parties all the time. Every year, we're updating their contracts to try to cover new issues that have arisen. It's a way of helping us think of every different angle and what types of things could happen." **GN**

Angela Lovell is a freelance writer, editor and communications specialist living and working in Manitoba. Find her online at www.angelalovell.ca.

Get these four agreements in writing

Lawyer Laura McDougald-Williams of Meighen Haddad LLP has seen almost every type of farm family dispute at her rural law practice in Souris, in southwestern Manitoba. She recommends several types of written agreements that are essential to family farms and may help resolve conflicts in the event of death, divorce, disability or disagreement among family members.

1. Employment contracts: Useful to set out wages, terms of employment, benefits, holiday entitlements and other employment basics, whether employees are family or not.

2. Land rental agreements: Your landlord may be a reasonable person to work with, but what if he or she has a stroke or passes away and you're dealing with the landlord's power of attorney, executor, or another family member? An agreement in writing including the rent charges, how many years it's locked in for, and the terms of the rental agreement is binding on a person's estate.

3. Unanimous Shareholders' Agreement: If there are multiple families involved in a farm company, the Unanimous Shareholders' Agreement can set out an exit strategy if someone wants out of the

farm operation. It can detail how to manage that in the event of retirement, disability, divorce or death. These agreements give families an opportunity, while everyone's healthy and things are stable, to map out what would be a fair exit strategy to give the farm operation maybe five or 10 years to pay out the value of retiring shareholder shares or that type of thing.

4. Partnership and operating agreements: When sibling groups farm together and don't have written contracts setting out how they are sharing the company expenses or use of machinery and equipment, it can get messy if there's a death or a disability. These are important tools to help with that type of situation. **GN**

Angela Lovell

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A DRY SEASON: the good and bad news

Get ready for a dry year. Here are six factors to consider when your moisture level is low

By Angela Lovell

To date, all indications are pointing to a dry spring, given the below-average precipitation received in many areas of the Prairies this winter. There are exceptions to every rule of course, but a lot of farmers had relatively dry soils going into winter, so we asked some agronomists and provincial crop experts what factors could influence cropping decisions in anticipation of a dry season.

1. FERTILITY

Jocelyn Velestuk, an agronomist with Western Ag, says she's had a few conversations with Manitoba and Saskatchewan farmers about what they're planning, going into a year with a very dry soil. "A lot of the farmers I speak with aren't too worried and are putting inputs down just as they normally would," she says. "Most of my customers are



PHOTO: THINKSTOCK

pulling fertility back based on starting with a dry soil, and an average to above average year for rainfall. They still want to put enough fertility down for the crop to take advantage of and are hopeful that the rains will come."

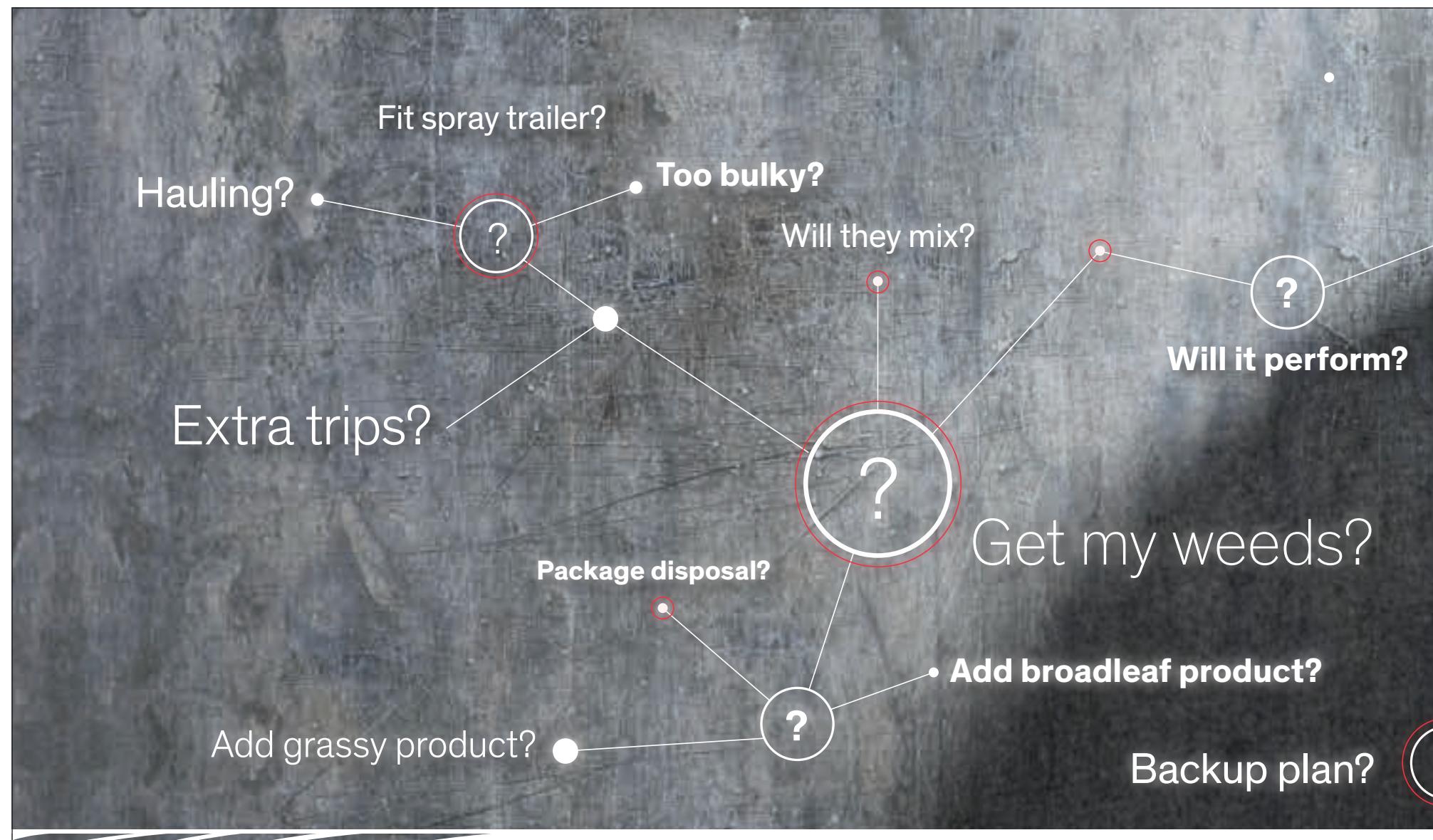
She has also had some discussions about split nitrogen application and topping up nitrogen should rainfall come. "Application of in-crop fertilizer N should also be around the three to five weeks following seeding when the crop is

taking up the majority of the nitrogen it needs to build yield," she says. "If farmers are going to fertilize in-crop, I recommend applying before a rainfall (a half-inch to inch minimum) to wash the fertilizer into the soil where it can bind to the soil."

Best nitrogen use efficiency is found if the nitrogen is washed into the ground directly following application, adds Velestuk. As well, nitrogen stabilizers can extend the period and reduce nitrogen losses. "Many farmers can find their best efficiencies through applying fertilizer at time of seeding, however some would like to manage risk," she says. "Nutrients such as phosphorous and potassium do not move a lot in the soil, therefore there may be less risk if there is a poorer crop because those nutrients will likely be available for the next crop. This is where soil sampling and analysis is can really pay because if there are available nutrients in your soil, use them."

2. GERMINATION

Should soils remain dry, germination is also on farmers' minds. "Finding the depth where there is enough moisture to germinate the seed is tricky in a dry soil. Some



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farmers choose to gamble and seed to a more shallow depth and hope for rains to come," says Velestuk. "Earlier seeding may result in the seed sitting in a cold soil for longer, which can increase the risk of fungal infections. Quick germination and a healthy plant are integral to building a healthy crop."

In terms of soil health, soils show their true nature in a drier year. "Soils higher in organic matter with good soil structure are able to withstand drought better than soils with compaction issues or soils that have been tilled or eroded," says Velestuk. "Practices that increase soil health and add organic matter could be integral to farming operations moving forward, especially with more than one dry year in a row."

Harry Brook, a crop specialist with Alberta Agriculture and Forestry, says he expects a lot of farmers have pretty much already decided what they are going to seed. "Although dry conditions last fall may have had a bearing, profitability still trumps everything else," he says. "I don't think there will be a whole lot of change in acreages. I expect a lot of acres still in canola and high acreages of wheat, which tends to be more drought resistant. I

expect there will be lower acreages of pulses, mostly due to trade issues with India. In southern Alberta, irrigation opens up the different crops producers can grow."

3. C4 WEEDS

With dry conditions there may not be weeds emerging pre-seeding. "Scouting is important, to determine if there are weed pressures to warrant a pre-seed spray," says Breanne Tideman, a field agronomy/weed science research scientist with Agriculture and Agri-Food Canada at Lacombe, Alberta. "A timely, early season in-crop spray may be more economical than a pre-seeding spray if there aren't any weeds."

Obviously weeds that are better adapted to hot, dry conditions could present some problems for farmers in a dry year. Those are weeds with C4 metabolism, says Clark Brenzil, Saskatchewan's provincial weed control specialist. "This C4 metabolism allows plants that have it to utilize CO₂ at lower concentrations than plants with the basic C3 metabolism," he says.

Weeds that fit into the C4 type are grasses like green or yellow foxtail (wild millet), and barnyard grass as well as broadleaf weeds like

kochia, Russian thistle, redroot pigweed and lamb's-quarters.

Why is this important when we aren't changing the CO₂ levels in the air? "Plants have openings in their leaves, called stomata, that they can open and close to allow for gas exchange and allow water vapour to escape, driving evapotranspiration, or the movement of water upward in the plant," says Brenzil. "When water is scarce, plants close their stomata and it also restricts the amount of atmospheric components that they have access to in their internal leaf spaces. As a result, as photosynthesis progresses, CO₂ levels are drawn down inside the leaf."

Because C4 plants can continue to produce sugars even at lower CO₂ levels, they will continue growing, even during periods of drought stress, for longer each day before slowing down. At night the stomata open when humidity is higher to replenish gases, and the process starts all over the next day. "What this means, however, is weeds with a C4 metabolism will outcompete C3 plants, which most of our main crops are with the exception of corn, sorghum and millets," says Brenzil.

Some weeds like kochia and Russian thistle have other characteristics that adapt them to dry conditions. Kochia and foxtail barley (even though it is not a C4 plant) have dense hairs on the leaf surface that reduce the amount of evaporation from the leaf surface and improve tolerance of drier conditions. Russian thistle uses a round leaf structure instead of a flat leaf to minimize surface area for evaporation.

4. HERBICIDE RATES

Weed control in drier conditions can also be tricky because moisture impacts how herbicides work. "The range of new, soil-active herbicides that have been introduced to the Prairies over the last 10 years may face challenges they have yet to experience," says Brenzil. "Most of the newer soil-active herbicides rely entirely on rainfall to move them into the germination zone of the soil, which under a moist climate regime works well but if insufficient rainfall occurs in the spring some of these herbicide may not be sufficiently incorporated to do their job. We don't know which ones will do well and which ones won't as of yet."

All plants will also have a heavier,

waxy cuticle layer on their leaves in dry conditions as a way to prevent uncontrollable moisture loss from the surface of the leaf. This, in addition to a denser covering of hairs, will make it tougher for foliar herbicides to get into the plants.

"This is not the year to skimp on herbicide rates," says Brenzil. "If plants are under moisture stress, herbicides tend not to work as well for other reasons. If a herbicide goes into a plant and the plant's metabolism has stopped because of stress, the herbicide can break down or get bound up in the plant and less or no damage occurs to the plant when the metabolism starts working again. And because that metabolism is important for the crop in breaking down certain herbicides, injury can occur when the crop is under stress as well."

How much rain will fall in the upcoming season is still one for the crystal ball. But, says Brenzil, what is already cast in stone in some areas, as a result of the lack of in-season rain last year, is the potential for herbicides, especially herbicides that already have a residual com-

Continued on Page 22 ▶

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► Continued from Page 21

ment, to not break down as fast as normally expected and cause injury to even certain labelled “safe” crops.

Mid-June to mid-September is a critical period for herbicide breakdown to occur since it is roughly the time that in-crop herbicides are applied and soils are warm enough for good soil microbial activity to occur. (Most herbicides are broken down by soil microbes). Beyond that time soils are too cold for rapid herbicide breakdown. “Each herbicide for which moisture may impact breakdown will have a different

This is not the year to skimp on herbicide rates

threshold for compensatory action to be taken and in regions that received three inches or less of rainfall during the June–September period last year, it is likely to impact the breakdown of most herbicides,” says Brenzil. “It is best if you have a concern about herbicide carryover to check with the manufacturer of

the residual herbicide you applied last year and see if they can give you guidance on which crops are the most tolerant to residues of that herbicide. Producers can also check their provincial Crop Protection Guides for the herbicides that may be at risk of carryover.”

5. SEEDING DEPTH

Weather and environment certainly affect crop disease potential. In general terms, warm and wet or cool and wet conditions result in more disease, while cool and dry or hot and dry conditions produce less disease.

Dry conditions in spring may lead to a reduction in some diseases such

as stripe rust and root rots, which are more prevalent in cool, wet conditions. “For example, the clubroot pathogen requires water films in the soil in order to initiate disease, so dry soils may reduce the impact of clubroot in some fields, depending on the inoculum levels,” says Michael Harding, a plant pathology research scientist with Alberta Agriculture and Forestry. “So, while drought is never what we hope for, the silver lining is that dry conditions often make it challenging for many of our plant pathogens to initiate disease and reduce yields.”

Holly Derksen, field crop pathologist with Manitoba Agriculture,

cautions farmers not to seed too deep to try and access moisture this spring. “From a pathologist’s perspective seeding deeper can lead to more seedling disease issues,” she says. “The seedling has more soil to travel through before emergence and therefore has a better chance of coming into contact with a pathogen in the soil.”

In addition, the seedling will take longer to emerge. If a seed treatment is used there is a greater chance that the seed treatment will wear off while the plant is still in the seedling stage. “The lack of snow this winter may also indicate that early seeding could be an option,” says Derksen. “Seeding into soils that are cooler will also lead to delayed plant emergence which again may cause an issue considering seed treatment longevity.”

Fusarium root rot could also be an issue, especially if just enough moisture comes to allow initial infection. “After that, it actually thrives under drier conditions,” says Derksen. “In a dry year, it is important that root systems remain healthy and expansive to reach all the available moisture in the soil. Root rots can have a larger effect in dry years, even though symptoms may just be more severe drought symptoms by the plant.”

6. SCOUTING FOR INSECTS

Drier-than-normal conditions would affect field scouting plans and priorities, and would favour some insects and reduce the risk of others, but not likely to the extent that it will result in growers switching cropping decisions as a result, says Manitoba Agriculture’s provincial entomologist, John Gavloski.

“Grasshopper survival is often better if we get drier weather. However, the grasshopper population was quite low during our survey in August last year, so I am not anticipating widespread economic populations, even if we get a drier year,” he says.

If the spring is very dry and crops are growing slowly cutworms may do more damage, so fields should be scouted for cutworms. Flea beetles could be more damaging to canola as well if the crop is struggling to grow early in the season. “It is always advised to scout canola for flea beetle feeding regardless of moisture levels in the spring, but if there are weather conditions that are highly deterring to early stand establishment scouting for flea beetle feeding takes on greater importance and should be done more frequently,” says Gavloski.

Rainfall can be a mortality factor for aphids. “Drier years could reduce aphid mortality caused by pathogens or being physically harmed by intense rainfall,” says Gavloski. “Many of our aphids don’t overwinter well in Manitoba though, so it is unpredictable whether they would be an issue anyway, and depends a lot on what blows in, and it’s not a reason to alter crop choices.” GN

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Angela Lovell is a freelance writer, editor and communications specialist living and working in Manitoba. Find her online at www.angelalovell.ca.

CROP VARIETIES

Four things to consider in a new canola variety

With more hybrids on the market, how can you choose the best one for your farm?

By Melanie Epp

Every year, some 43,000 western Canadian growers choose a canola seed variety. And every year they have more options to choose from. Here's what you need to consider when choosing a variety for your farm.

1. YIELD

The first factor to consider when choosing a canola variety is yield, said Rene Mabon, agronomy and regulatory manager at Brett Young Seeds. Yield data is available from seed companies and retailers. Mabon also recommends checking out the Canola Council of Canada's canola performance trials (www.canolaperformancetrials.ca).

Shaan Tsai, product development manager at Canterra Seeds, agrees, pointing out that higher yields mean bigger bottom lines. "It should therefore be worth the effort to spend the time and seek out multiple sources and multiple years of information and data to make the best possible decision," he said.

Mabon also suggests growers choose more than one variety to spread risk, and consider rotation benefits, like herbicide history and disease. Lodging, standability and maturity are all important factors to consider as well, he said.

There are a lot of good varieties to choose from. "The companies do a pretty good job of filtering out any poor choices," said Mabon. "But sometimes some growers do hone in on very narrow points — a certain type or a certain disease — when maybe they need to be doing other things on their farm to manage that disease better."

Growers often look too narrowly — seeking our primarily local data, Mabon said. "Sometimes you need to look at more than one source of data and look a little more widely," he said. "They may be underestimating or overestimating potential choices by only looking at one local trial."

2. WEED CONTROL OPTIONS

While it's natural that growers focus on yield, Lyle Cowell, regional agronomist at Crop Production Services in northeast Saskatchewan, doesn't think that criteria is as important as it used to be. "There's a lot more parity between varieties than there used to be in terms of yield potential," he said. "I don't think that that is necessarily the first thing people should look at."

"The most obvious and first step I think to take in choosing a variety is actually in making sure that weed control is adequate," said Cowell. "Because there's good-yielding varieties amongst all three herbicide systems."

3. DISEASE PACKAGE

Growers, Cowell said, should start paying more attention to disease resistance. Control of blackleg and clubroot largely relies on genetics,

since fungicides do not easily control those diseases.

"Recently, because there has been more findings of clubroot, there's been more focus on selecting clubroot-resistant varieties," he said. "But we have to remember in Western Canada, blackleg is in all fields and certainly is a disease that has the greatest risk, so they really need to think about both clubroot and blackleg resistance in varieties."

Tsai agrees, pointing to a recent Agriculture and Agri-Food Canada study that shows that even low levels of blackleg infection can drop canola yields by as much as 20 per cent. "Due to the frequency and variability of blackleg populations in different fields, choosing varieties with multiple genes of resistance that offer a broad defense against the disease is recommended," he said.

4. OTHER TRAITS

Cowell also mentions factors like growing season and pod shatter resistance. "There's been a lot of focus in the past few years on selecting varieties for shatter resistance," he said. "And that can be important depending on how you want to harvest your crop, but at the same time a person shouldn't select that in front of things like weed control or disease resistance."

BUY EARLY

When you're spending about \$60/acre on seed, the cost can be significant.

"There's almost always an advantage for people to, if not actually pay for and buy canola early, at least indicate their intentions to the retailers to book the seed for spring," Cowell said. **GN**

Melanie Epp is a freelance farm writer.

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What exactly *is* sustainability?

There are many ways to farm sustainably, and many ways to discuss the issue



Les Henry

A lot of recent farm press talks about sustainability. When I look up "sustainable" in Webster's it says: "...a method of harvesting or using a resource so that resource is not depleted or permanently damaged..."

The first time I remember that term used with respect to agriculture was when a respected farmer on Sceptre heavy clay soil said the wheat/summerfallow rotation of the day was not sustainable. To be sure, the old half-and-half rotation was responsible for gradually, but surely, reducing the fertility and productivity of even our best dryland soils.

PHOSPHORUS, THEN NITROGEN

Phosphorus was the first nutrient to seriously reduce wheat yield. By the 1950s P was a big limiting factor. The photo shows a huge barley response to P for barley planted on summerfallow. The researcher, Bob McKercher, told me that the landowner, Mr. Whatley, never seeded a crop without P fertilizer after seeing the effect.

P fertilizer extended the productivity of the soil, and summerfallow allowed us to suck even more of the nitrogen out of the soil organic matter.

By and by we realized that we could do away with summerfallow if we adopted zero till, put on enough N fertilizer and included legumes in the rotation.

But the old half-and-half rotation lasted a long time with little or no fertilizer, if a farmer could still live off the smaller yields. It was sustainable, but at a much lower level of production than newly broken prairie.

ORGANIC FARMING

Organic farming that relies on summerfallow for weed control and

nitrogen mineralization is not sustainable at anywhere near the yield of fertilizer and chemical farming.

Organic farms with livestock, legumes and diverse planting schemes are probably the most sustainable. If markets for organic grain and meat are available at seriously elevated prices, then that system is very sustainable.

CONTINUOUS WHEAT WITH NO FERTILIZER

Continuous wheat cropping with no fertilizer is sustainable – with herbicides to control weeds, especially wild oats. The Agriculture and Agri-Food Canada station at Scott, Sask., has a small field that has been planted neat (without fertilizer) to wheat for 107 years and counting – at least I hope it is still going. The average yield is about 15 bushels/acre. Nitrogen is the big yield-limiting factor (after moisture) but N in rain and free-living nitrogen-fixing soil organisms are enough for a small yield. At that small yield the "suck" on phosphorus, potassium and other nutrients is small.

It is sustainable, at a very low yield. There is also the famous Rothamsted station in England where a portion of the Broadbalk field has been continuously cropped to wheat with no fertilizer since 1840. The yield is in the 15 to 20 bu./ac. range.

TWO CROPS, ONE HERBICIDE

It is my opinion that a two crop, one herbicide (glyphosate) rotation is not sustainable. The rat in the closet is weeds that become resistant to the excessive use of one herbicide. We use plenty of glyphosate even if we use it in-crop only for canola. My 2018 crop is canola and I very much look forward to what glyphosate can do so well for so little cost.

In addition to canola in crop, we make use of spring burn-off, pre-harvest and post-harvest sprays of glyphosate. We use too much already with just one crop that tolerates

glyphosate and I also plead guilty to that charge.

PROTOCOLS FOR SUSTAINABLE CROP AGRICULTURE

Various parts of the market chain have been working on a "brownie point" system so a farm can be labeled "sustainable." I have seen some guidelines that say you must not pull any bush or drain any slough if you want to get the label. In that case they should decommission agriculture in all of the U.K. When the Romans first landed they found little but bush and swamp. They cleared the bush and drained the swamps and made farmland of it.

I suspect that many of these protocols are drafted by folks with little understanding of actual farms. Perhaps I am wrong and some reader will enlighten me.

BEEF SUSTAINABILITY

It is with some trepidation that I comment on the affairs of cowboys – stubble jumper that I am. But some of the things I have been reading of late leave me bewildered. Recent communications talk about a "Sustainable Beef Framework." The tone of the piece is "Hurrah, we finally have it!"

A lead statement is "Even the overview of protocols set out in the Certified Sustainable Beef Framework runs nearly 60 pages." I can just

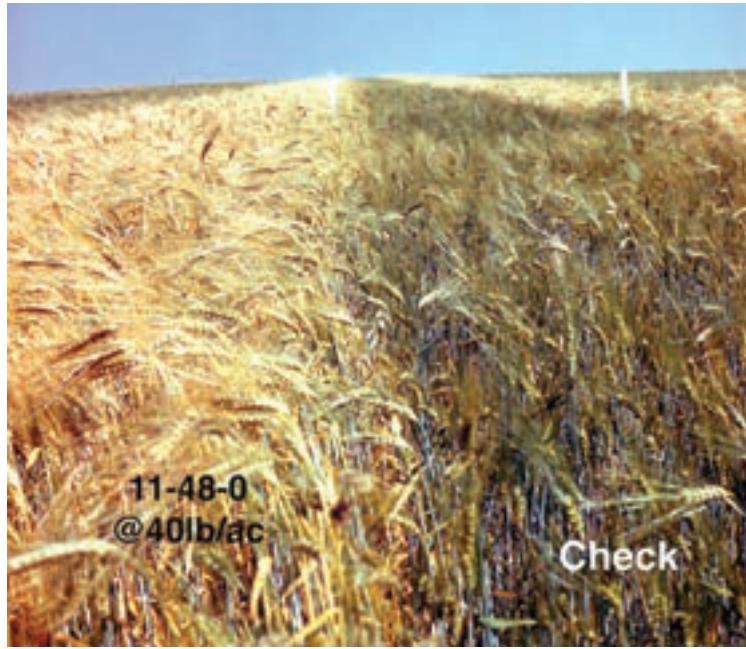
imagine the excitement that cowboys have reading 60 pages as an "overview."

Imagine what the full document looks like. And what exactly are they trying to sustain?

HOME ON THE RANGE

Probably the most sustainable form of agriculture we have is the cow/calf ranching operations in the remaining grasslands of southern Saskatchewan and Alberta. Many of those operations are 4th and 5th generations of the same family line so they must be doing something right.

A quick peak at the "our values" section on Saskatchewan Stock Growers Association's website



This photo shows the phosphorus response in a 1958 barley crop near Kindersley, Sask. The blue tinges showing in the "check" side of the photo are a result of the photo scanning.



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(www.skstockgrowers.com) shows some straightforward "sustainability" statements without a lot of flowery language or complicated protocols.

Environmental Stewardship: they simply state that they will use the grass and water in such a way that it is still there for generations to come.

Animal Husbandry: simply states that if they treat their animals with respect and ethical treatment, the animals will take care of them financially.

SPREADING MANURE

One concern I have about livestock is too much manure spread over too few acres near intensive livestock operations. Many studies show it is easy to have too much of a good thing. At our own University of Saskatchewan a major new livestock research facility is being constructed near Saskatoon. The baseline groundwater monitor-

ing is in place in spades. Modern instruments were installed before construction began.

But, we must also have some basic research to determine how to concentrate the nutrients, phosphorus especially, so that it can be economically applied over many more acres. Part of the equation may be that stubble jumpers like me have to start paying for the P they receive in manure.

There are still way too many acres of phosphorus-deficient soil that are far removed from a manure source. On my little patch I have the eroded knolls well charged with P by moving topsoil and high rate of broadcast P fertilizer. But much of the area could still do with a good dose of manure or other P.

As this column has often stated: 100 years from now folks will look back and wonder why we took so long to figure out how to better use manure phosphorus.

SUSTAINABILITY: THE BOTTOM LINE

In my opinion, much of the sustainability rhetoric we are hearing is mostly buzzwords, often crafted by folks far removed from a combine cab or a cow herd. Long-winded protocols are much like the Kyoto Protocol and other similar documents – too much verbiage and too little common sense.

Rather than such a general buzzword such as "sustainability" we should be talking about specific air, soil, water, plant or animal problems that must be addressed. GN

J.L.(Les) Henry is a former professor and extension specialist at the University of Saskatchewan. He farms at Dundurn, Sask. His book, "Henry's Handbook of Soil and Water," mixes the basics and practical aspects of soil, fertilizer and farming. To order a signed copy, send a cheque for \$50 (includes shipping and GST) to Henry Perspectives, 143 Tucker Cres, Saskatoon, Sask., S7H 3H7

FROM THE SLIDE CABINET



PHOTO: COURTESY OF LES HENRY

Les Henry giving an illustrated talk in the field. This was taken at the Rewerts farm at Cutknife in July, 1984.

EXHIBIT 2: Ag extension – in the field

This is Exhibit 2 in an occasional series that will bring slides of interest from the thousands we are now scanning.

In the 1980s and '90s we did much deep drilling work to sort out causes of soil salinity all over Saskatchewan. These pictures are from the Cutknife area in 1984.

That red passenger Ford had the seats stripped out and was equipped with field equipment and soil and other maps for all of Saskatchewan. I'm using my left hand to point out the geologic cross-section showing the shallow artesian aquifer. That aquifer was the cause of salinity at that location.

Those were happy times. We had a story to tell and the definite evidence for all to see right where the problem was.

The solution to the problem was: plant the salt-affected areas down to

grass and carry on farming the rest of the land. A theoretical solution would be to pump the aquifer but that is theory, not practical.

In the second photo, I'm standing by a well in the same aquifer. At this point, the aquifer at 40-foot depth had enough pressure to shoot water more than eight feet above ground.

At this site there was also an old seismic testhole flowing in the ditch. We plugged that and sent a bill to the seismic company but heard nothing — not even a thank you.

All seismic testhole records must be reported to government so we knew who was responsible. It was no big deal. — we were on site with the materials and knowledge. Made no sense to this old farm kid to do anything else. Common sense. GN

Les Henry

Rewerts Farm, Cutknife
Piezo installed July 1984
SW18 42 2 W3

Sand @ 40 feet had head
> 8 feet above ground in
1985- had to extend pipe



This photo was also taken at the Rewerts farm at Cutknife. In July 1984 we installed a piezometer (a device to measure water pressure). The sand at 40 feet had enough pressure to shoot water more than eight feet above ground. We had to extend the pipe.



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HART ATTACKS

Don't trust your oats with any secrets

You don't want to know what plants are saying about you behind your spraye



Lee Hart

Today's take home message: watch what you say or do out in the buckwheat patch. Plants aren't exactly seeing, but they could be listening and they are definitely communicating.

That's what Jack Schultz, a biologist and zoologist at the University of Missouri, whose business card describes him as a chemical ecologist, tells me anyway. Schultz admits when he gives a talk, he is a bit of a novelty act at farm conference. But who knew there was actually research into if, when and how plants communicate?

But when you consider all the remarkable natural defence mechanisms animals and plants developed through evolution, why not plants in canola, wheat, pea and corn crops communicating with each other?

Since I retired from my active three-day farming career about 50 years ago I can't claim to have much first hand exposure to this. But I do know if you cut a hay crop there is definitely an aroma. In Jack Schultz's research that's plant communication.

"Plants communicate very effectively with each other both above and below ground," says Schultz. "By understanding these mechanisms it can help farmers understand how crop production practices might affect these natural defence systems."

HOW PLANTS COMMUNICATE

All plants produce odours, says Schultz and when they are attacked or damaged by a pest they produce a specific volatile odour. His research over the years shows that if one plant is attacked by a pest it emits an odour, which will soon trigger a defence mechanism in the plant next to it, even though the next-door plant isn't being attacked itself. The next-door plant senses the odour change and takes action. And the odour emitted by the attacked plant will vary depending on which pest is attacking – a different volatile odour for each pest.

Wheat, for example, has a natural defence system. The wheat midge begins feeding on wheat, and the plant emits a volatile odour, which in turn can be sensed by parasitic wasps that feed on wheat midge.

"The parasitic wasp can be very effective in controlling wheat midge, but it is very tiny," says Schultz. "If there is a wheat midge in a field of wheat how does that little wasp find the pest? The wasp senses the odour being produced by the wheat plant and is attracted to the plant and attacks the wheat midge."

As well as above ground odours, plants also send signals through their roots into the soil, says Schultz. Experiments showed if an attacked plant was covered with a jar so its odour was contained, neighbouring plants with root connections to the

covered plant would still respond to the threat. The signal is carried through the intertwined roots, and perhaps even by the bacteria (mycorrhiza) in the soil.

How else do plants communicate and what other defence mechanisms do they have? With brassicae plants such as canola, for example, when plant leaves fall on the ground and decompose they produce a natural fungicide in the soil, which helps control certain fungi.

Humans are very familiar with other chemistry processes plants use as defence mechanisms. Plants such as tobacco, coffee and hot peppers, for example, produce chemicals, which humans have capitalized on for components in food and consumer products. Cigarettes and cigars, a cup of coffee and hot pepper sauce are all consumer products.

"Why would a plant develop nicotine, or caffeine or some other chemistry we sense as burning or hot?"

says Schultz. "They don't do it for humans to enjoy. These are all natural insecticides. Nicotine or caffeine or that hot pepper spice were all developed through evolution by plants to act as a natural defence against some type of pest or threat." A damaged or attacked plant will produce higher levels of these compounds.

Now that you know most plant communication is limited to detecting odours, that doesn't mean you can frolic naked in the barley field

with total impunity. A neighbour or some passer-by with a cellphone camera will be watching and your romp will be featured on Facebook, YouTube or maybe even the six o'clock news before you get home. Try explaining your way out of that one. **GN**

Lee Hart is a field editor with Grainews based in Calgary. Contact him at 403-592-1964 or by email at lee@fbcpublishing.com.

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CAN'T TAKE THE FARM FROM THE BOY

Getting to the grassroots

The hardest part about communicating with farmers is getting to the farmers



Toban Dyck

A convinced mind is hard to crack. Except if that mind belongs to a farmer. Then it's nearly impossible.

My job as director of communications with the Manitoba Pulse & Soybean Growers involves communicating with farmers. It is difficult. When

I'm with my peers, we brainstorm better ways to reach them. We dream of beautiful, comprehensive databases full of current email addresses and activated telephone numbers — a utopia whereby commodity groups have a mainline to its members and they to it.

In this make-believe world, I would send out a newsletter, and, eureka, it would reach all the inboxes. Every farmer would be teeming with relevant information

and research relevant to his or her farm.

But this is not the reality we live in, folks. No. It's not even close. I remain idealist, though. I will continue to scrape and claw toward this dream, even if only an inch is gained. Because, dang it, I really enjoy chatting with farmers. And I really do believe these non-profit commodity associations have something valuable to offer.

I have been at the forefront of a

process that could see five commodity groups amalgamation into one. There's lots I can't say here, but there is also lots I can.

My involvement is simple: pluck what is being discussed at the steering committee level and place it in the laps of each and every farmer this will affect. Easy, right? No. It's not.

GETTING TO FARMERS

Press releases are a wonderful, somewhat timeless tool, but they have to

be read. Twitter is a useful tool, but tweets have to be seen. Meetings are perhaps the most effective medium, but they have to be attended.

Many farmers still don't know much about the process. They have seen the headlines, but haven't ruminated on the contents.

I was frustrated about this once. When I was green. When I was young. But a year later, the wisdom is just oozing out of my pores.

It's okay to not reach everyone, because it's just not possible. It's okay to repeat information more times than you think is necessary. It's actually essential that you do. It's okay to grant people more time. Usually, it's needed.

Amalgamation is at once an easy word to digest. The businessperson is familiar with the word. She hears it used in the news every day, and reads it in the papers.

But, it turns out, amalgamation is quite tricky. As a consumer of news and someone armed with just enough information to comment on this life science company amalgamating with that one, you're not going very deep and you're certainly not driving the process.

This amalgamation is different. It is real. Farmers are driving it. And it's complicated. It has stirred emotions, riled people up and made others afraid, both of the loss of the current system and the potential delinquencies of the new model.

Some farmers believe an amalgamated group won't be able to represent all the crops it purports to. Others believe that the commodity group in which they are active is unique and should not be involved in the process. There are some who believe it's the best option and will make things more efficient and therefore better equipped to provide more value. And then there's every other position imaginable.

You're in the driver's seat now. The guts of this thing will be mapped and approved by you.

It's not my job to take sides. It's my job to make sure you hear about it. It's my job to direct you to mbcrops.ca to learn more.

This process signifies a potentially large change for many of Manitoba's commodity groups.

It's important to view the opinions of others as valuable, no matter how silly or uninformed it may seem. There's a nugget there, more often than not.

I have thoroughly enjoyed listening to what farmers have had to say on this matter.

Historically, my best decisions have come after a good night sleep, which for this process may be a little longer than eight hours. I don't mind. It gives me time to talk with more farmers, an enjoyable and rewarding responsibility. A few minds may crack and let some light in. A few minds won't need to. That's not up to me. **GN**

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Toban Dyck is a freelance writer and a new farmer on an old farm. Follow him on Twitter @tobandyck.



Four questions to ask yourself

Before you get involved in an ugly social media argument, take time to think it through



Lisa Guenther

When I look at the state of public discourse these days, the phrase that comes to mind is "dumpster fire."

My theory is that our society hasn't had time to adapt to rapidly changing technology (i.e. social media). These days, anyone can tweet or post anything. Some of those opinions are insightful and worth exploring. Some... are not.

The Canadian Literature (Canlit) dumpster fire is one of the most toxic ones you'll find. It's a good case study of how not to handle a contentious issue within a community.

The Canlit community starts to feel like a small town once you know a few people. It is similar to agriculture in that way. But since this is not

a dumpster fire within the ag community, I think it's easier to look at it more dispassionately.

It all began when Steven Galloway was accused of having an abusive relationship with a student. Galloway is an author and was the head of the University of British Columbia's creative writing program, which is one of the top jobs in the Canadian writing industry. He did have a relationship with a student, but few details have been made public because of confidentiality agreements, etc. Whatever happened, it was investigated by a third party, and he was fired. He protested, and there was some sort of arbitration.

The latest development involves two authors taking screen shots of another author/professor's Facebook post about the university course she was teaching. Her Dalhousie English class had discussed the Galloway issue, among other things. One of the authors passed

that Facebook post to Jonathan Kay, former editor of *The Walrus*, a Canadian magazine. Kay then posted it to Twitter, and accused the prof/author of indoctrinating her students. Once again, this is the Cole's Notes version, but I don't have the column space to flesh it out.

I missed this last incident on Twitter/Facebook, but the *Globe and Mail* covered it. Why are major media outlets following this latest squabble when they barely cover Canadian books these days? Why are Canada's literati acting like high school students? What on earth is happening?

I guess we all love to watch a bit of drama. But most of us don't enjoy being part of the drama, at least not for very long. It rarely turns out the way we'd imagined.

Here are four questions we should all ask ourselves before we weigh into contentious issues in a public forum.

1. DO I KNOW WHAT I'M TALKING ABOUT?

While this seems like common sense, too few people stop to consider whether they actually know the facts before they dive into an argument head first. I think we've all been guilty of this at some time or another. But social media would be less annoying if we all cut this out.

Save those speculative, fraught discussions for friends who are willing to participate instead of publishing them somewhere that they can be screen-captured, reposted and perhaps cause real damage.

2. AM I BEING FAIR?

Assuming you know what you're talking about, consider whether you're twisting the facts to suit your own argument. Sometimes we do this without even being aware of it at first.

Also consider whether the information you're sharing was shared with you in confidence, or perhaps

shared with someone else in confidence. Is the issue so important that it's worth breaking that confidence? If you do share that confidential information, are you going to share everything or be selective in what you leak? If you're being selective, are you only sharing information to bolster your own argument or serve some other interest? What are the consequences of all this?

A few years ago someone gave me a copy of Susan Scott's book, *Fierce Conversations*. One concept she writes about is how to deliver the message without the load. Basically, if you want to reduce the negative aftermath of a tough message, avoid loading it with a malevolent undertone, she writes. For example, don't call people names. Don't use jokes to attack someone (a friend of mine calls this a joke with a jag). Don't sprinkle sugar all over a passive-aggressive comment. Don't put words in other people's mouths. You get the idea.



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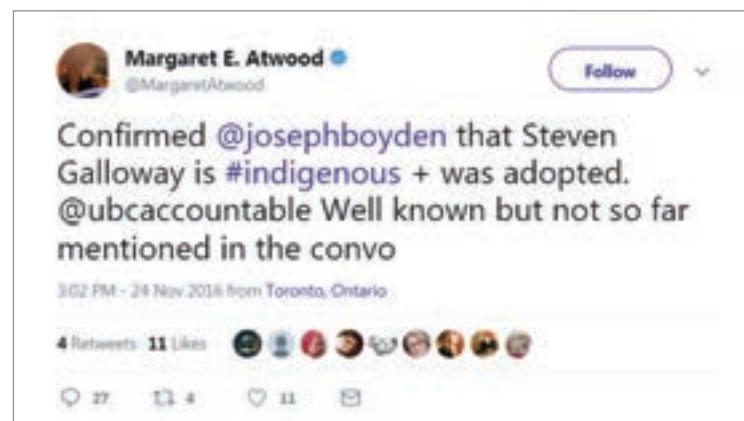
Susan Scott's book was first published in 2002, but that idea of loading messages with malevolence seems bang-on with today's social media-fuelled public discourse. When I look at the online conversations in Canlit these days, there are plenty of people on both sides willing to rip each other to shreds. There is very little forgiveness for any perceived slight or difference of opinion.

3. IS THIS RELEVANT TO THE CONVERSATION?

Have you ever been at a dinner party, telling a story, only to have someone interrupt you to argue about some detail that seems irrelevant? Would you find that annoying?

When this happens offline, people have all kinds of strategies for dealing with it or shutting it down. But when it happens on social media, there's a huge risk of people following the rabbit trail until it takes on a life of its own.

Consider author Margaret Atwood's tweet on the Galloway affair, pointing out that another Canadian writer, Joseph Boyden, had confirmed that Steven Galloway is Indigenous and was adopted. What does Galloway's ethnic back-



ground or adoption status have to do with his behaviour towards students, you ask? I frankly have no idea. It seems completely irrelevant.

But this tweet sparked a whole new fire. Some people were angry that Joseph Boyden apparently conferred Indigenous heritage on Galloway. He had been a very vocal defender of Galloway. Boyden has written three novels set in Indigenous communities. Boyden had also claimed to be both European and First Nations himself.

About a month after this tweet, APTN published an article questioning Boyden's claims around his First Nations identity. It seems fair

to check his claims about his ethnicity, since he had talked about it quite a bit over the years. But how do you determine this? DNA testing? Cultural practices? Official membership in a band? Honourary membership in a First Nation? Blood quantum? At any rate, it got very ugly for Boyden.

It turns out that people were wondering about Boyden's ethnicity long before Atwood's tweet. But I doubt it would have blown up so spectacularly if his ethnicity hadn't been linked in some way to the Galloway debacle. It's the difference between fuelling a fire with paper and wood, and pouring diesel all

over an overflowing dumpster before striking a match.

I know which fire I'd rather roast marshmallows over...

4. AM I LISTENING TO OTHER PEOPLE?

There is plenty of drama and nonsense surrounding the Galloway issue and its spin-offs. But there are also meaty moral quandaries worth talking about, if you're interested in these things.

How should institutions handle allegations of abuse? Should profs or program directors be allowed to sleep with students in their programs, even if the affair is completely consensual, or are there too many potential issues of nepotism and abuse of power? Who should we believe in those situations? Who gets to decide what communities we belong to? Who gets to decide what stories we write? All these issues relate to power, and that is a fiction writer's bread and butter.

Susan Scott has an interesting idea in her book. Thinking about the word confrontation, she realized the Spanish word "con" means "with." She reasoned that the word confrontation could be interpreted as being with someone in front of

something. I visualize it as standing with someone in front of a road-block and discussing how to get around it.

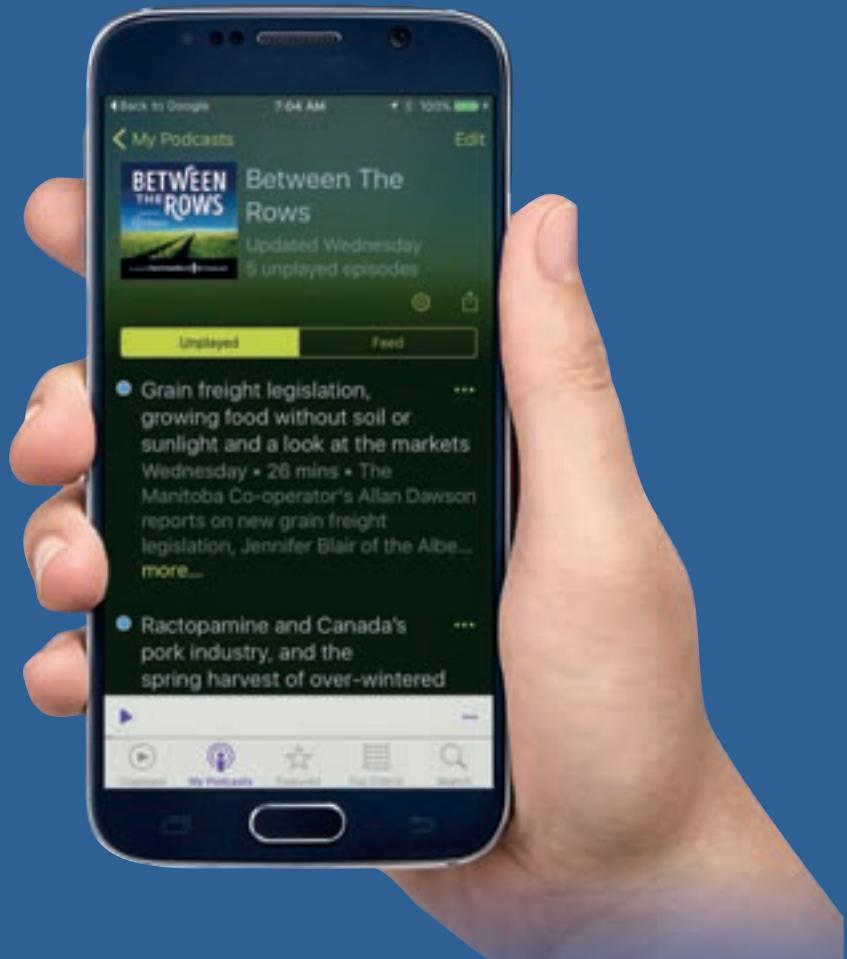
Scott writes that "conversation" has that same "with" sentiment. If you're not conversing *with* someone, what exactly are you doing? You are talking *at* someone.

Social media is full of people talking at each other and not listening. I want to ask: If you don't think anyone else in the conversation has an opinion worth listening to, then why are you even talking to them? Is that really how you want to spend your time? Aren't you better off talking to someone whose opinion you respect? If you have so little respect for the other person's opinion, do you really think you're going to change his mind anyway?

If you've read this far, you probably know more than you ever wanted about the not-so-secret drama of Canadian authors. Heed this warning, Canadian ag community, and avoid lighting those dumpsters, no matter how much the garbage stinks. GN

Lisa Guenther is field editor for Grainews based at Livelong, Sask. Follow her on Twitter @LtoG.

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WORLD TRENDS AND YOUR FARM

Global statistics from FarmTech could mean opportunities for Prairie farmers



Brian Wittal

This year's FarmTech conference in Edmonton at the end of January was another great conference packed with interesting speakers.

First up was Darrell Bricker from Toronto, the CEO for IPSOS Public Affairs, talking about the new Canada – population pattern changes due to fertility, aging patterns, urbanization and multiculturalism. His focus was: "who will be our new market and what they will be wanting?"

FERTILITY RATES

Bricker told the audience that the

number of children per household in Canada in 1921 was 3.5; in 1961 it was 4.0 (the peak); in 2011 it was 1.8.

The main reason is that women today are getting married later in life than those 80 years ago, and then only having one or two children instead of three or more as was common in earlier years.

Across Canada by province the number of children per household ranges from a low of 1.4 in B.C. to a high of 2.0 in Saskatchewan. Manitoba is at 1.86 and Alta is at 1.8. The Prairie provinces are the three highest, due most likely to their relatively higher rural population.

In 1960, Canada was at 3.9 children per household, and the rest of the world was at 4.9. In 2017 Canada was at 1.6 and the rest of the world was at 2.5. In 2050 Canada is

In Canada in 2017 there were 7,900 people over 100. By 2061 that is expected to grow to over 78,000 due mainly to better diet and health care

expected to be at 1.7 and the rest of the world is estimated to be at 2.35.

Fertility rates in the world's 10 largest countries have dropped by more than 50 per cent over the last 50 years from an average of 5.2 down to 2.5 kids per household.

Bricker predicts that the world will reach a peak population around 2050 at about 8.9 billion people, then start to decline due to these dropping fertility trends.

AGING PATTERNS

Bricker said the average lifespan in Canada was 57 in 1921 and 81 in 2017. By 2036 it will be 87 years.

In China in 1950 the life expectancy was 40 years. Today it is 80 years. That is why we have seen such a rapid increase in total population there over the past 65 years.

The main reasons for these increases are better diets, the reduction of smoking in many countries and better health care.

In 1960, 7.7 per cent of Canada's population was 65+. Around the world, five per cent of the population was 65+.

In 2017, 18.3 per cent of Canada's population was 65+, but around the world, only 9.3 per cent of the population was 65+. In Canada, for the first time in history the number of those 65+ is greater than the number of those under 15 years of age. Not a good trend.

By 2050, 26.4 per cent Canadians will be 65+ compared to 16 per cent of the world population.

In Canada in 2017 there were 7,900 people over 100. By 2061 that is expected to grow to over 78,000 due mainly to better diet and health care.

In 1971 in Canada, 6.6 people were working for every retired person. In 2012, there were 4.2 workers per retired person. By 2036,

there will be only 2.3 workers per retired person.

It is difficult to maintain a government pension plan when the number of workers is dropping and retirees are living longer! Premiums will have to go up dramatically to keep it functional.

URBANIZATION

Darrell Bricker also talked about urbanization. In 1960, one-third of the Canadian population lived in cities. In 2017, just over half of Canadians lived in cities. By 2050 it is expected that two-thirds of the Canadian population will live in cities.

In the 1920s, 50 per cent of Canadians lived rurally. In 2011 only 19 per cent now live rurally.

IMMIGRATION TO CANADA

Globally, Canada has the fastest growing immigrant population as a percentage of total population. We bring in equal to one per cent of our total population annually.

To help rebalance fertility rates and the number of workers per retiree we need to ramp up these numbers even more.

The majority of immigrants to Canada are economic migrants with skills or education who are able to come and work right away. Refugees only make up 15 per cent of the total number of immigrants that come to Canada every year.

The top six countries that Canada receives immigrants from are the Philippines, India, China, Pakistan, Iran and the United States.

Twenty per cent of Canada's population is foreign-born; 49.6 per cent of Toronto's population is foreign born.

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PHOTO: THINKSTOCK

Canada has become a truly diverse, multicultural country.

MY THOUGHTS ON THE DATA

The largest and fastest growing countries in the world have unique cultural and ethnic food preferences. This opens up vast market opportunities for Canadian agriculture.

There are ethnic and cultural local niche markets in every major city across Canada that can be tapped into. How can we displace some of the imported foods in these markets with locally grown options?

What do we have to do to supply a larger part of those markets? Both domestic and in export markets?

What kinds of new crops do we need to grow?

What kinds of new crops do we need to grow?

As you plan for the future of your farm here are some questions to ponder:

Is large scale farming the way to go? Or are niche, small-market opportunities the way of the future for your farm? This could include processing and packaging to target your specific niche market.

Should you scale up your machinery for more acres or scale up equipment for cleaning, processing and packaging to net a more profitable return on your farm?

If Canada's population is going to grow it will have to be through immigration, so the demand for different food stuffs will always be there and will continue to grow. How can you tap into that long-term market opportunity?

Why do you think we have had three announcements over the past year of new pulse cleaning, processing and fractionation plants being built in Western Canada? What markets do you think they are trying to tap into?

These ideas may not work on everyone's farm but there will be opportunities in the years ahead. This might be a great discussion to have with different generations on your farm. GN

Brian Wittal has 30 years of grain industry experience, and currently offers market planning and marketing advice to farmers through his company Pro Com Marketing Ltd. (www.procommarketingltd.com).

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Investing risk and skepticism

Investing with skepticism, not a crystal ball, makes for healthy off-farm portfolios

By Andrew Allentuck

Investing, in the broadest sense, is about predicting what will be valuable in future. A century and a half ago, railroads knit nations together. Then came airplanes. Along the way, the greatest empires of central Europe — Germany and Austria — perished, China sank and rose again to produce dollar billion-

aires faster than any other country, and Japan opened up and went to war, was destroyed, and became an economic power once more. Fifty years before each event, anyone predicting these events would have been thought daft.

Investing in early stage ideas is problematic. The high-risk path is strewn with failure. However, if you spread your financial commitments widely and keep costs down, your

upside will be greater than your downside. This is no way to get rich quick, but it will keep you from becoming suddenly poor.

Risk can turn from theory to disaster very fast. Atari and Commodore 64 were primitive computers, if anyone remembers. LEOs were low earth orbit satellites that cost hundreds of millions and then were made obsolete by cell phone towers. Airlines rose and collapsed. Remem-

ber Eastern Airlines, Pan American World Airways, TWA, Swissair, Sabena, and our own Canadian Pacific and Wardair? It is not just the idea, but the survivability of companies that turns concepts into long term gains.

How do you know what to do when rules seem to change so quickly? The integrated North American car assembly industry may be shattered by the American

president. Quebec may keep or lose its protected dairy industry depending on what happens in trade negotiations. How can a person without a crystal ball make rational decisions? I don't think you can.

Look back a century to 1918. Germany was financially shattered by the First World War, ditto Austria. Both lost their monarchs, then were united in one empire, the Third Reich, by a movement led by a failed artist who had a gift for making rousing speeches. That the most robust monarchies on the continent would flop was unpredictable — before they did. That Germany would be reindustrialized by the American Marshall plan was unimaginable and actually against the advice of the Secretary of the U.S. Treasury who, in 1944, had urged that Germany be left in defeat and ruin never to rise again.

In 1960, IBM owned the world of mainframe computing. In 1990 it was a big player still. Today, who cares? IBM was the world 30 years ago, now it is just one of many companies in computer services.

And think of the flops of the last 20 years: dot.coms with no business plans, Nortel Networks with unbelievable and often disingenuous accounts, Enron — an outright fraud. How can a sane person invest in this stew of lies and hopes?

THE ANALYSTS

When you examine the record of analysts paid for their crystal ball work, you come away scratching your head. The CXO Advisory Group, a Massachusetts-based think tank, rates gurus. Here is what they found:

- The average guru has a forecasting accuracy of about 47 per cent.
- The distribution of forecasting accuracy by the gurus looks very much like what you would expect from random outcomes. That makes it very difficult to tell if there is any skill present.
- The highest accuracy score was 68 per cent; the lowest was 22 per cent.

The gurus may be smart and have degrees from MIT and Harvard. But most work for investment banks who pay their salaries and sell the stocks they rate. Gurus who want to keep their fat paycheques do not tell the world that their firms' clients are money losing enterprises with overpaid managers.

I think you can do better with a combination of skepticism and a refusal to pay more than about 20 times annual earnings for anything, plus an insistence of a dividend rate of 2.5 per cent or more and, as well, refusal to buy when the dividend yield goes to seven per cent or higher — a sure sign the market thinks the dividend will be cut. Be a skeptic and reject others' advice even if they have fabulous titles and brilliant resumes.

In the dot.com era from 1998 to 2000, some stock market analysts urged investors to pour money into companies that had no profits, no



sales, sometimes no business plan, but did have a period in their name. This advice produced astonishing runups in price and then equally astonishing flops when folks realized they were buying wind without sails.

Today, we have imaginary money being priced to the heavens by people who don't know what character-

istics money should have. Imaginary money that behaves like a rocket on the way up and then flops like a bad North Korean missile test is not money. It is not even a good commodity. But novelty and lack of understanding propel Bitcoin and about 800 other cryptocurrencies to the heavens.

As for cannabis, it may work. It is, after all, an agricultural commodity with a known and vigorous market. Valuation of the product with consumers having vast choices of this or that bud is going to be a challenge, as is the precise legality of the stuff in various jurisdictions.

So we come back to the problem of finding solid investments.

In the end, there is no substitute for doing your own research, being a cynic, never paying too much for somebody else's business, and keeping plenty of cash on hand so that, if things turn bad, you won't be forced to sell at firesale prices. Caution

cuts risk. If there is one lesson for off-farm investing, it is just that. Be early and be at risk. Be late and lose. **GN**

Andrew Allentuck's book, "Cherished Fortune: Build Your Portfolio Like Your Own Business," with co-author Benoit Poliquin, will be published in November, 2018.

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TILLAGE

Kinze adds Mach Till implement line

Our cold-weather review of a Ford 2018 Platinum pickup

By Scott Garvey

Williamsburg, Iowa, based Kinze has long been known for its grain carts and planters. This year the brand is growing its product portfolio by adding the Mach Till high-speed tillage implement line.

"Farmers will now be able to obtain three types of equipment from their Kinze dealer, all with the same standard of quality," said Susanne Veatch, the company's president and chief marketing officer, in a press release.

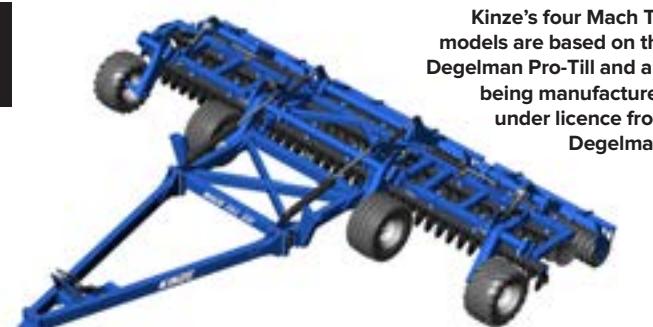
The design of the new high-speed discs may look a little familiar to Prairie farmers. Saskatchewan's Degelman Industries has licensed the design of its Pro-Till to Kinze, who will build and market its ver-

sion under the Mach Till name. It will offer four working widths.

"We are constantly evaluating opportunities in the market for new products that would be a good fit for Kinze," Veatch noted. "The Mach Till product line allows us to improve our already strong brand and have instant access to the growing high-speed disc segment with an already proven product."

The Mach Till line offers working speeds in the eight to 12 m.p.h. range and can be used for working at deep depths or for shallow seedbed preparation. They'll be available through all North American Kinze dealers, with deliveries scheduled to begin this fall. **GN**

Scott Garvey is machinery editor for Grainews. Contact him at Scott.Garvey@fbcpublishing.com.



Kinze's four Mach Till models are based on the Degelman Pro-Till and are being manufactured under licence from Degelman.



PHOTOS: KINZE

Kinze will now offer its own high-speed tillage line, with the first deliveries scheduled for the fall of 2018.

CANADA'S FARM PROGRESS SHOW

The face behind CFPS's classic trucks

Long-time show participant has a passion for heavy trucks

By Scott Garvey

Regular visitors to Canada's Farm Progress Show in Regina have likely seen the daily parade of classic trucks and farm machines go past them several times. And each year the parade of machines that make the trip around the show grounds includes some of the same equipment. Many owners of those vintage machines have been long-time participants, bringing their trucks and tractors back year after year. Sterling Hornoi is one of those who've contributed machines to the daily parades for several years.

Owner of Hornoi Leasing and Sterling Truck and Trailer Sales in Regina, Sterling Hornoi has been showing examples from his stable of classic heavy trucks not only at CFPS, but also at shows in several cities in the U.S. and across Canada. Sterling is a member of the American Truck Historical Society, which is made up of a broad group of Canadian and American classic truck enthusiasts.

His passion for big rigs started with a career in the trucking industry.



PHOTOS: SCOTT GARVEY

This 1958 Fargo truck tractor is part of Sterling Hornoi's personal collection and makes regular appearances at Canada's Farm Progress Show.

"I started driving trucks with one like this in '58," he said as he stood beside his vintage Fargo highway tractor. "August '58 was my first trip — from Regina to Swift Current."

Sterling had several trucks entered in this year's CFPS vin-

tage machinery display and daily parade. Along with the old Fargo there were a '70s vintage Chevrolet Titan cab-over highway tractor and a pair of Hayes tractor units.

"I sold Hayes from '72 to '75," he explains. "I was the dealer

here in town for them." Unfortunately, the Hayes brand suddenly ceased operations in 1975, which caused dealers like him a lot financial problems. It left them stuck with inventory that became very difficult to sell. However, Sterling was able to

continue selling trucks by switching to the Volvo brand, and he is now Regina's Volvo truck dealer. **GN**

Scott Garvey is machinery editor for Grainews. Contact him at Scott.Garvey@fbcpublishing.com.

SEEDING EQUIPMENT

Canola Ready Technology from Horsch

Small seeds kit lets Horsch's Maestro SW planters handle canola with an easy conversion

By Scott Garvey

Horsch has recently announced it now has a small seeds kit for its line of Maestro SW planters that will allow for an easy conversion to handle canola. It includes a stainless steel seed disc and quick-change meter components, which it says allows for fast planter change over.

The brand also claims producers could see a 50 per cent or more reduction in seed cost when using a planter for canola when compared to air seeders. Those savings come primarily from the planters' ability to singulate seed and place it very accurately, which could permit lower per-acre seeding rates. But other features built into the planters help reduce seed input as well.

"The seed savings alone in canola gains an extra \$30 to \$40-plus per acre of margin," said Jeremy Hughes, product manager at Horsch, in a press release. "Features such as individual row shut off to control seeding over-



lap, curve compensation, and auto row unit downforce control add even more seed savings."

The Canola Ready Technology kit can be installed on all Maestro SW row crop planter models, which are available in 40 and 60-foot toolbar widths with row spacing of 15, 20, 22 or 30 inches. **GN**

aScott Garvey is machinery editor for Grainews. Contact him at Scott.Garvey@fbcpublishing.com.



A new small seeds kit that includes a canola seed disc is now available for Horsch's Maestro SW planters.

PHOTO: HORSCH

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NEW EQUIPMENT

VERSATILE REPLACES THE RT 490

The brand makes improvements to the cab and interface in its RT 520 combine

By Scott Garvey

In 2011 Versatile introduced the RT 490 combine. It was the first time the brand – under its current ownership – has offered one since combine production in Winnipeg ceased a few decades ago. Versatile's parent company combine manufacturer Rostselmash of Russia built and supplied the RT 490 to the Winnipeg brand.

Adam Reid, marketing manager for Versatile, says the decision was made to update the RT 490 now that it has several years of service in North America under its belt. The upgrades incorporated into its replacement were based largely on Canadian and U.S. customer feedback.

"The RT 490 was a great combine for us; it was an older platform," he says. "We introduced it in North America in 2011-12. What we found was the productivity was very good. The threshing capacity was great, but we needed to make some improvements to the cab and the operator interface. Now we're able to introduce the RT 520."

The RT 520 uses the same basic threshing body used on the 490, but it did see some improvements to further improve harvesting performance.

"The bulk of the machine is the same in terms of the mechanics of it," he explains. "But we have a bigger clean grain elevator than we had before, which will actually help improve capacity, especially in wet crops. We have a new feeder chain system on the front."

The new combine also gets some updated overall styling. But the biggest improvements are related to making the operator more comfortable.

"We found the feedback from the customers has been good on the threshing," Reid notes. "But they really wanted more operator comfort, especially with the amount of time you spend in there. So in addition to making the cab bigger, we've made it quieter."

"It's a 30 per cent bigger cab. It's inline with what the North American industry expects. It's much



The RT 520 is built around the same basic threshing body used in the previous RT 490, but offers a few changes to improve threshing performance along with a much more comfortable cab.



The redesigned body includes access panels that lift high to allow for access to the threshing body.



An uprated lighting package more than doubles the available light offered on the previous RT 490.



The RT 520 gets a completely new cab with 30 per cent more interior space that provides a more ergonomic and quieter operator environment.



The RT 520 uses the same counter-rotating concave design as the previous RT 490.



Up front is a newly designed feeder house arrangement.

Continued on Page 37 ▶

25th anniversary tractor

Versatile hasn't been shy about its willingness to try new looks on its machines, especially when it comes to offering unique paint schemes. The "Legacy" look that saw limited production on 50th anniversary four-wheel drive tractors was well received by customers. Now, it's thinking about doing something similar with its front-wheel assist tractor line.

"We're known for four-wheel drives, says Adam Reid Versatile marketing manager. "There's no doubt when you say Versatile people think of four-wheel drives. But we do have a 25-year legacy of building front-wheel assist tractors as well."

First introduced in 1993, the Genesis tractor line was built in the same Winnipeg factory. Since that time, that lineage of production actually represents seven brands that were sold internationally.



The special livery on this 365 is to celebrate 25 years of front-wheel assist tractor production in Winnipeg.

"What we did for the 25th anniversary, is one tractor," Reid says. "It's done in black paint with a silver fleck in it, of course 25 years being a silver anniversary. We're

just doing one right now, but if there's demand we might build a few more. GN

Scott Garvey

PHOTO: SCOTT GARVEY

► Continued from Page 36

"We probably have more power in this combine than we actually need" Reid says. "We've never had a farmer complain to us about the power."

"In terms of working on the machine, it's a lot easier. The panels open up way wider than some of our competition and access to the engine bay is a lot different. It's built in that Versatile philosophy of being simple, reliable and easy to maintain."

2018 will be a limited release

It also gets a much-improved lighting package, more than doubling the total light output that was available on the 490.

"All the changes the customers have been asking us for have now been integrated into the 520," says Reid.

Versatile plans to ease the RT 520 into the North American market in limited numbers for this season.

"2018 will be a limited release," he confirms. "Versatile tends to approach all our new products with a little more caution at the outset, just to make sure we're providing the right product to the market."

And Reid adds that the 520 will have a price point advantage over the other main competitors on the market, somewhere in the neighbourhood of about 15 per cent. GN

Scott Garvey is machinery editor for Grainews. Contact him at Scott.Garvey@fbcpublishing.com.

INDUSTRY QUOTE

“30 years ago if you were a farmer you had welding skills and you could do a lot of stuff in the shop in the winter months, and that sparked a lot of new equipment manufacturers. The ones that are still in business today, though, have taken that innovation to the next level.”

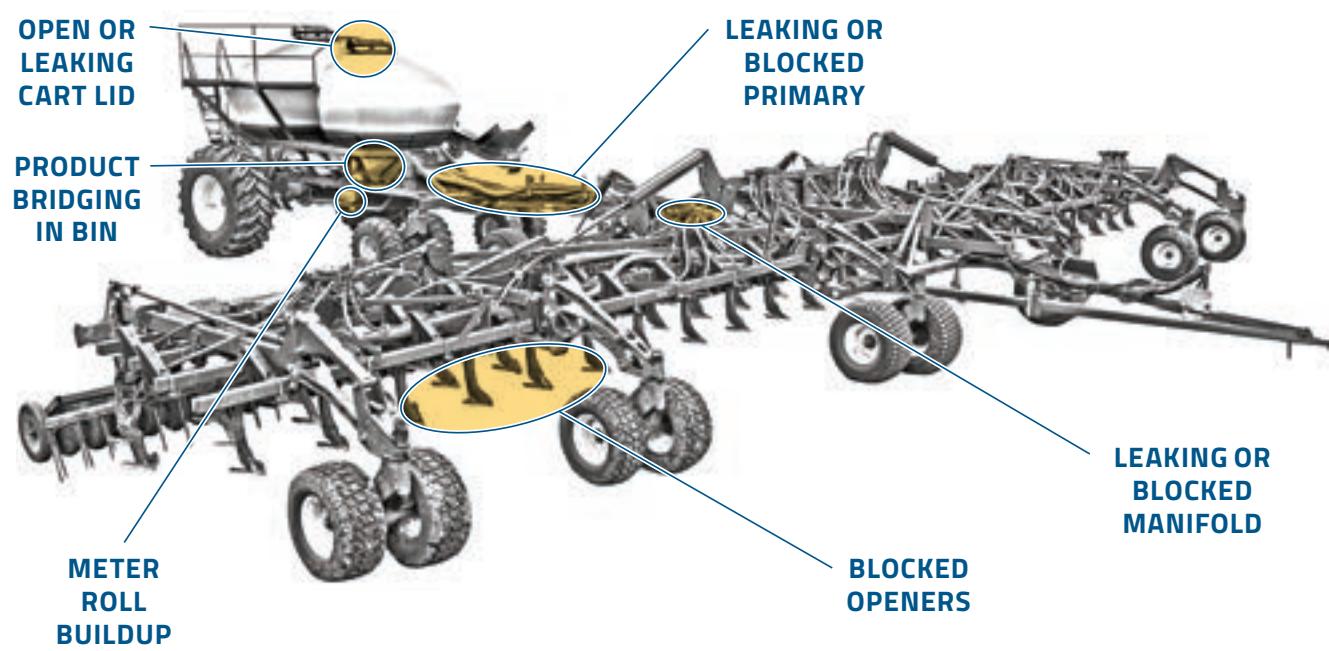
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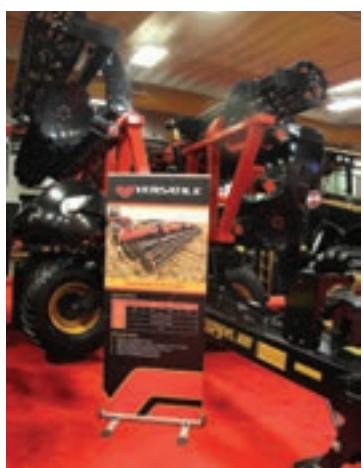


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TILLAGE EQUIPMENT



The "Fury" high-speed tillage tool made its first public appearance at Manitoba Ag Days in Brandon.



The new Fury high-speed implement from Versatile joins the vertical tillage Viking in the brand's implement line.

NEW FURY HIGH-SPEED TILLAGE IMPLEMENT

Versatile's new high-speed disc implement will be available this spring

By Scott Garvey

The new Fury high-speed implement from Versatile joins the vertical tillage Viking in the brand's implement line. The company debuted the Fury at the Manitoba Ag Days show in Brandon in January.

"A lot guys don't want to run 4.5 or five miles per hour like a traditional tandem disc does," explains Trevor Jubinville, Versatile's tillage and seeding product marketing manager. "They want a tool that's simply more productive and that means going faster. That's what this machine will do. The Fury is a high-speed compact disc. It's going to move lots of soil, lots of residue. It works 2.5 to five inches deep. It will manage residue, but you can run eight to 10 miles per hour." It can flex side-to-side as well as fore and aft to better follow ground contours.

The Fury is a high-speed compact disc

The Fury uses two rows of independently mounted discs followed by a soil reconsolidation attachment to leave a firm field surface behind it that is less prone to erosion. It is available in 25-, 30-, 35- and 40-foot working widths, and it folds up to just under 12 feet wide and under 14 feet high for easy transport.

"We give you a choice of blade size," adds Jubinville. "Our base blade is a 20 inch with a four-bolt bearing hub. We offer a 22-, a 24- and a 26-inch blade. With a 22 and large blade we go to a six-bolt hub with a heavier bearing. We offer three different choices of finishing attachment on the back."

The Fury uses a full-floating frame design, so it will float front to back. And the wings will flex up and down to contour over rolling terrain.

"It's available in a limited release for 2018," he says. "So we'll have units available for spring." The Fury will also be distributed under the Farm King brand as the HS8500. **GN**

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Scott Garvey

ANIMAL HEALTH

Problems and benefits of twins

It is worth the extra management effort to save both calves



ANIMAL HEALTH
Roy Lewis

In my practice I often hear producers complaining about twins, mainly because often the focus is on the problems they can present. However, research done on a twinner population over the last 10 years in the U.S. found there to be a definite economic benefit with twins. So it is important to look at both the positive and negative aspects that come with these double deliveries.

There is no doubt twins can be a positive if they both arrive alive, are the same sex and you have an extra cow to foster one of the calves. But we all know the opposite – twins coming malpresented (mixed up), then you finally get them out (with or without veterinary assistance) both are dead and the cow doesn't clean and becomes a problem to rebreed. If we can minimize the bad scenario and come up with more positives, twins would be welcome. Keep in mind they will always require more care, attention and management skills.

The original British breeds rarely twinned but with the advent of the exotics, better nutrition and other factors, twinning occurs about eight per cent in Simmentals, Charolais and Holsteins. This creates a lot of extra calves, which if they reach weaning, can definitely improve the bottom line. The key is getting them out alive, grafting one to another cow and then getting the cow rebred. Fortunately twinning has decreased with the red and black Simmentals, and even the traditional ones have fewer twins than previously. Twins happen more often than we think in bison. Most orphan bison calves were most likely born as twins.

Dystocias from fetal malpresentation are the biggest reason twins have

a lower survival at birth. Twin or triplet lambs and kids are seldom mixed up at birth, yet calves commonly are. When one ponders all the permutations and combinations of all the legs and two heads coming backwards and forwards, it is no wonder mixups occur. In U.S. twinning research, they selected and kept cows with a propensity to twin resulting in more than 60 per cent of cows delivering twins. They knew to watch these cows closely and jump in when problems developed.

In a commercial or purebred operation there are a few clues to help us. Twins can often drag down a cow's condition so not only should the cows be pulled from the main herd and fed with the heifers where there is less competition but they can also be observed when closer to calving.

Cows produce twin calves because they have ovulated two eggs or an egg has split, resulting in identical calves. Genetically these cows have a high likelihood of doing it again. You often hear farmers say a cow has had three sets of twins in the last four years or she twins every second year. These are very common scenarios. These cows with any past history of having twins likewise should be monitored closer when they calve. If you observe any unusual behaviour at calving, don't hesitate to get that cow in and check her out. If cows are ultrasound early at say 50 to 60 days, twins can be picked up by the test and these should definitely be noted and referred back to come calving season.

COMMON PRESENTATIONS

The most common presentation for twins is one backwards and one forwards. With the backwards presentations the likelihood of a full breech (tail first) is increased and these often require veterinary intervention. These are a great loss if the breech birth is first preventing the second



PHOTO: ROY LEWIS

About eight per cent of most common beef breeds will produce twins, and it is also quite common among bison. Economics show there is value in making the extra effort to save the extra calf.

calf from being born and both are born dead.

With breech births, the cows appear in first-stage labour for a long period and often don't initiate calving quick enough. In calving twins out, remember to follow the legs back to make sure they are from the same calf and the top calf is the one that must come out first. If assisting at calving, remember to routinely check the cow for a twin, especially if a calf is backwards. Twins have a shorter gestation by about a week than a single birth so it is not uncommon to have a higher percentage of twins early on in the calving season. It never hurts to start observing cows one week to 10 days before the first one is due to avoid missing twins.

Having an extra calf earlier is great because there will be opportunity to foster one. If a cow loses one right at calving, rub the placenta on the twin calf to be grafted. If this fails any of the other tricks including placing the skin of the dead calf over the live one can be attempted. This method works very well if an older calf dies and its smell is transmitted to the transplanted calf.

Half the time twins are mixed sex and about 90-95 per cent of these heifer calves will be freemartins (very little development of the female reproductive organs) and will be ster-

ile. Some freemartins you can definitely tell as the external genitalia are different with a real prominent clitoris. Others look normal and may even cycle but will not breed. Because they possess more male influence freemartins will grow very well (like a bull calf). Producers generally will graft the freemartins, often with the fact they were a twin getting lost in the shuffle. A common mistake is selecting a freemartin for replacement status as they will be in the upper 25 per cent for growth in the heifers. Mark their tag well with "Twin" written on it or use a different-colour tag to avoid this mistake. When they are identified in the feedlot, freemartins do better if implanted with the steer implants.

COW ISSUES

Any cows that deliver twins are more prone to certain clinical diseases. Retained placenta and metritis are the obvious ones. Because they are generally more run down, the immune system is compromised and conditions such as mastitis and ketosis are increased. If the cows are raising both calves at least for the first few days, provide the cow with better-quality feed as well as extra vitamins E, A and D. A selenium shot may help with retained placenta. As mentioned, a higher number will be treated for retained placentas and also watch for signs of depression and/or a fever, which may indicate metritis. Twins often extend the stretching limit of the uterus and it does not contract as well or as fast after calving. This results in fetal membranes not being expelled and the accumulation of micro-organisms in the uterus. This combination combined with intervention at calving can lead to metritis.

With twins being earlier in gestation, the fetal membranes are immature so don't release as quickly. This is why retained placentas are common

in almost all abortions. Research several years ago showed using GnRH or prostaglandins at two weeks after calving may get these cows cycling earlier and allow them to get bred on time. There will be more open cows after twins or often they will take another cycle to get bred so it is imperative to provide this extra care post-calving.

I would be remiss to not talk about colostrum supplementation with twins. Postnatal survival is lower with twins due to insufficient consumption of colostrum. Perhaps the cow only mothers the first or second calf or simply has not produced enough to supply both calves. During a slow birth, oxygen-deprived calves may be kind of stupid and have a poor suck reflex. This is where an extra supply of colostrum either saved from your herd or using the good-quality commercial colostrum such as Headstart from the Saskatoon Colostrum Company is a real benefit to improving the survival of twins. Even if they both have nursed vigorously, it's a good practice to split a bag of high-quality colostrum between the two calves.

More pounds of calf weaned per cow exposed are definitely possible if more twins are saved. Many of the negatives can be counteracted with good management and a little more work. If purchasing twin bulls for breeding, keep in mind birth weight is not relevant and they will not have more of a propensity to twin but their heifer offspring will.

It's better to pamper twins as we can't really prevent them and saving them results in more pounds of beef. Here's to a great calving season and no lost twins. **GN**

Roy Lewis is an Alberta-based veterinarian specializing in large-animal practice. He is also a part-time technical services vet for Merck Animal Health.

BETTER BUNKS AND PASTURES

Supplying good cow nutrition in the post-calving season

Ramp up ration as cow gets closer to calving — and beyond



Peter Vitti

One of the first questions I like to ask cow-calf producers is, "When are your cows calving?" It gives me an excellent idea as to what stage of nutrition their cow herd needs at the time, so I can recommend the best diet during their post-calving season.

To design a good post-calving diet, I often remember the dietary requirements of the cow herd increase at a modest rate at the beginning of the winter when the average beef cow is in mid-gesta-

tion and the cold weather has yet to make a big impact upon her body condition. Her diet of fair- to good-quality forages often supports her requirements for energy and protein as well as those of her small fetus. The cow's need for essential mineral and vitamin are also nominal.

All changes overnight! This is when her need for energy, protein, minerals and vitamins dramatically increases as the average cow enters her last 45-60 days of pregnancy. They continue to skyrocket for the next couple of months after calving.

That's because the pre-calving nutrients are used to support her accelerated fetal growth and

colostrum (antibody-enriched first milk) production, while a significant amount of nutrients she consumes immediately after calving is transported to her udder to produce five to 10 kg of regular milk each day for her newborn calf. During transition, the cow's reproductive system is also preparing itself to resume estrus for the subsequent breeding season. The cold weather could also still have a negative impact during those mid-winter calving days.

ESSENTIAL NUTRIENTS

Of the four essential nutrients consumed by beef cows, energy is needed in the greatest amount during the immediate months after

calving. It is expressed throughout beef science literature in two different ways, namely: TDN (total digestible nutrients) or NEm/NEP (net energy maintenance/production). Although, I have used both methods in formulation of my beef feeding programs, I still prefer to design beef diets using older TDN energy values, because I can simply envision TDN values in different feeds in absolute amounts. For example, 10 kg of medium-quality hay containing 55 per cent TDN equals 5.5 kg of TDN energy for beef cows.

TDN values also give me a clear comparison of specific energy values found in different feedstuffs; forages = 40-60 per cent TDN and

energy-enriched grains equals 70-75 per cent TDN. It also gives me an idea of forage quality; low-quality forage equals 40-45 per cent TDN such as found in straw, 50-55 per cent TDN medium-quality grass hay and high-quality alfalfa equals 55-65 per cent TDN.

I can design a post-calving cow feeding program by looking up the respective TDN requirements and related information of the beef cow that will be nursing a newborn calf. So, if a mature post-partum beef cow (525 kg, BW) has a feed intake of about 13 kg (2.5 per cent of BW); according to NRC BEEF

See COW NUTRITION on page 40 ▶

Tighter feeder cattle availability ahead

Drought in southern Plains has moved more cattle to feedlots



MARKET UPDATE
Jerry Klassen

In mid-February, Alberta packers were buying fed cattle in the range of \$273 to \$275 on a dressed basis while live prices were quoted from \$163 to \$165. Fed cattle prices have been relatively flat so far this year. However, feeder cattle prices dropped sharply in January and failed to recover. This is largely due to weaker feeder cattle prices south of the border.

Feeder cattle that usually move off small-grain pasture in March and April are being placed sooner during the winter due to drought-like conditions in the U.S. Southern Plains. Feed barley prices have been firm throughout the winter and stocks are expected to become extremely tight by the end of the crop year. This could also be tempering the upside in the Canadian feeder market.

The Canadian dollar has deteriorated and been very unstable. Rising interest rates, weakening bond prices and a volatile equity market have investors shifting capital into U.S. dollars. A safe-haven investment strategy is needed during this period of uncertainty.

SLOWER EXPANSION

The cattle inventory report was considered supportive for feeder cattle market because the herd did not expand as quickly as expected. The U.S. calf crop came in at 35.8 million head, which reflects a year-over-year increase of 0.715 million head. It is important to realize that many analysts were projecting a year-over-year increase of 1.2 million head.

Secondly, the report implies that the number of feeder cattle outside of feedlots on Jan. 1 was 26.1 million head, 1.6 per cent below last year. We've seen U.S. November and December feedlot placements come in higher than expected due to the drought-like conditions in the Southern Plains. This suggests feedlot placements for March and April could be sharply below year-ago levels.

Currently, the feeder market is experiencing a sluggish tone because feedlots are carrying sufficient numbers. However, feeder cattle supplies could be abnormally tight in March and April, which would result in higher prices. Looking forward, this is constructive for fed cattle prices in the third and fourth quarters of 2018 because beef production will be lower than earlier projections. This is a fundamental shift compared to earlier expectations.

Seasonally, the fed cattle market tends to percolate higher through March and then soften in April. Beef demand tends to surge in March while early-spring beef production will be similar to last year. Moving forward the fundamentals shift quite quickly. Given the placement schedule this past fall and winter, second-quarter beef production will be sharply above year-ago levels, causing the fed cattle market to come under pressure.

There is potential for a divergence between the fed and feeder cattle markets in the second quarter. There is usually a surge in U.S. feedlot placements in March and April when feeder cattle move off small-grain pasture. However, the cattle inventory data shows us that feedlot placements will be down from year-ago levels in March and April. Therefore, the feeder market could actually percolate higher in the spring and summer. The fall feeder cattle futures are reflecting a premium over the March and May contracts, confirming ideas on the placement schedule. Unlike the feeder cattle, the October live cattle futures are trading at \$9 discount to the April contract.

As of late February, medium- to larger-frame fleshier Charolais-cross steers averaging just under 850 pounds were trading for \$175 in central

USDA CATTLE INVENTORY REPORT			
	2017	2018	% change
All cattle and calves Jan. 1	93,704.6	94,399	101
Cows and heifers that have calved	40,559.2	41,122.6	101
Beef cows	31,213.2	31,723.0	102
Milk cows	9,346.0	9,399.6	101
Heifers 500 pounds and over	20,132.0	20,244.8	101
For beef cow replacement	6,368.2	6,131.2	96
Expected to calve	3,979.2	3,771.0	95
For milk cow replacement	4,754.0	4,781.3	101
Expected to calve	3,071.6	3,037.9	99
Other heifers	9,009.8	9,332.3	104
Steers 500 pounds and over	16,383.5	16,352.2	100
Bulls 500 pounds and over	2,243.6	2,252.2	100
Calves under 500 pounds	14,386.3	4,006.4	107
2016	2017	% change	
U.S. Calf Crop	35,092.7	35,808.2	102

Alberta. Similar weight and quality heifers were quoted at \$162. If we think back to my previous article, an average basis is \$12. If we use the March feeder cattle close of US\$147.27 and an exchange rate of US\$0.78950, the feeder cattle basis is \$10 for these steers. Given the current basis, this is actually a good buy for feedlot operators. The cow-calf producer or backgrounding operator should probably look at additional options, which I'll cover in the next article.

Feedlot margins have been hovering between \$80 to \$120 per head this winter. Despite the positive margins,

weakness in the deferred live cattle futures has failed to enhance buying interest. Feedlots are factoring larger than expected U.S. beef production during the May-June period because of the sharp year-over-year increase in placements during the winter. **GN**

Jerry Klassen is manager of the Canadian office for Swiss-based grain trader GAP SA Grains and Products Ltd. With a strong farming background, he is also president and founder of Resilient Capital, a specialist in commodity futures trading and commodity market analysis. He can be reached at 204-504-8339.



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DRIVING DEMAND



► COW NUTRITION from Page 39

(2016) requires about 7.5 kg TDN (re: 58 per cent, dmi) to support about 10 kg of milk production and maintain an optimum 2.8-3.0 body condition score until the start of the breeding season. These dietary energy requirements can be managed by a post-calving diet made up of about 11.0 kg of a 55 per cent TDN forage and supplemented with 2.0 kg of grain/barley (75 per cent TDN). Note: My calculations are $[11 \times .55] + [2 \times .75] = 7.5$ kg TDN. If cold weather becomes a factor during the calving season and the few weeks beyond, the cows may require extra kilos of TDN and then an additional 1.0-2.0 kg of barley (75 per cent TDN) per cow could be fed to increase its energy density.

PROTEIN NEEDS

After supplying enough energy, I want my feeding program/diets to supply enough protein that meets the respective requirements (NRC BEEF, 2016) of calved-out beef cows. However, unlike energy, protein requirements are usually not impacted by cold winter, but may be challenged by forage quality.

Post-calving protein requirements for 525-kg beef cows are about 1.2-1.4 kg per day, depending on post-partum milk production. If the producer feeds 13 kg of 9.0 per cent protein greenfeed and some grain, it should meet the protein requirement of cows up to calving. However, without protein

supplementation of 1.0-1.5 kg of DDGS or 0.5-1.0 kg of a 20 per cent protein low-moisture block, protein requirements may not be fully satisfied for the recent fresh cow.

I also usually recommend beef producers to feed about 70-100 g per post-partum cow per day of a well-balanced commercial beef mineral that complements the mineral and vitamin profile of the forages and grains being fed.

On a practical basis, most producers I know often fill up mineral feeders every few days to one week's worth at a time. So, if a producer operates a 200-cow operation and has about eight mineral feeders (one per 25 cows), they should put out a half bag of mineral per feeder per week. Calculations are: (i) 200 cows x 70 g x 7 days = 98 kg, (ii) 98/25 kg = 4 bags of mineral and (iii) 4/8 = 1/2 bag of mineral per feeder. Adjustments can be made if a significant amount of mineral is leftover or wasted.

Pulling together cattle mineral and the other essential nutrients into a comprehensive feeding program for beef cows after calving helps them nurse well-growing and healthy newborn calves. As a result, such good post-calving nutrition promotes producer financial success in one of the most important times of the year. **GN**

Peter Vitti is an independent livestock nutritionist and consultant based in Winnipeg. To reach him call 204-254-7497 or by email at vitti@mts.net.

Sweeter grass may benefit milk production

Different classes of livestock can make better use of forage mix



Debbie Chikousky

Spring is the time of rebirth. This year our livestock is not scheduled for babies till late spring so we have more time than usual to study, read, and plan our 2018 pasture season. While reading over garden catalogues my mind keeps turning to old ideas of turnip grazing, mangels (large beet) or potato choppers. Some of these plants would never be utilized as hay; but maybe for pasture?

We pasture cattle, sheep and goats. Studies show that goats prefer to browse on brush rather than on grass. Their preference would be a diet that was about 60 per cent browse and 40 per cent grass in mixed-plant populations. This makes them a great addition to our bush pastures. The sheep and cattle are both grazers, though they do complement each other because the sheep are more useful for cleaning up weedy spots the cattle will just leave behind. The sheep might nibble on a piece of brush but it would not be a big part of their diet. With this knowledge in hand a continual effort has been made to improve our pastures and place livestock where their needs are best met.

Last fall a tour of the pastures found the undergrazed areas tended to contain plants that the sheep or goats would have been happy to use, but which the cows left behind. A European visitor suggested in his country they would heavily apply compost both in the fall and again in the spring. He said that this would help to add many nutrients to the soil as well as introduce elements that preferred plant species need to thrive. This would probably be a good pasture to apply some of the compost we've made from manure/bedding/feed materials. It is suitable for use on pastureland.

TURNING GRASS TO SUGAR

Understanding how a ruminant uses grasses has also helped us to better utilize pastures. A lactating ruminant needs to be producing as much milk as possible for her young to flourish, and is depending upon pasture grasses to produce that milk. Ruminants are relatively inefficient at converting grass proteins to milk proteins, with a conversion rate of 20-25 per cent. To increase the milk output, the sugar content of the grass must increase. New Zealand research by IGER Innovations in 2001 suggested that high sugar grass content on the farm has a positive effect on the amount and quality of the milk produced. This is very important to meat producers.

The rumen of the animals breaks down the grass, producing amino acids that in turn produce protein which is later used for milk production. However when the diet lacks readily available energy such as sugars, rumen microbes either cannot

grow, or, instead use amino acids to provide energy, meaning less milk production.

Feeding energy-rich foods in a concentrate feed is one way to increase the efficiency of the rumen, but the cheaper way is to use the natural sugars in forages. This is especially true in the warm months when animals are on pasture. Some producers use creep feeders on their pastures. We are trying to avoid this. We do not produce grain on our farm so creep

feeding is an added expense. According to these researchers, by improving the quality of the grasses grown in our pastures the quality of the milk would increase.

Another reason that compost is such a great addition to pasture management, according to some research, is that the nitrogen fertilization will directly increase pasture growth. On the other hand, nitrogen application alone also significantly depresses the soluble carbohydrate levels. Research

suggests this can reduce milk production. Another IGER Innovations study shows an eight per cent increase in milk production from cows which were grazed on high-sugar ryegrasses.

The research also suggests that higher-sugar grasses increase animal performance, increase feed nitrogen utilization, and reduce nitrogen excretion, but this has yet to be totally proven. How this will affect our native grasses no one is sure but it is

exciting to watch what will happen next!

Now there is an electric fence around over half our pasture there is also more opportunity to start utilizing strip grazing, mob grazing, and other grazing systems. The possibilities are endless. **GN**

Debbie Chikousky farms with her family at Narcisse, Manitoba. Visitors are always welcome. Contact Debbie at debbie@chikouskyfarms.com or call: 204-202-3781.



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Winter brings a mixed bag of weather

Ice, snow and even rainy conditions make chores challenging



**Heather
Smith Thomas**

JANUARY 28

We've had cold nights this past week. I'm glad we're no longer calving in January. I finished revisions and updates for the new edition of my book *Storey's Guide to Training Horses*.

The thick ice on our lane and Andrea's driveway is slippery and treacherous, making it tricky to get up and down with vehicles or the feed truck. One night we had warmer weather and it rained, freezing on top of the ice, making it more dangerous. Rain changed to snow by chore time; snow on top of ice made it worse. Lynn slipped and fell down on his back when we were sweeping the snow off the feed truck to go feed the cows. We now have "chains" on our boots for more traction.

The next day, temperatures rose and the new snow melted, making the ice slicker than ever. Water running down the draws filled several ditches, and ran across the fields in a few places, including the spot where Michael and Lynn put the bale feeder on heifer hill. There was water all around it, which then froze, making slippery footing for the cows trying to eat from the feeder.

On Sunday Michael helped us

move more hay around and took another bale and feeder to heifer hill to put in a better spot where there won't be water and ice around it. Andrea checked those cattle, and was missing one — Starfire, a young cow pregnant with her second calf. Andrea found her down in the brush, dull and in pain, kicking her left hind leg. Andrea brought Starfire to the hay feeder but the young cow wasn't interested in eating. We think she injured the leg falling down on the ice.

We brought her down to the corral below the barn, where I can feed and water her. On the way past the barn we caught her in the head-catch and gave her injections of Banamine (anti-inflammatory drug that also eases pain) and DMSO (anti-inflammatory) to help the injured joint/tendon. By the next morning she was feeling better, eating and drinking again. We'll keep her by herself a few more days until she's fully recovered.

FEBRUARY 6

Last week Andrea and I hauled straw down to the brush in the field below her house, to scatter in that sheltered area for that group of cows to bed on. Then she took hay on a sled, down to the creek, stringing a trail of enticement to encourage the cows to start using the lower water hole where the ice isn't so thick and deep — easier for them to try to get a drink.



From snow and ice to almost muddy conditions, work continued on building a new fence that separates pasture from hayfield.

Michael and Nick brought another load of poles for the fence that afternoon, and started working on the fence again the next day. They were slow to get here that day however, because they lost Tiny (their oldest cow dog) during the night. She'd been ill for several months and they'd been keeping her in the house, but that night she had another stroke. They buried her in the "family cemetery" behind their house where other favourite old dogs and a couple horses are buried. Frozen ground was a challenge; Nick spent three hours working on a burial hole before breakfast and finished it after they got their chores and feeding done.

Friday we had more snow, then warm weather, with more flooding. Andrea spent one morning chopping ice to make a channel for the water rushing down our driveway so it won't all go in the



PHOTOS: HEATHER SMITH THOMAS

had Nick drive the skid steer up there first. It still has chains on, and Nick was able to pull Michael's truck through the deep mud in the gateway.

Sunday Michael brought his feed truck down and we loaded a couple more bales of straw for him. When Jim was taking the deer netting away from the stack so we could get to the straw (stacked next to the alfalfa) he noticed smoke coming out of the stack. In the junction between the stacks, the old tarps had holes and water had run down into the hay. It was wet and heating. One straw bale was hot and black on one side, and the alfalfa bale next to it was smoking. We set it aside, away from the stack, so it can cool down. We don't want our haystack to burn up.

Yesterday brought some excitement when neighbour Alfonso drove his tractor off the road just below our place, rolling it down off the bank and through his fence. The cab saved him from being smashed. Michael, Lynn and a couple other neighbours with backhoes and another tractor helped pull Alfonso's tractor back up onto the road. We were glad he wasn't seriously injured in that wreck. **GN**

Heather Smith Thomas is a longtime Graineews columnist who ranches with her husband Lynn near Salmon, Idaho. Contact her at 208-756-2841.

THE EPPICH NEWS

Making the deal on five bred heifers

Going for quality rather than quantity and what the bank account allows

By Heather C. Eppich

There's never a dull moment when you have animals in the winter. On January 30 the power went out for about five hours. When it came back on, we rushed to thaw out the stock waterers. Thankfully, it wasn't too bad. The stallions' waterer wasn't frozen hardly at all because they hadn't drunk the water down. We scooped out some of the water and let it run to open things up. The other two waterers were frozen to some extent. With just some hot water and a bit of tinkering we got all the waterers going, and the thirsty cows were able to get a drink.

February 5 to 9 was the Hereford bull sale week. Its nice to see the animals and to meet different breeders. We learn a lot by just watching and seeing what the animals are fetching and what kinds of feeding and breeding programs other people are using. Its important to find out if they



PHOTO: HEATHER C. EPPICH

Five good bred heifers from River Bridge Herefords are the foundation of a growing beef herd.

push the feed to the bulls to try to get them to gain weight. An animal that has been pushed tends to have more problems with their feet and joints, shortening their working lifespan. We're planning to use our coming six-year-old Black Angus

bull again for our cows, but we don't know how long he will work. We do need something much smaller for our heifers, so we've been looking at advertisements and going to a few sales to see what's out there that would work

for our program and for our pocketbook.

We are focusing more on quality than quantity with our cow herd. We are increasing our numbers slowly by buying a few nice bred heifers. When you go to a breeder you can look at their whole program and they can tell you about the bull they use to breed heifers. You don't get this when you go to the stockyard. There's no guarantee against calving problems but there are things that can be done to help prevent them, things that responsible breeders do.

We have spoken for five nice bred heifers from River Bridge Herefords, a ranch about two hours north of us. We purchased seven bred heifers from them last year and were incredibly happy with how well the heifers did. They were very motherly and they all raised nice calves.

We saw some nice bred heifers at a sale on Feb. 6 and we started dreaming about adding them to our herd. We did some mental cal-

culations and figured that if they went for the right price we could stretch ourselves and make it work. We knew it was a long shot, but it worked, although not quite in the way we had figured. The heifers we were interested in walked through the sale ring with bids that were too low and so they "no saled." After the sale, the owner said he could make us a good deal. He was doing calculations too and couldn't come up with enough pasture to run these heifers himself. So, we bought the heifers at a very fair price and they were delivered to us on Feb. 10. It was very nice to see our new bred heifers step off the trailer and into our corral. We're excited to try out our new Bannerlane girls. We should start calving around the middle of March. **GN**

Heather Eppich is a young former Idaho ranch kid building a new farm and family with her husband and young son near Handel, Sask. Contact her at: h.t.horsemanship@gmail.com.

SEEDS OF ENCOURAGEMENT



PHOTO: THINKSTOCK

You have to share what's in your head with your farm team. People can't read minds.

Love does not read minds

You need to share what's in your head and heart so have those farm transition discussions



Elaine Froese

An amazing group of Alberta farmers shared their deepest fears with me at the 2018 Agriculture Service Board Conference. They texted me their biggest issues regarding fairness in transition planning. I thought you might like to see what resonates for you in this list of texts (no particular order).

- What I have had to come to grips with in our farm situation is that we have no next-generation farmers in a succession plan, while I have an emotional attachment to my land, my children and my brother's children do not.
- Listening to each other fairly is an issue. How to deal with non-farming family members.
- Narcissists. Too much negativity.
- Big talkers. People who over-promise and under-deliver. Not being forthright.
- Overtaxation. Government policies. King Justin's cut. Tax.

"All are created equal. Just some are a little more equal than others." – Orwell.

- My fairness issue is a small family farm with four daughters of whom only one wants to come back, but I fear having a split-up in that daughter's family (divorce threat).
- The older generation will not let go. Control issues. They expect me to farm the same way they did. Letting go.

- Who gets the homestead?
- How to be fair with three boys. Bringing kids into the farm.

- Siblings. Having greedy siblings when fairness should prevail. Greedy sister-in-law. There is always someone who feels they have been done out of something. Almost everything is going to one sibling. Hard to deal with siblings who have never been on the farm.
- Splitting up the farm. Balance between siblings. Having 10 brothers and sisters.

Sisters get half the land and the parents don't want to talk about transition. Parents won't let me buy out our sister. I pray my wife will inherit lots of cash so I can buy out sister. When I ask Dad about vision legacy he says, "build your own."

- Money. Money. Money. Should you be gifting the farm or selling it to them?
- Second-marriage families.
- Substantial increases in land values. "We have heirs to the loan, no heirs to the throne."

Having one of four children on the farm. How soon do you have the succession talk? What ages of kids and parents are acceptable? Should you be looking at your farm more as a business and allow the children with the most capable skills to run and take over the spread?

- Clarity in choice. Balance. Do it.
- What do you do when it's dangerous to have all family members sitting in the same room?

Our issue is trying to have a conversation without someone getting angry.

- Changing the guard. How do you get the founder to not have the "work all day" attitude, and how do you actually give the founder a deadline? How to step away from the farm activity?
- Someone sent a colourful meme: "I guess it's not what you take when you leave this world behind, it's what you leave behind when you go."
- We need mechanisms that will allow for a reasoned financial entry point for specifically young/new farming family members.
- Equality doesn't always appear equal. So if we step back would step one not be to make sure the initial business plans for those currently owning or purchasing the business be to put our vision statements and goals on paper? Wouldn't we make the future transition be easier if we started off on the same page with a similar vision?
- (See the Farm Vision tool downloadable at www.elainefroese.com Farm Family Toolkit on the home page.)
- Transfer of decision-making. I struggle with taking over the management decisions from my father who wants to work in the business every day but never work ON the business. Working on the business is almost looked down on as avoiding "real work." I think his generation was built

on the basis of the harder and longer you worked the more money you made. Plus, he was subsidized by my mother's nursing wage. It is a struggle to turn the farm into a stand-alone profitable business and support a different generation with increased lifestyle costs.

- Fair isn't always equal and equal isn't always fair. Our daughter-in-law is a non-farmer. She has no interest in the family farm. (I am seeing this as a trend in agriculture now.)
- Why should a son or daughter feel like they're entitled to anything?
- If I push too hard on tough subjects they may push me out.

WHAT DO YOU EXPECT FROM YOUR PARENTS?

Opportunity, love, support.

WHAT IS SUCCESS TO YOU?

Success to me is working alongside my hubby, raising our babies on our farm while maintaining a healthy relationship with my parents who own our farm and the rest of the family who is on and off the farm.

Success is ensuring everyone in our family has enough work to fill their time and enough time to do their work.

My definition of fairness is helping everyone be successful. If you would like a transcript of my notes text FAIRNESS (use ALL CAPS) in the message line to 1-587-800-4323 and you will get my thoughts on "FAIR," financial transparency,

attitudes towards money, intent, and roles and rebels.

My farm audiences are rich with ideas that are keeping them stuck, but when they start to drill down on what is the stumbling block to getting transition plans activated, it usually distills down to a fairness issue.

"Elaine, what's been helpful in this discussion is to see and understand that others (families) are having similar issues as our family. We are not on the journey alone. Each business is as unique as a fingerprint and no two are the same. You can creatively structure yourself for future transitions. Communication is the key to the success of any business model," says the Ontario farmer in my seminar.

Take a highlighter to this article and make your own personal list of fairness issues that your farm team needs to talk about. Don't procrastinate. Don't let the fear of conflict stop your discussion. You can do this. Remember, "Love does not read minds," you need to share what is in your head and heart. **GN**

Elaine Froese, CSP, CAFA is energized when she empowers farm families to embrace family issues and find success in courageous conversations. She works with families from her farm office in Boissevain, Manitoba via ZOOM and her phone. Start breaking through the emotional issue affecting planning by taking her online course www.elainefroese.com/getunstuck.

REBUILDING HEALTH

Woman promotes healthier diet decisions

Teaching people about nutritious food in rural setting fulfills lifelong dream

BY EDNA MANNING

Paulette Millis's goal in writing her national bestseller, *Eat Away Illness*, was to cut through all the hype on health and dieting and help people understand what's really required to build health naturally. She also wanted to create awareness and help people realize they can personally take steps to restore their health.

"Rebuilding your health is not a quick fix. It can sometimes take months or years. Our society wants a quick fix. We want to get rid of the symptoms, but symptoms are often signals of looming problems. What I do is help people recognize how to correct their diet and lifestyle before it turns into disease," Millis says.

Millis is a registered holistic nutritionist and a registered social worker. She became interested in nutrition after dealing with personal health issues, and instead of alleviating the



The church on Paulette Millis's property has been renovated and she hopes to use it as a home that promotes healing.



Paulette Millis in her kitchen.

symptoms with medication, she chose to make changes in her diet and lifestyle, and her health improved. She began to study nutrition and today has over 25 years of experience in speaking and writing about the topic.

Millis feels an important aspect of understanding nutrition is knowledge of macronutrients — what quality protein, carbohydrates and fats are necessary for health and well-being.

Many of our illnesses are caused because we're not getting the nutrients our body needs. When we satisfy our body with nutrient-dense foods, we lose our craving for junk food.

"The main area of need is for people to learn how to utilize carbohydrates, because all our carbs are so highly processed. In order to increase shelf life, large percentages of nutrients are removed from grain in the

milling process. These nutrients, as well as the essential fibre, work together and are found in balanced proportions in whole grains and seeds. To remove most of these nutrients reduces the effectiveness of those that remain, so I spend a lot of time teaching people how to source, use and cook with whole grains, legumes, seeds and nuts," Millis says.

She also says that consumers need to understand the difference between good fats and bad fats, and how essential it is to include foods rich in the good fats in their diets.

Protein is another important macronutrient and is necessary for the growth and repair of all body tissues. "Many people don't get the correct amount of good-quality protein, and women in particular can suffer from symptoms such as depression, and hormone imbalance is often exacerbated by incorrect intake of protein," she says.

Millis moved from Saskatoon to a rural community near Borden,

Sask., fulfilling a lifelong dream. "I grew up on a farm and love gardening. Now my passion for helping people heal is enhanced by being able to grow more of my own food here in the country," she says.

Millis renovated a church on the property with the goal of establishing a home that supports healing. "Experiencing nutritional guidance in a rural setting, and enjoying the peace and solitude of the country is a wonderful way to bring your body back to health," she says.

"I teach people not only how to prepare the food, but also how to source it, and how to store it, and they are usually surprised how simple ingredients can be so flavourful and healing at the same time."

For more information on Millis's books, upcoming events and to sign up for free recipes, visit www.healingwithnutrition.ca. **GN**

Edna Manning writes from Saskatoon, Saskatchewan.

Manitoba Co-OPERATOR

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FIRST WE EAT

The scoop on making cookies

What kind of fat is best? What kind of sweetener? Does it really matter?



dee Hobsbaw-Smith

I started baking at six, the same age I first climbed onto a horse. I was too short to mount a tall gelding unaided, and in the kitchen, I didn't realize that what I wanted to make first — cookies — were among the most challenging of any sweet. But at my first gymkhana, when I pitched out of the saddle as we went over the little jumps in the scurry competition, someone picked me up, brushed me off and put me back in the saddle. And when I first picked up a mixing bowl and wooden spoon, my mom was there to interpret the cookie recipe's instructions. But addressing failed cookies has taken baking many batches and reading extensively about ingredients, and how they work.

At their simplest, cookies are composed of fat, flour and sugar. They require the best ingredients: simplicity magnifies the good and not so good, and when a cookie fails, there is nowhere to look beyond the makings and the means. Understanding those truths undermines the old platitude that bakers are born, not made.

Butter is bakers' most popular fat because, like chocolate, its melting point is close to body temperature, creating lush mouth feel. Added benefit: it tastes good. Home-rendered lard is utterly devoid of water content, as is shortening. Butter, on the other hand, contains about 20 per cent water, and some margarines are more than 50 per cent water. In the oven, water converts into steam, so cookies made with fat high in water (or with more than a spoonful of added milk or liquid) will be soft and puffy.



PHOTO: THINKSTOCK

How fat melts influences a cookie's profile; butter goes from rock hard to puddle in minutes, so butter-based cookies flatten in the oven. Some bakers blend butter and vegetable shortening so that cookies hold their shape without losing butter's great taste.

Sugar is bipolar, contributing tenderness and crispness while colouring the cookie. The type is crucial: glucose, in corn syrup, colours more than sugar does, and forms a crustier cookie. White sugar's sucrose, low in moisture, reverts to crystals, making a crispy cookie. Honey, high in fructose, which absorbs moisture from the atmosphere, makes cookies that soften after baking, as does brown sugar.

High-protein Canadian all-purpose flour makes dry, crispy cookies that hold their shape, but are flatter and darker in colour than cookies

made with softer flours, such as cake and pastry flour, which are noticeably lower in gluten. Gluten-free flours are grist for another day's mill.

The worst thing you can do to a cookie is overbake it; keep baking times brief, because cookies firm up as they stand after removal from the oven. Rotate the pans partway through for even colouring and cooking. Let cookies cool on the pan to minimize breakage. Don't hoard them, as I did as a child; just share!

So the next story will be about cooking by the book, but first let's eat some cookies with your mutton buster. **GN**

dee Hobsbaw-Smith is a writer, poet and chef living west of Saskatoon. Visit www.deehobsbawsmith.com and www.curiouscook.net for books, doings and sightings of things literary and edible.

CANDIED LEMON AND ROSEMARY SUGAR COOKIES



PHOTO: DEE HOBSBAW-SMITH

Adapted from Michele Genest's recipe in *The Boreal Feast* (Lost Moose/Harbour, 2014). These are very good keepers, and their flavour improves as they mature. Makes about 50 cookies.

Candied lemon peel:

3-4 lemons
Water to cover
1/2 c. sugar



Dough:

1 c. butter (at room temp)
1-1/2 c. white sugar
1 large egg
1 tsp. vanilla extract
2-1/2 - 2-3/4 c. flour
1 tsp. baking soda
1/2 tsp. baking powder
1 tbsp. minced fresh rosemary
Sugar for sprinkling

Set the oven at 375 F. Line several baking sheets with parchment. Use a sharp knife to remove the lemons' zest (yellow peel) and pith (white). Trim and discard pith. Slice zest into strips. Place in a small pan and cover with water, bring to a boil, drain and repeat twice. The third time, add sugar and bring to a boil, stirring until sugar dissolves. Simmer until lemon is tender, adding water as needed when syrup gets thick. Remove peel and cool, then chop finely. Reserve lemon syrup for use in beverages or cooking. Beat butter at high speed, scrape down the bowl, then beat in sugar. Add egg and vanilla. Mix in flour, baking soda and baking powder, rosemary and lemon zest. Form dough into 1-inch balls. Space on baking sheets and gently flatten with the palm of your hand. Sprinkle with sugar. Bake for 8-10 minutes, or until golden. Cool on the tray. Store in a tin lined with wax paper at room temperature.



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SINGING GARDENER

Do you wrap your kidneys? If not maybe you should

Plus, fellow gardener shares his success with growing a bougainvillea



Ted Meseiton
singlinggardener@mts.net

Brrr! It's been a cold one this winter. That's why I'm prompted to tell my fellow Canadians about the kidney wrap before winter's over. Also, a fellow gardener named Joe persisted and finally achieved overwhelming success at growing his striking bougainvillea. Can't say I've noticed a lack of kindness among rural and country folk. Is it true that apartment dwellers in large urban centres don't even know their immediate next-door neighbour? Reminds me of a few lyrics to an old country song I recently listened to that said, "things have changed they're not the same as the days of Maw and Paw, etc." Add to that, my memories take me back to Eaton's Good Deed Club radio broadcasts. The aforesaid totals more than enough to fill this Singing Gardener page I'd say. Yes, it's Ted here as usual tipping my well-seasoned Tilley hat and extending a sincere welcome to all. I really appreciate having you come by for a visit to this printed *Grainews* page.



A PRAIRIE CANADIAN GARDENER NAMED JOE

This is the true story of one man's determination. It took four years of care to finally experience the performance Joe was expecting from a bougainvillea. After purchasing one from a Prairie greenhouse in 2014, Joe indicated he had some small moments of success with touches of intermittent flowering during the first three years. But what a pleasant surprise was in store during the fourth year in 2017.

My conversation with Joe continued after accepting his invitation to come see it. "I am just really totally amazed by the brilliant-coloured bracts that surround hundreds of tiny white to yellowish inconspicuous flowers," he told me. "They surround the entire plant from bottom to top. It's at least six feet tall and no sign of slowing down."

I asked Joe about what care he provided to finally achieve such floral success. "I placed the bougainvillea outside facing full sun in early June. The weather was sunny and hot. I decided to collect rainwater and pour it into a reservoir at the bottom of a huge self-watering pot I bought in which the bougainvillea grows in nutrient-rich soil. It seems to know when to take up moisture as needed. It's done really well. When my wife and I were in Hawaii we saw many bougainvillea there, but none were



PHOTO: TED MESEYTON

It's not the tiny white flowers in the centre that make bougainvillea so outstanding. It's the very showy crimson magenta scarlet bracts that attract attention. This six-foot-tall (two metres) potted climbing woody vine is native to tropical regions of Central and South America. Now bougainvillea is cultivated in many climates the world over including the great sunny and warm-weather days throughout southern Canada during summer.

nearly as bushy, not as spectacular either, nor produced so many flowers as mine."

Retracing some thoughts to the previous three years, Joe spoke of moments when the plant had its ups and downs. "At first I thought it's not going to do much and came close to tossing it out. But I persisted and saved it. Now that I've learned its requirements I have a lot more respect for bougainvillea and am amazed how it's done so well." Joe checks it every morning and also does a survey of all the other plants in the windows. "I wanted it, I bought it, am looking after it and now I'm very happy I kept the bougainvillea."

Well done, I said to Joe. Any gardener who's never tried a hand at growing bougainvillea previously shouldn't hesitate to purchase one. They're usually readily available during gardening season from many Prairie garden centres, nurseries and plant sellers.

FACTS AND OVERWINTERING BOUGAINVILLEA

The basic bougainvillea is *B. glabra* also known as paper flower and sometimes used in bonsai. However, this plant has been extensively hybridized, so most bougainvillea seen in garden centres are hybrids. It can spread itself vertically along a wall, climb up a trellis or form a luscious crown (as shown in the picture), and even burst forth into graceful arches. Obviously some trimming, training and even support may be required.

Remember, it's not the flowers that make this plant so colourful but actually the magenta bracts that surround the tiny white flowers that are loved by bees and other pollinating insects. Bracts also come in other shades such as pink, purple, red, yellow, salmon and orange. Bougainvillea is Grenada's national flower.

Throughout Canada, bougainvil-

lea has increased immensely in popularity because it thrives so well outdoors during summer in sheltered and microclimate areas with low rainfall and intense heat. That's the very kind of summer climate many Canadians experienced during 2017. A bougainvillea requires at least five hours of direct sunlight daily and is brought indoors each fall before a killing frost. During winter, provide a cool, frost-free basement or other low-light area and let it enter semi-dormancy. Water only lightly so soil doesn't completely dry out. During early spring introduce the plant to stronger light gradually and water gently. Feed it with a weak fertilizer solution once green shoots start to appear. Some modest to vigorous trimming, shaping and pruning may also be required depending on length of woody stems.

WHAT THE WORLD NEEDS NOW

A staffer at one of the major CBC outlets included the following in an email sent to me. "Not so sure the world needs more of me -----, (name withheld) but kindness, ahhhh yes kindness needs a hefty shot in the arm. Be well."

OK readers, I throw it out there to you with a question, in case you care to comment. Q: What else does the world need now besides a hefty shot of kindness?

That got me to thinking about Eaton's Good Deed Radio Club that I regularly listened to years ago each Saturday morning. A chorus of youngsters directed by Claude Knapman began each program with the "Good Deed Theme Song," or whatever it was called. The radio show was broadcast for the first time on CKOC in Hamilton, Ont., during February 1933 but I never heard that program as I wasn't yet born for a considerable while. Here are some lyrics to the best of my recollection.

Do a good deed every day obey the Golden Rule,

Never say an angry word nor be unkind or cruel,

Scatter seeds of happiness at home, at play, at school,

And you'll find there's sunshine everywhere, obey the Golden Rule.

THE KIDNEY WRAP

First a couple of questions: Do you spend or have you already spent a lot of time outside in the cold this winter? Have you ever heard of the kidney wrap? Short and to the point — it's a simple but powerful way to take care of your body during winter months and is known to soothe the adrenals atop the kidneys and ensure the entire body will be ready for a fabulous spring. The kidney wrap is an amazing health technique that was once well known and keenly utilized by northern Europeans. In our country, most Canadians know what it is to experience a cold climate. Maybe it's time we learned more about protecting our own body from winter's cold regardless of what Mother Nature throws at us. Are you interested in learning this simple but powerful technique? Then read on.

Here are some tips and thoughts by expert master herbalist Doug Simons who explained the kidney wrap this way. "We know that the winter season is kidney season and kidneys come inward so they can recharge and give us an awesome, outward, energetic summer and that happens every year." He continued, "There are three things that kidneys really appreciate in winter and things we need to know. Kidneys hate to get cold. That really depletes them. In winter our kidneys want to be warm, so we work at not allowing them to get cold. They love darkness and pressure. One thing that's really powerful for taking care of our kidneys and having a wonderful winter is a kidney wrap that looks like a big sash and almost feels like wearing another coat."

His directions are as follows. "Put the wrap on nice and tight and be surprised how warm it keeps you. I learned if your kidneys are kept warm... you're warm throughout. Remember, they like darkness, pressure and the wrap needs to be put on nice and tight." Doug describes kidneys as the seed of fear and says, "When they get diminished by cold in winter we become less assertive and less able to feel strong. Any time we feel cold or chilled, little things and even indecisive thoughts bother us. That's the time to put on our kidney wrap and notice how our mind will soon switch to pleasant thoughts and good things. When we diminish our kidney health we can even end up paying for it the following winter season and in future."

Kidneys are bean-shaped organs located against the back muscles at the bottom of the rib cage in the upper abdominal area. They sit opposite each other on both the left and right side of the body. The right kidney sits a little lower than the left to accommodate the size of the liver. Doug recommends a wide kidney wrap similar to a long scarf "made from some natural material such as wool or Alpaca yarn or silk material wrapped and kept nice and tight." He also indicated that "synthetic materials don't work well by not allowing moisture and sweat to pass through and that can moisten kidneys too much. You can wear more than one kidney wrap if desired. The first application is directly on the skin and another on an inner or outside garment. A comforting and warm feeling is soon experienced. You can also experiment by sleeping with one on at night. The moral of the story is "keep your kidneys warm."

Now I, Ted, am telling readers about this old method of health maintenance with a reminder that the winter season is also kidney protection season. I personally wear a kidney wrap myself. There are lots of knitters out there and what could be finer than a home-knit kidney wrap made with loving hands from pure wool or Alpaca yarn. GN



This is Ted Meseiton the Singing Gardener and Grow-It Poet from Portage la Prairie, Man. Thinking back I got to wondering how many readers remember when a man's word was his bond. He just shook hands on it and the agreement or deal was sealed. No thumbprint, no signing, no sealing and no paper trace — just the spoken word.

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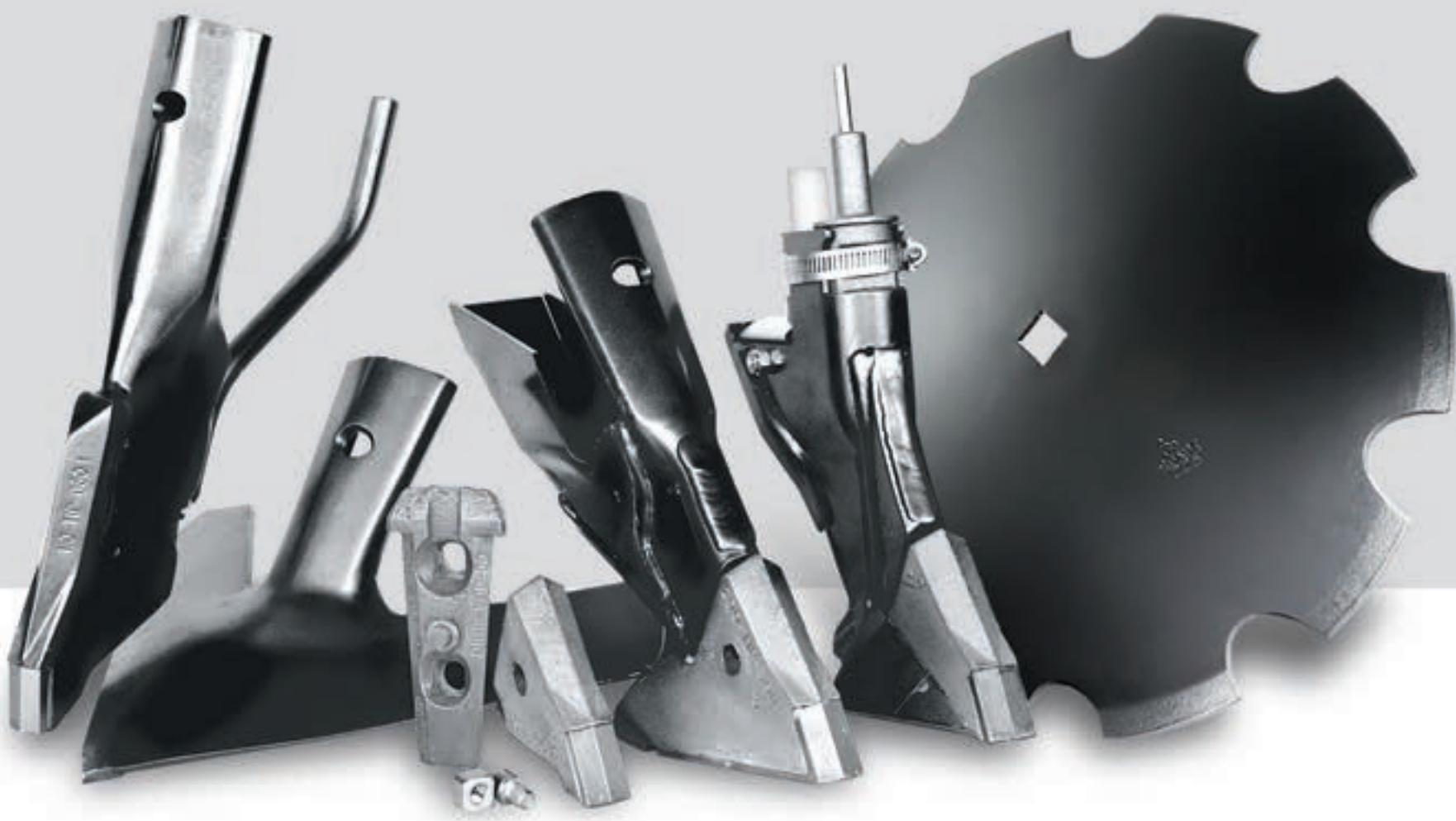


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