

## Millennial Farmers

Exploring the push—and pushback—of technology on the family farm, and how one young ranching couple is finding their own way

BY SEAN MOORE

When the phone rang at 5 a.m., Graham Tapley felt the bottom of his stomach drop. Fire had jumped the road and was now burning the family farmland, threatening everything he and his wife Kristine had in-vested in to convert an abandoned gravel quarry into pasture: their cows, their sav-

ings, their young business.

"It's scary when you're that helpless.
You're really at the mercy of Mother Nature," he says. "There is no high-tech stuff that can really help in that situation, noth-

ing that can replace going into the field." Kristine stayed back at home with their newborn son, while Graham and his inlaws sped across acres on ATVs, searching for their cows.

In good weather, with sunlight, it usu-

ally takes weeks to gather all the docile Angus-Hereford crosses they breed. On this day, they corralled all 320 cows in four exhausting hours and the ordeal ended with a water bomber drowning the

ended with a water bomber drowning the flames—a technology the Tapleys have a new appreciation for. In recalling the incident, Graham wears a reserved smile that shows his relief. The stress of farming is still a touch foreign to him.

nim.

He's originally a city boy. He grew up in the St. James district of Winnipeg, but his grandparents had a grain farm south of the city and he loved it, wanting to spend every minute there and hating that school got in the way.

Before Kristine talked him into ranch-

ing, the 28-year-old had never touched a

The couple met at the University of Manitoba, on an "Aggies" pub-crawl in

Kristine is a fifth-generation rancher. As a young girl, her job was to blow-dry the ears of newborn calves so they didn't freeze in the February chill.

Her life is cows, and now Graham's is too— the art on the walls of their sunbaked house near Langruth, Manitoba,

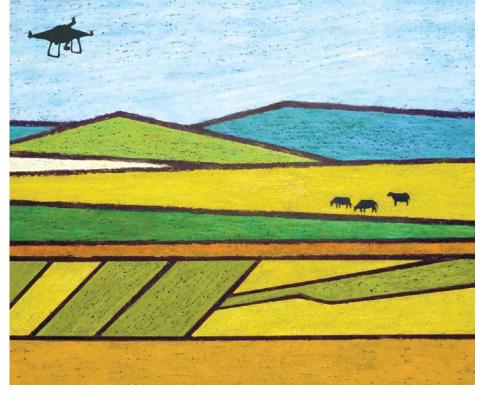
depicts only ranch scenes.

Their dining room table, which Kristine made, is reclaimed from her family's old corral

It's around rural tables like this that It's around rural tables like this that Manitoba farmers are talking about the drawbacks— and benefits—of infusing more technology into the family farm. Some technologies bring efficiencies while others bring burdens and breakdowns. Rather than investing in gadgets, the Tapleys would prefer to buy more cows, which virtually guarantees a financial return, although nature occasionally plays trump cards. trump cards.

trump cards.
This past April, cow 81, a family favourite, chased a bear away from its calf and was fatally slashed, leaving an orphan to bottle-feed.

Predators. Droughts. Floods. Fires. Disease. Trade wars. The mutable struggles



"At the end of the day, I don't see a robot replacing a rancher."

farming brings don't seem to deter youth. Indeed, between 2011 and 2016 the number of Canadian farmers under the

age of 35 increased by three per cent, the first bump in this age category since 1991, Statistics Canada reports.

Also since then, more women have

steadily entered the agricultural industry. Female students have outnumbered males for the last four years within the U of M's Faculty of Agricultural and Food

Manitoba has 14.791 farms and the second-youngest farmer population in Canada (Quebec is youngest), with many millennials pondering how to do things differently than the generation before. Do they buy out their parents?

Do they rent or purchase land?

Do they crop-share (a practice where the farmer and landowner bear the risks and divide the rewards of each harvest)?

In the 1980s, a ranching family could live off of 200 head of cattle.

Today they need about 800 because 200 would net less than \$18,000, which is why Statistics Canada found the vast majority of ranchers in the cow-calf sector rely on

or ranchers in the cow-cair sector rely on other employment. The Tapleys' goal is to ranch full time. Until then, Kristine's day job is with Ducks Unlimited Canada (DUC), although she's currently on maternity leave with their 10-month-old son.

At DUC she works to create partner-At DUC site works to deate paracti-ships between the organization and the ranching industry that result in programs like wetland restoration, and she sits on the Canadian Roundtable for Sustainable

Beef.
She says her family put no pressure on

her to become a rancher and only asked that she get a good education.

And after travelling to Mozambique and South Africa to guide ranchers on sus-tainable practices, she earned her master's at the U of M.

Graham also works 40 hours a week advising grain farmers for Shur-Gro Farm Services, and he's not convinced high-tech meets the needs of all farmers equally just yet. "On the grain side, what I work in at Shur-Gro, high-tech is where things are moving to: a guy sitting at a desk control-ling his whole fleet of robotic equipment," he savs.

Continued on page C33 ™



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## Beware of these early grazing pitfalls

BY RICHARD KAMCHEN
Cattle producers low on feed may be more tempted to put their cattle out on pasture as soon as the snow melts, but ex-

pasture as soon as the snow melts, but experts warn that comes with repercussions to both plant and animal health. "Livestock should go out on pasture when grasses have developed three to four new leaves," says Christine O'Reilly, Ontario Ministry of Agriculture, Food, and Rural Affairs forage and grazing specialist. "Turning out earlier than this is very stressful on the plants."

Grazing season

The rule of thumb is grazing a week too early will sacrifice three weeks of grazing in the fall.

early will sacrifice three weeks of grazing in the fall.

"If livestock are turned out too early year after year, weeds that begin their growth later in spring than grasses may be able to out-compete the plants producers want in their pastures," adds O'Reilly.

It doesn't do the cattle much good either, as immature plants are mostly water, offering little nutritional value. That's especially problematic for cows with calves, notes Alberta's forage and beef specialist, Karin Lindquist.

notes Alberta's forage and beet specialist, Karin Lindquist.

Stressed pastures

Cattle in areas that experienced dryness and feed shortages last fall may have stayed on fields longer than ideal, meaning those pastures went into winter overgrazed, says Cedric MacLeod, executive director of the Canadian Forage and Crassland Association Grassland Association.

For those pastures, it will be that much more important to get adequate rest in the spring to re-establish their root reserves.

"In general, we're probably putting our cattle out too early even in the good years," MacLeod says.

Shortages and cold Winter hasn't been kind to producers with low supplies, and Alberta Agricul-ture's beef and forage specialist Barry



Yaremcio points out cold in his province has caused increased feed consumption.
Hay shortages and extreme cold have challenged many Prairie producers this winter. They worry if they'll have enough feed to hold their animals over till pastures are ready easy. Lindwich. are ready, says Lindquist.

Options

Farmers may have to resort to buying

more feed and/or custom feeding.
Alberta Agriculture's CowBytes soft-

ware program can assist in ensuring live-

stock receive a balanced ration of nutri-

Lindquist adds creep feeding can provide supplemental feed for calves. That can be one-third peas mixed with two-thirds oats and barley, or corn.

MacLeod says another option is reduc-

"If guys are holding heavy calves, if there are cows out there that should be culled from the herd, now is the time to do it, as opposed to limiting your forage production into the future," he says

The downside is depressed cull cow prices, but the risk of not selling is inade-quately feeding your herd, MacLeod says.

Bottom line

Cattle farmers are facing hard choices amid feed shortages but are urged to consider other options such as custom or creep feeding or even reducing inventory before early grazing. Putting livestock on pasture too early can damage both plant and animal health.



Clarke Hill, BSc, DVM Christine Ewert Hill, DVM Rafael Pineda, DVM Leuraunt Trach, BSA, DVM Brittany Johnsgaard, BSA, DVM

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## Association hopes to put 'dollars in producers' jeans' for storing carbon

Saskatchewan farmers may find ways to get paid for doing their part to se-quester carbon to fight rising carbon it the atmosphere. The province's cli-mate strategy could bring

hat goal closer.

By setting a price for large industrial operations to buy offsets for the carbon they release, the plan will boost the market value

for carbon stored in soil. Cedric MacLeod, the executive director of the Caadian Forage and Grass-lands Association, said in an interview, "It comes down to whether or not it's

down to whether or not it's a voluntary or a legislated, regulated market."

MacLeod gave the example of Alberta, where the government set prices to start at \$15 per tonne of carbon dioxide and go up, even though they had been getting only \$2 to \$5 per

tonne on a voluntary basi

But before agricultural producers can get that money, they need a way to prove they have stored car-bon in a measurable, mean-

oranin and other agricultural products contain carbon, but most of it cycles quickly back to the atmosphere when humans eat the final food product for energy and breathe out carbon dioxide.

carbon dioxide.

Instead researchers look for carbon "sinks" – places where carbon is building up over time. One promising place to look is agricultural soil.

Historically, Prairie soils lost carbon when tillage exposed roots and other organic matter in the soil to decay.

But if farmers can reduce tillage and tip the balance so plant growth is putting more carbon into the soil than decay is taking out, then the soil becomes a

The Saskatchewan Soil Conservation Association has been collaborating on a study to show how carbon has changed since farmers started using zero-

till methods in the 1990s. John Bennett, a farmer and advisory committee member with the associa-tion, said early modeling assumed soil carbon would increase for a while but soon reach a new steady state, or saturation, where no new storage was occur-

But up to the latest sampling in 2011, at a network of sites across the province, soil carbon was still in-

Soil Carbon was still increasing.

Bennett said, "At the moment, the best data we have, which is the Prairie Soil Carbon Balance Project, is suggesting that saturation is a long way away."

Bennett sees potential for soil to eventually store even more carbon than it had before cultivation, as farmers continue to find new ways to increase plant productivity.

For example, when the soil carbon study started, farmers were starting to move away from tillage

Later they added more crops in rotation, and moved to zero till methods, which included placing fertilizer better for efficient plant growth.

New revenue from car-bon offsets might open up possibilities for further improvements.

Although the study fo-



Studies are under way to find a way for farmers to unlock the value of storing carbon in cropland and pasture.

cused on the effects of zerotill, the association wants to expand it to look at other ways of storing carbon.

"We're advocating we need a Prairie Soil Carbon Balance Project II, that has way more facets, and it has to address forages, managed rangelands, a whole plethora of things that have to be brought into it," Bennett said.

Forages are the focus of a new Canada-wide project. The Canadian Forages

and Grassland Association and Grassland Association recently received federal funding under the Agri-cultural Greenhouse Gases Program to find out how farmers can best store carbon in pastures and hay

But there's a lot of varia-tion across different regions, farm operations, and research findings.

The project will start by

sorting out how to calcu-

late carbon storage.

"What we're working on right now is a quantifica-tion protocol, which is the very first step," MacLeod

At a November technical workshop, researchers agreed they can already show a clear carbon-stor-ing benefit of keeping grassland intact and not converting it to cropland.

The next step is to fig-ure out what farmers and ranchers can do differently to coax their existing pas-tures and hay fields to store even more carbon.

"The third is actually to "The third is actually to fire some pilot [sites] out on the landscape. That allows us to, A) test the protocol, and B) showcase these high-performance best-management practic-es," MacLeod said.

Soon, MacLeod hopes the project can at least help "get a few dollars in producers' jeans for maintaining the carbon we know they have."

Of course all that will depend on the price of car-

bon.

Meanwhile, even if
they're not directly paid
for it, farmers and ranchers can still see returns for
building up their soil.

MacLeod said a pasture
with more root mass has
more soil carbon built also

more soil carbon, but it also produces more forage and more beef.

And Bennett cited the past growing season as evi-

past growing season as evidence of improved climate resilience under contemporary cropping methods.
"If we went south of the Trans-Canada Highway last year, we had the driest year in, maybe recorded history, or very close to it. We actually didn't have any soil erosion to speak of, and we grew a crop," he of, and we grew a crop," he



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## The lighter side of life...down on the farm

Nothing speaks spring like calving season, even if you've calved a hundred of them in minus forty degree weather.

During one of the coldest Februarys in forever, it was hard to imagine such a thing as warmth, but now that we can actually feel the warmth of the sun the woes of calving in the cold will be soon be forgotten and we'll be

dreaming of camping season.

Calving season did provide me with an idea for a three-way drawing competition with the grandkids the other day—a 'cow-drawing' competition to be exact.

"You be the judge, Grandma," they told me. "Pick the

best cow."
Well in the end I chose a best cow-inside-a-fence drawing, a best prolapsed-cow drawing (oh the detail), and a best udder drawing. How's that for being diplomatic?
During February school break, as the guys were keeping their ever watchful eye on the cows, I was entertained

daily by five youngsters.

Between games of crokinole, yahtzee and wii bowling, I am positively sure I made 42 slices of french toast, fried 26

am positively sure I made 42 slices of french toast, fried 26 eggs, and whipped up at least five dozen crepes complete with real whipped cream and fresh sliced strawberries. What's particularly funny about all the cooking I did, other than that I seldom do any cooking at all, was the kids' perception of meals (or lack thereof) at Grandma's house during that week.

"The kids told me you never made any meals for them," my son said to me as we gathered for a family support.

I he kids fold me you never made any meals for them, my son said to me as we gathered for a family supper on the weekend following the break.

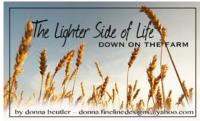
"I never made any meals?" I squeaked. "I went through 52 eggs in the first three days!" I responded. Which truly was not far off from the truth. These kids ate all day long, was not far off from the truth. These kids ate all day long, generally egg-based dishes of one kind or another. How could they possibly say I hadn't fed them?

This begs the question of whether the kids and the Grandma (moi) could both be telling the truth.

And, in fact, we both were. I may not have made meals exactly but I certainly fed the bunch—all day long!!

The highlight of our week was a trip to the farm, more for me than for them, since most of them live on said farm.

Their interest in the cows and calves is intense to say the least and at any given time of any day, they can tell



ou exactly how many calves there are on the ground

including those deceased), and how many heifers have calved and how many cows.

Farm kids in training is really what it's all about. Though I have to admit there's a bit of a pull from the twins' (now seven) second love—hockey, the Winnipeg

Jets in particular.

I tucked the boys into bed the other night when their parents were away—one was reading the calving record book, the other the Winnipeg Jets schedule. The look they gave me when I suggested they read a story book instead

gave me when I suggested they read a story book histeau was priceless.

"The Jets play Boston on the 20th," said one to the other. The other asks when the Jets play the Capitals.

"The 14th," the first responds.

And both share the same thought, "Darn, the cows start calving on the 10th; we won't be able to watch hockey."

"Don't forget the Brier, boys," I say which was on at the time. Oh, they assured me, they would be watching that too because Tam Sask (who they watched in person that too because Team Sask (who they watched in person at the Tankard in our hometown in February) would be

Playing.

We were at a figure skating competition in Winnipeg in February to watch one of our granddaughters compete. The twins (at home) were watching the Jets play (on TV) that weekend and had taken a particular interest in watching the lets and the statement of the statement

ing the stands when the camera scanned the crowds "Who are you looking for, boys?" asked their dad.

"Grandma and Grandpa," they said. "They're in Winnipeg you know." I guess they couldn't imagine someone going to Winnipeg without taking in a Jets' game.

The grandkids are pretty excited about spring on the farm—after all, the baby chicks will soon arrive. I see those chicks becoming laying hens and so I'm pretty excited too—after all, I could use the extra eggs when the kids come over. kids come over.

It's such a delight to watch the kids as their love for

and their knowledge of the farm grows and to watch their enthusiasm about the life we so love.

enthusiasm about the life we so love.

Watching a cow calve for the first time was an education in itself for our seven-year-old granddaughter the other day. Eyes big. Tales after even bigger.

When our youngest grandson visited us recently, he told me how, for his upcoming birthday, he would really like a big farm set, you know, with a tractor and trailer, cows and chickens, fences, and a farmer guy too.

"Ahh," I said knowingly. "One of those 100-piece farm sets!" I could envision the excited look he would have upon opening a gift like that until I saw the look in my son-in-law's face, his eyebrows slightly frowning.

The message to me was clear—ONE toy would be the best option.

best option.

best option.

Our focus will soon switch from the barn to the land in anticipation of sowing this year's crop. And with that anticipation is the excitement of not only watching the fruits of our labour materialize but in watching the youngest members of our family grow their knowledge and their love for the animals and the land.

Here's hoping your spring, whatever that may look like, is nothing short of exciting and perhaps even inspiring—both on the farm and off!!



Donna Beutler farms at Whitewood, and writes the occasional newspaper story!



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## **SARM** comments on 2019 federal budget

The Saskatchewan Association of Rural Municipal-ities (SARM) has reviewed the federal government's 2019 budget.

SARM has long been

advocating for access to reliable broadband in ru-ral Saskatchewan. We are pleased to see the 2019 budget propose a new, co-ordinated plan that will deliver \$5 billion to \$6 billion in new investments in rural broadband over the next 10 years. SARM is eager to see how these dollars will roll out to connect our communities to the global marketplace while improving quality of life for all. "Access to an essential service, such as re-liable broadband can assist in boosting the economic and social wellbeing of our rural communities," said President Ray Orb. "We are happy to see that the federal government has listened to the rural voice

on this issue."
In 2017, SARM lobbied
on behalf of rural farmers, ranchers, and small
business owners urging the federal government to reconsider proposed changes to the taxation of private corporations. The federal government will continue its outreach to farmers and small business owners throughout 2019 to develop new propos-als to better accommodate intergenerational transfers of businesses. Budget 2019 proposes to extend relief from the tax rules designed to prevent the multiplica-

tion of the small business tion of the small business deduction to the sales of farming products to any arm's length corporation. This measure applies to taxation years that begin after March 21, 2016. SARM is also pleased to hear the Government

is working to develop the Western Canada Growth Western Canada Growth Strategy to reflect the unique regional advantag-es of the western provinc-es. Budget 2019 proposes to provide \$100 million over three years, start-ing in 2019-20, to Western Fronomic Diversification ing in 2019-20, to Western Economic Diversification Canada to increase its programming in western Canada. The TransMountain Pipeline is part of the strategy and SARM is disappointed that there was no mention of a plan to move this project forward to sup-port the western economy.

The budget proposes a one-time transfer of \$2.2 billion through the federal billion through the federal Gas Tax Fund to address short term priorities in municipalities. This dou-bling of dollars available for 2018-19 will provide much needed infrastruc-ture funds to address in-frastructure deficits across

Canada.

"While there are some wins in the 2019 budget, SARM still sees some pri-ority issues not receiving attention," commented Orb. "Energy infrastructure remains a challenge in rural Saskatchewan and we would like to see some movement on the pipeline

## A salute to **Agriculture Producers**

I would like to express my appreciation to our agriculture community for the enormous contribution you make to our province's economy.



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ZR 8000 Sno Pro ES 137 Charcoal/Green SNOWMAGEDDON PRICE: \$12,695 MSRP: \$15,795

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## An interview with Saskatchewan Agriculture Minister David Marit

World-Spectator editor Kevin Weedmark spoke with Saskatchewan Agriculture Minister David Marit on Thursday about issues facing Saskatchewan agriculture.

One issue that is top of mind for a lot of farmers right now is the trade issue with China and the impact of the Canola ruling. What is the province doing on that front

What is the province doing on that front right now?

We are monitoring it closely. A few weeks ago, just after the new federal ag minister was sworn in, the following Monday we reached out to her office and we did talk to her that day, and offered her any support we could give her on it, and she assured us it's a priority for them.

We're obviously concerned because of the intense it has in the province with come.

We're obviously concerned because of the impact it has in the province with cano-la. As of this week, CFIA and China are going to look at the samples. We feel very confident in the integrity and the quality of the canola grown here, and we hope they find a swift technical solution to this. We're hopeful that, within a few weeks, this can be predified.

## Is there much the province can do, or does this have to be solved at the federal level?

Not really, because it is country to country. We have just offered any support we can to the federal minister on this one.

There are different ministries involved, so there are two or three federal ministers who have had discussions with China about this. I know Minister Carr was in the province a week ago with the SARM convention and assured us this is a priority of his as well. He is a Manitoba MP and cabinet minister, and a friend of the Richardson family. We hope that the right people are dealing with this and we hope we can come to a quick resolution on it.

## Our agriculture industry is obviously very dependent on exports. Is it frustrating for you when an issue like this comes up and the provincial government is limited in what it can do?

ited in what it can do?
It is when you're dealing with trade issues. What we do on the home front is really look at expanding the markets. We work with industry players here in the province, whether it be canola growers, pulse growers and other industry players are read. ers, and other industry players on trade missions. In fact, Minister Harrison just got back from a trade mission to Indonesia where he had great success in talking to them about our agriculture commodities here. I'm hopeful that soon we will have some good news coming out of that.

## Other than trade, what are the main is-Other than trade, what are the main issues in getting our Saskatchewan agricultural products to market? There's always transportation. Just this week we had conference calls with both rail-

ways and expressed our concerns on that. Their numbers have fallen off. They're

on thitting their targets.

Obviously February was a very cold month and there were some days they didn't have any trains running because when they reach those temperatures they have a very target they are the three trains and the second that the large of the second that the second t have air issues to the cars with the brakes I understand that. We just have to work through it and they seem to have ramped up their horsepower from a few years ago to where they're at now. They have ramped up the employee side of it, so we are seeing some trends in the right direction, but obvi-ously it's still a concern.

The other concern is with spring coming on, the road bans are coming on. For a ing on, the road bans are coming on. For a lot of farmers hauling isn't a priority right now. The issue we have is with the backlog from February, there are a lot of contracts where farmers locked in canola or locked in durum or locked in pulses for February/March delivery, so they will have those contract obligations they will have those contract obligations they will have to make. Hopefully we have the capacity. In talking to railways, we're also quite concerned about Vancouver. There's a congestion problem there, with ships waiting. When ships are waiting the product's not there. We are always challenged by congestion at the Port of Vancouver. We as a province have been very vocal about fed-

gestion at the Fort of Vancouver. We as a province have been very vocal about fed-eral funding to the Port of Vancouver, es-pecially for the rail side, to alleviate a lot of that pressure. The public know about the tunnel and how that restrains trains going through, and they're looking at a process that might be able to allow another train an hour through versus what they're doing now, and then the trestle obviously to the



Saskatchewan Ag Minister David Marit

North Shore. But getting the product delivered to the destination so it can get on these

ships.

We are still concerned about the China piece. China is our biggest customer and exports to China are a significant part of Saskatchewan's economy. I believe exports to China from Saskatchewan in canola last

year was over \$3 billion. It's a huge part.
Thisn (the Richardson shipment) was a shipload of canola seed. Farmers over there are concerned about getting their seed so they can put it in the ground

Every time you see a train loaded with oil cars go through town, you hear the comment that it could have been loaded with grain. From your discussions with the railways, is that an actual problem, oil by rail reducing capacity for grain by rail? Do they have the excess capacity to move more oil by rail or will that take away from

grain capacity?
You raise a good point, Kevin, you really do, and I raised it with both railways. It's do, and I raised it with both railways. It's a bigger issue with CN than it is with CP. The oil movement is about three per cent on the CP system. For CN, with the oilsands in orthern Alberta, the heavy oil in northern Saskatchewan, a lot of that moves out by

Saskattewari, a fot of that moves out of a formal car if it doesn't have pipeline capacity. When you see the province of Alberta order 4,000 oil cars, obviously that's going to have an impact on the system. When you look at the fleet of grain cars, and then this is 4,000 new oil cars, over and above what's already in the system. That 4,000 alone is close to 25 per cent of the entire grain car fleet in Canada.

I know the railways are building new hopper cars, CN and CP are both committed

to that, which is good to see, because they will be able to haul more, and have more

cars in a train than what they're doing now. We're always logistically challenged be-cause we're landlocked, and once winter hits we only have one place to go, and it's west. Thunder Bay gets restricted. Hopefully we will see movement through the Port of Churchill going forward. We don't know for Churchii going forward. We don't know how that's going to play out. That might give us another option, but that's limited too, as far as season. We are continually challenged by this. We have a good relationship with the Vancouver Port Authority and their board and executive director and we're always talking to them about con-cerns that they have. We were the first prov-

cerns that they have. We were the first province to sign a letter supporting the Port of Vancouver in accessing some federal money in that whole freight corridor program. It is important that we alleviate the congestion in Vancouver, because we could double track both railways from the Manitoba border to Vancouver and that's not going to increase capacity if we don't do something in Vancouver. That's why we felt it was important to do that.

# I see in the provincial budget there's a

I see in the provincial budget there's a three per cent increase for agriculture. Did you get everything you wanted in the budget, or did you go in with a wish list and only get some of it?

You know what, we were pretty confident of what we wanted, and the increase of \$12.7 million is really to cover the increase in crop insurance. The prices have increased, the coverage has increased, the acres have increased, and premiums have increased, so we looked at that, plus we made some enhancements to the program. made some enhancements to the program. For the forage side of it, for the livestock

side, for the corn heat units, we did that. Fifty new weather stations, that's all part of the budget process. We're fully funding Agri-Stability and the business risk management, but crop insurance is a big part of it, you bet, it's huge. We're seeing an increase in acres and an increase in coverage, so that and the increase in Agri-Stability is so that and the increase in Agri-Stability is where you're seeing the biggest bulk of the

# Looking at the next 12 months, what do you see as the biggest challenges Sas-katchewan agriculture will face? I can say one word, Kevin—weather! It comes to that, and stabilizing these mar-

kets. With our trading partners, we hold the highest integrity with everything we grow here in the province of Saskatchewan. We can quantify what we do here as top quality. We can assure the customer that what we're growing here in the province of Saskatchewan is safe. I think that's something we really need to relay to our customers—to say that what we're producing here is safe and

### Is there some recognition of that among customers, or is there an effort to brand Saskatchewan products as coming from a clean environment, a land of clear blue skies?

skies?

I think we do a pretty good job of that. I think they get it. I know Minister Harrison in his trip just last week when he talked to some private businesses in Indonesia, they were looking for the Saskatchewan commodities because of the environment here and the way we grow the products here, environmently feight and they keep it? vironmentally friendly, and they know it's safe. We just have to keep sending that mes-sage—that what we do here is in the best interest of the climate and the customer at the end of the day.



## Follow the cow: A look at Canada's beef supply chain

BY MARTHA ROBERTS
The U.S. border is within sight from the Ross' comfortable home.

Owned by Chad Ross and his family, the L-7 Land & Cattle ranch lies 15 minutes from the town of Estevan in the southeast

rom the town of Estevan in the southeast corner of Saskatchewan. Behind the calves born out on pasture lies a classic Canadian scene: a prairie sky-line dotted with coal mines and the bright

orange pumpjacks that hum throughout so many of these fields.

It was early 2017. Across the border from the L-7, officials with the Trump administration were preparing to announce plans to renegotiate the North American Free Trade Agreement (NAFTA). Throughout the year, the U.S. would make clear they'd abandon any agreements they believed to subvert U.S. interests.

The next two stories will illustrate how those interests matter to a large Saskatchewan cattle ranch, and the Canadian cattle

and beef supply chain generally.
L-7 Land & Cattle currently market cattle to Cargill's plants in Alberta as a part of the Canadian Beef Sustainability Acceleration

Like the L-7, most Canadian ranches supply meat that's consumed in the Canadian market. Although the journey from a pas-ture in southern Saskatchewan to restau-rants and retailers throughout Canada is only one possible trip through the Canadian cattle and beef supply chain, it's a common one: in 2017, 61 percent of the beef produced on Canadian soil stayed here. Even still,



global trade patterns and the geopolitical events that shift markets. The prices Cana-dian ranchers pay for feed and the prices they get for their cattle reflect that global landscape.

The Ross family has ranched here for 112

years. Chad, his wife Crystal and his father Brian have endured in an industry hit by disrupted markets, bad weather and herd disease on the way to becoming a 1,500-head operation. That's large in a Canadian industry that has averaged 3.3 million new calves each year over the last five years.

In 2017, the Rosses had 1,000 cows calve Those calves were born at a time when the market was unexpectedly robust

## What happens in the U.S. doesn't stay in the U.S.

doesn't stay in the U.S.

Despite an expected jump in both global
and North American 2017 production, the
outlook for Canada's cattle industry had
showed promise in January. The global
trade landscape was already suggesting the
volatility that would feature prominently
throughout the coming year and into 2018,
but demand for red meats showed signs of impressive growth. Alberta fed cattle prices averaged \$191.51/cwt in the spring, well above seasonal expectations. A growing U.S. herd and recent processing investments had

boosted production there since 2014, prompting lower beef retail prices that spurred both North American and global beef demand beyond expectations. That bumped up the prices for North American fed cattle (or slaughter-ready cattle) from feedlots, who could afford to pay cow-calf operators more for the calves they would fatten.

The Rosses run their own feedlot. Many of the calves born on the L-7 leave the ranch

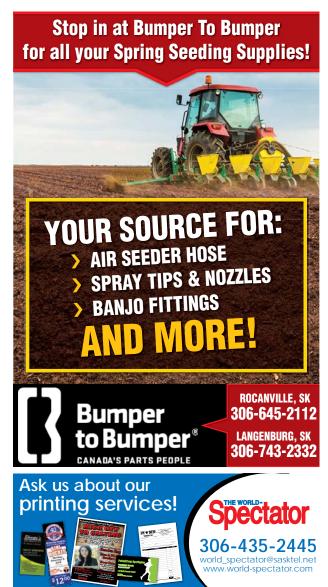
as fed cattle for processing. But in 2017 the Estevan area was dry, part of a largescale drought across the Canadian Prairies and the U.S. too, driving up feed prices throughout North America. Because the U.S. is the world's largest beef producer, shifting costs of feed grains there has ripple effects well beyond its own borders.

### As 2017 drew to a close

In southern Saskatchewan, feed prices climbed. In March, barley cost C\$164/tonne in western Canada; between October and December, it cost roughly CA\$220/tonne, an annual gain of about 24 percent. The higher costs of holding the animals longer meant more cattle were sent for processing in the second half of the year, often at lower carcass weights. Domestic beef production rose 3.2 percent year-over-year.

Weather and feed costs partially explain when ranchers sold their cattle in 2017. But the prices Canadian ranchers received, whether their product ended up in the States or not, was also influenced by the CAD-USD exchange rate.

Continued on Page C11 \*\*





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## Benefits of pulses: Good for you and the planet

BY DR. MARY BUHR (PHD)
Food production from this continually cropped land has skyrocketed—and its nutritional value has increased. Today's production of more, better food from the same amount of healthier land means that tomorrow's population may not go hungry. But is there logical science behind this il-logical revolution? Science, like revolutions, has many com-

plexities, but key to this major change is a trio of farming tactics: planting pulses (beans, lentils and chickpeas, for example), rotating crops and embracing zero-till

rotating crops and embracing zero-till farming.

In simple gardeners' terms that means we plant pulses one year, a cereal such as wheat or barley the next year and then an oil seed such as canola in the third year. And we never clean up the mess! After harvesting the grain or seeds, we leave the rest of the plant bits in the field, and we sow of the plant bits in the field, and we sow the next year's crop directly into the field in amongst all that leftover plant residue. It doesn't look tidy, and it takes special equipment—but oh, the benefits! Why a pulse? Pulses naturally produce their own nitro-gen. They take nitrogen from air in soil and

gen. They take nitrogen from air in soil and get the bacteria living in specialized pockets in their roots to "ftx," or trap, the nitrogen so that it stays in the soil in a form that is readily available for plants to use.

Since nitrogen is a primary component of fertilizer, pulses basically produce their own fertilizer. Their roots, left in the ground after the crop has been harvested, leave nitrogen behind for the next crop so it doesn't need as much fertilizer.

Over a nine-year test in the prairies, planting a sequence of pulse-pulse-durum

planting a sequence of pulse-pulse-durum wheat every three years yielded 13 per cent more wheat than did planting grain-grain-durum wheat. Planting pulses also reduced the carbon footprint of the durum wheat by 34 percent: the farmers used less fertilizer and less fuel, and saved more carbon.

The pulses are also highly nutritious



Canada's Food Guide has put an emphasis on lentils, chickpeas and other pulses

ture increases

Couple that with zero-till, where we do

They contain vitamins and micronutrients, and are incredibly rich in protein, with two-to-four times the protein content of cereal grains and significantly more iron, folate and zinc, which are crucial for good

health and eyesight.

A diet of nutrient-dense pulses can benefit young and adolescent girls. Pulses can be especially valuable to children who suf-fer from stunted growth, are underweight and malnourished because of insufficient amounts of a diet largely based on cereals with limited nutrients

with limited nutrients.

Canada's new Food Guide also celebrates the value of pulses, advising people to eat more beans, peas and lentils. The combination of disease-preventing micronutrients and high protein content of pulses, along with their relatively easy, cheap cultivation, truly merit the term "superfood."

Working the soil

And let's not forget the benefits of leaving all our plant trash in the field. It makes the soil healthier, more productive and turns it into a better carbon sink. As the plant residue decomposes, it gets incorporated into

due decomposes, it gets incorporated into the soil. All the carbon in the plant material enters the soil and doesn't contribute to airborne carbon dioxide. Plant residue helps the soil trap water better, and the water moves deeper into the ground so soil moisand reduce emissions by 25 per cent to 50

Now add in the benefits of pulses to those of trash and no-till. This triple whammy combination improves every measure of environmental impact tested—from the resources invested to ecosystem health to greenhouse gas emissions—some by as much as 35 per cent. Strikingly, the impact on human health also increases between three per cent to 28 per cent.

This year, the United Nations declared

Feb. 10 as the first-ever World Pulses Day. Truly, that is important and worth celebrating. But revolutionary integration of pulses, agroecosystem management—the best combination of crops, animals, fertilizer, pest and water management—the very best land management technologies, and all the other knowledge we have and are learning, THAT is the revolution that will help us feed the world.



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## Spring has finally arrived

The forecast for the next few weeks is calling for above normal temperatures across the country. The warmer temperatures will bring hope that spring fieldwork is just around the corner.

Warmer temperatures in eastern Canada help with the opening of the St. Lawrence Seaway. The lower seaway is scheduled to begin operations before the end of March and the warmer temperatures will help melt the existing ice on the Great Lakes.

Prairie temperatures begin to climb Temperatures across Western Canada have been well below normal from mid-

January through mid-March.

During this period, the forecasts and actual weather has been consistently below normal

Temperatures in the last two weeks of March are expected to reach normal to above normal values across the Prairies.

This warm spell should melt the exist-

ing snowpack and allow planting to begin

in a reasonably normal time frame.

The rapid turn to above normal tem-peratures will increase the chances of flooding in southern Manitoba as a heavy snowpack in the Dakotas and Minnesota

will melt rapidly.

The main concern in the central and southern Prairies is the lack of subsoil moisture.

Snowfall across the southern and central Prairie regions has been well below normal over the past three months.

Timely rains are going to be needed this growing season due to the lack of subsoil moisture in the southern two-thirds of the Prairies.

Despite the cold conditions over the winter, it appears spring is just around the

The largest concern for planting is that many areas of Western Canada did not receive normal precipitation this winter. This will increase the need for timely rains this growing season.



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SUMMARY: and assisting with shipping/receiving at the Feed Plant.

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Assist Shipper in assembling orders for shipment.

- 3. Assist in handling incoming ingredients or product for resale and place in stock
- 4. Responsible for the maintenance of good housekeeping for plant, ensuring general clean-up during and prior to next shift.
- 5. Report all needs for maintenance and any unsafe operating conditions to Feed Plant Supervisor.
- 6. Assist in inspecting incoming trucks for signs of possible sources of contamination and that documentation is received
- 7. Assist in the performance of daily production service maintenance duties when required.
- 8. Follow all FCL safety policies as outlined in the Feed Safety Manual.
- 9. Other duties as assigned

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## Making driverless farm equipment even smarter

BY DALE JOHNSON

Driverless farm equipment is becoming more and more attractive to today's farmers as they battle short growing sea-sons and rising fuel and equipment costs.
Dr. Mehran Mehran-

dezh has his eye on improving crop yields through the use of automation and algorithms, focussing his efforts on making the entire tillage process more precise.

Mehrandezh, a Professor of Industrial Systems Engineering in the Fac-ulty of Engineering and Applied Science, says faster and more precise farming can also reduce the carbon footprint of the farming machinery by consuming less fuel. He and his research

team are developing sensors that can be mounted on farm implements. While there is already

plenty of research being done into automated and precision agronomy, Mehrandezh says, "the use of machine-learning techniques for adding autonomy to tilling applications is a new and novel research area."

He says this new form of Artificial Neural Networks is a physical rep-

"I have decided to put the research on precision agriculture at the centreline of my research activities. I like to do research that can impact lives.

—Dr. Mehran Mehrandezh

lication of how the brain works, and how it learns how to learn.

"If trained well, the machine-learning algorithm may be able to outperform humans in terms of the speed of detection, and accuracy. Further-more, the sensors used for monitoring the process, namely cameras, can zoom in on the features of the landscape, something that homo sapiens lack, Mehrandezh explains.

He says these sensors will observe if the machine is producing the desired results; detect malfunctions due to the breakage of a shank; and spot areas where tillage is undesirable.

His research team has received funding from the Natural Science and Engineering Research Council of Canada to work with the Salford Group, an agricultural equipment firm, on adding autonomy to tillage applications for testing.

Mehrandezh's latest research follows work with automated seeding in 2016.

That's when he led a team of students at the AgBOT Challenge held in Indiana.

The student teams had to come up with the most efficient unmanned crop seeder capable of plant-ing two varieties of seed over half-mile-long rows, while providing real-time data utilizing a mobile tracking antenna.

The team came home with the first prize of \$50,000.

Mehrandezh says that experience led to his current research.

"It provided us with an excellent venue to con-nect to and network with key players in agriculture industry. I have decided to put the research on precision agriculture at the centreline of my research activities. I like to do research that can impact



The reason for Dr. Mehran Mehrandezh's research is simple: He likes to do research that can impact lives.

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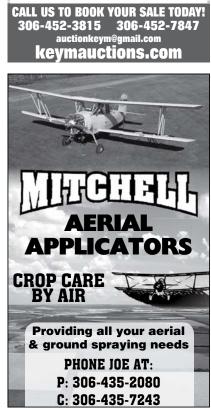


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## Follow the cow: A look at Canada's beef supply chain

™ Continued from page C7

## The cycle of life ent investments

Recent investments in North American processing capacity had injected revenue into every stage in the supply chain early in 2017, prompt-ing producers to market lighter-weight cattle. Rising feed costs also moved cattle faster through the chain. Then the global red meat market that had been so up-beat in 2017 turned decidedly

beat in 2017 turned decidedly more uncertain in 2018. The 2017 calves were born at a time when the sector was en-joying a bull market, but by the time the cattle were delivered to Cargill between Octo-ber 2018 and January 2019, the sector was facing several new setbacks.

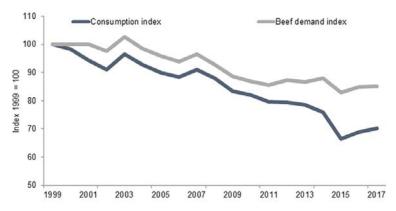
Southwest Saskatchewan

Southwest Saskatchewan 1999 2001 experienced another dry year in 2017, pushing feed costs higher and challenging efforts to grow the herd. The ranch's forage production was halved and Chad's feed costs doubled. Lacking the grass to sustain the herd, Chad and Brian bred fewer heifers, and culled the cow herd.

### For the love of beef

As a possible contraction of the global market developed, a mature Canadian market continued to show strengthening per capita consumption growth.
The launch of Sustainable Beef is one way the Canadian cattle sector has responded to what some have argued is a

waning consumer interest in beef. The entire supply chain



ranging from environmental sustainability to animal welfare with several initiatives, including the Verified Beef Production Plus program.

The calves born on the L-7 in 2017 were sent to Car-

gill's High River plant between October 2018 and January gill's High River plant between October 2018 and January 2019. The processor has committed their own sustainable beef program to the industry initiative. It costs the Rosses to participate in the program: they pay the fees for the independent, third-party auditor to ensure compliance, and they ensure their processing chutes meet program requirements, among other costs.

But the program was a good fit for them, Chad says, as they were already doing much of what are now the sus-

SPRING FREEZER PACK SALE

a short-term return through a premium paid back to the L-7, but it's the long-term goal of giving consumers the beef they want that will ulti-mately pay the richest divi-dends. Simply put, consum-ers love beef.

Canada's per capita beef consumption has been falling over the long term (Figure 1), but Canadians still prefer it when given an equivalent option.

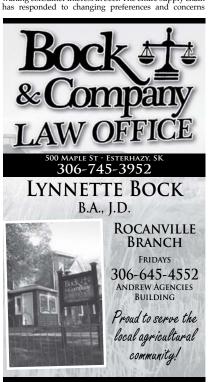
tion.

Canadians buy more beef when disposable income grows and/or beef prices decline, as has happened since 2015. But beef "demand"—or consumers' preference for beef relative to pork or poultry—has always remained. try—has always remained stronger than consumption trends (or actual purchases of beef). This means that if consumers can afford to buy

whatever meat they want, and if the prices of competing proteins remain constant, they'll buy more beef over time

### Throughout the supply chain

Throughout the supply chain
What happens in far-off places matters locally. Along
with every other Canadian cattle producer, the Ross family deals daily with the ramifications of changing food
preferences in foreign markets, trade negotiations, and
the value of the loonie. The industry's response to conditions arising at home and abroad continues to evolve,
ensuring a Canadian supply chain that can adapt and remain a world leader for years to come. main a world leader for years to come.







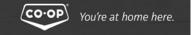
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### Clubroot—the sky is not falling yet

CCA AGRONOMY LEAD, SHARPE'S CROP SERVICES

There has been no limit this winter to clubroot presentations at conferences and articles in agriculture print. Listening to producer conversations around clubroot has left me with some apprehension. I am going to discuss less about the science of this disease and more about the psychology of the disease by addressing some of the comments I have heard.

First comment: "The Ministry survey showed I do not have clubroot spores or plant symptoms so I'm not going to worry about it." While this is true we must understand how the survey was conducted. The Sask Ag and Food survey was excellent but realize that only one field per township was sampled. That leaves many other fields that spores could be present in.

I think understanding spore First comment: "The Ministry

I think understanding spore load in the soil is important. Spores can last in the soil for 20 years or more. However there seems to be a natural spore population decline if no host crop is present for two years. Preventing spore build up will help keep inoculum at a level that may not cause plant symptoms and therefore no yield loss. This is easily achievable by following a longer canola rotation or using a clubroot resistant variety.

tation or using a clubroot resistant variety. New research from the Alberta camp (AAFC, U of A and Alberta Agriculture) supports this. The research demonstrated most clubroot resting spores disintegrated within the first two years in the soil. Additionally, growing a clubroot-resistant hybrid substantially increased yield and reduced the resting spores going back into the soil compared to a susceptible hybrid. Lower inoculum also helps reduce selection pressure within a resistant variety.

lection pressure within a resistant variety. These findings highlight the value of using clubroot-resistant hybrids in combination with a greater than two-year break from canola to help minimize the impacts of

clubroot and to help slow the spread of the

Second comment: "I am not scouting or looking for the disease—I would rather not know." Understanding your fields is key to keeping clubroot at a manageable level. Clubroot is spread by the movement of soil containing soil-borne resting spores. The obvious place to keep an eye on is field

Clubroot surveys in Alberta have found almost all new infections begin near the field access pointing to contaminated equipment as the culprit. This is not the only spot that needs to be watched. Clubroot spores transform to zoospores which will swim in water to find a root to infect. Watch areas where water accumulates such as runways or low spots for strange

canola symptoms.

Also watch areas where old yard sites existed. Clubroot is a disease of Brassicae

symptoms of wilting, yellowing, stunting or premature ripening need to be examined closely. Carefully dig up the canola plants and inspect the roots for swollen galls. Patch management is feasible where disease levels are low and caught early.

Double the size of the patch, dig

up plants and dispose.

Lastly: "It will be too time consuming to clean off my equip-ment." Areas where clubroot is present require strict sanitation procedures. In areas where club-root has not been detected follow a common sense approach—90% of the soil removed equals 90% of the infection risk reduced. Small windows of effort can help towards long term prevention of this disease. Make sure to knock off big clumps of soil and sweep off any loose soil before you move fields. Sanitation of equip-ment with a 2% bleach solution after season use could also be considered.

It ruly believe Saskatchewan will not be in the same situation as Alberta. As my title suggests, the sky is not falling "yet"—as long as we don't ignore the potential presence of this disease.

We have more knowledge and tools at our disposal than Alberta did in the early days of clubroot discovery. The psychology of awareness is key. Keep your eyes open for any weak plants this summer and contact an agrologist like myself to help you determine what is going on in your field. what is going on in your field.



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## Managing forages for uncertain weather conditions

Nadia Mori, PAG, REGIONAL FORAGE SPECIALIST

REGIONAL FORACE SPECIALIST

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Whether conditions will turn dry or not, extremes of weather have become more of a norm than the exception. The best way to manage your pasture or range through these tosses and turns is to A) have a plan and B) keep your forage stand as healthy as possible.

No roots—no Grass

Have you guest strained to grab compething from a shelf

No roots—no Grass

Have you ever strained to grab something from a shelf but despite your efforts, the desired item stayed out of reach? That is how your forage root system feels when it is too short to access a moisture layer which may be just below its reach. Roots are out of sight and often out of mind. Yet, it pays to remember that roughly two-thirds of total plant growth occurs below ground, while the visible above ground portion only makes up about one-

third. This extensive root system forms the lifeline for forage plants and helps ensure long-term survival as well as productivity. Remember that drought stress can reduce or impair root growth even without added grazing pressure.

impair root growth even without added grazing pressure. Resist the urge
It is challenging but imperative to leave residual forage at a height of 3-4 inches (7-10cm). Removing every last blade of grass only leads to a longer road to recovery. The resulting rest period will automatically be longer. The grazing stubble left behind also helps shade and cool the soil, which reduces evaporation and conserves what little moisture there is Just as important as removing the anisoft, which reduces evaporation and conserves what intermoisture there is. Just as important as removing the animals on time, is resisting the urge to put livestock back on a pasture as soon as some form of regrowth has occurred. Grass regrowth needs to reach 8 -10 inches (20-25cm) before animals can return to that paddock. Overgrazed plants will dip into the root reserves and stop allocating

resources to root growth in an attempt to survive shortterm. If dry conditions persist into subsequent years, desirable plants will first reduce production and eventually disappear from your stand.

disappear from your stand.

It takes moisture to grow grass
This may be obvious but it is a reminder that there are no miracle solutions to forage growth in dry conditions. The absence of moisture will inevitably result in an absence of forage growth. Adjusting stocking rates and using alternative feeding systems helps protect your pastures, your animals, and your financial bottom line.

Keeping pastures healthy during good weather conditions is an investment in ensuring the pasture will remain more productive during weather extremes and recover quicker in the aftermath. Leaving sufficient carry-over may be the hardest but most critical management tool in dry conditions. dry conditions.



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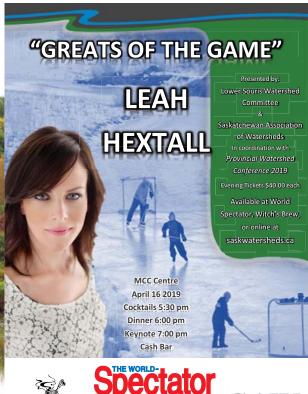
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## World durum markets show signs of softening



BY GREG KOSTAL

World durum prices may have showed the first signs of softening last week, likely in anticipation of the new crop just ahead.

Last week, Algeria bought approximately 300,000 tonnes of durum at average price of US\$282 to \$285 per tonne landed Algeria. Shipment from port is mostly in April, which is just before the Mexican new crop availability in May. As a comparison, Algeria paid US\$292 per tonne landed last January, while Tunisia paid the same mid-February

mid-rebruary.

The typical speculation is Algeria was buying No. 3
Canada Western Amber Durum but with minimum 60
per cent Hard Vitreous Kernel and maximum two parts
per million vomitoxin. Algeria will most likely be supplied a No. 1 CWAD quality because that's what Canada
has. This sale should mostly be serviced from Canada be-

Fighting our own weather-induced logistical challeng-es made rail costs expensive, U.S.-origin durum is an is-

land of high local price.

Canada has some of the cheapest, but highest quality durum in the world left to sell. It almost feels like Canada was the residual choice after all other world import-blending options were exhausted.

blending options were exhausted.

It appears world traders already had some ownership and were motivated to sell before convergence to a lower price, new crop begins. No matter the flat price, Mexico is notorious for having a price that is just beneath Canada's, especially during May-July shipping slots.

Price arbitrage
Price arbitrage implies delivered Saskatchewan elevator price from this purchase is \$6.50 to 6.70 a bushel for methods that make business replacement sense, such as through Vancouver ports. Specific to southern Alberta, the irony is the domestic feed market is worth minimum \$\$10 a tonpe higher than the offshore arbitrage value \$10 a tonne higher than the offshore arbitrage value.

Wrap-up
This is the first sign of world durum prices dropping,
likely in anticipation that convergence to cheaper new
crop is just ahead. North Africa growing conditions are
benign (although the western half will need rain later this
month), the market already expects North American acreage contraction and knows Canada carryout is close to
two million metric tonnes.

What durum always needs to evolve to a higher price trend is confirmation that:

U.S. and Canadian acreage is down nearly 20 per cent.

The trade already discounted a low five million Canada seeded acreage compared to 6.2 million in 2018.

Yield ends up no better than trend.

Quality ends up no better than trend.
Quality ends up no better than average, down from two
consecutive high years.
In the spirit of understanding of what's needed to
change the trend, if these three variables do not occur, durum will most likely have more price-grinding work to

do. This is now. The 2019 growing season and associated what-ifs reside ahead.

Bottom line

World durum prices showed signs of softening last week. To strengthen prices, 2019 seeding intentions need confirmation and quality needs to be maintained during the upcoming growing season.

Greg Kostal of Kostal Ag Consulting Ltd provides insight on commodity markets and marketing guidance. For more infor-mation, please visit www.gregkostal.com.



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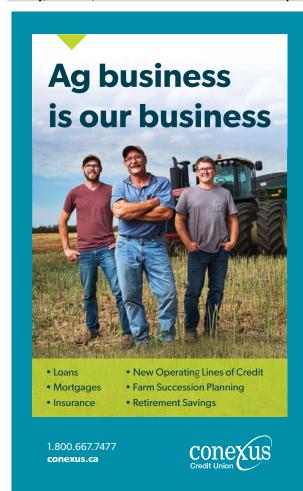
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## Diversifying chickpea genetics for better crop performance



BY SARATH PEIRIS Pictured above is Bunyamin Tar'an—Agri-Food Innovation Chair at the CDC.

University of Saskatchewan researchers Bunyamin Tar'an and Donna Lindsay at the Crop Development Centre (CDC) are part of an international project that will increase the genetic diversity of chickpea crops by providing plant breed-ers around the world with

access to thousands of seed progeny from wild plants. "The scale and depth of this study makes it

Food Innovation Chair at the CDC. "This research generated close to 10,000 generated close to 10,000 progeny from crossing samples from where wild chickpeas grow in southeastern Turkey and crossing them with cultivated lineages."

In a paper published Feb. 13 in Nature Communications, the 49 university researchers, faculty members and students involved

bers and students involved

in the five-year project say the seed collection they've developed "contains great-ly expanded diversity and a range of traits of potential agronomic importance." The collaboration was led by Doug Cook from the University of California

The diversity of avail-ble materials means able materials means chickpea breeders from countries such as Canada, Turkey, India, Ethiopia, Pakistan, Russia, Australia and the United States can select desired genetic traits to address their current problems and future opportunities.

"Characteristics like drought, heat and cold tol-erance, seed nutrient den-sity, reduced dependence on inputs and resistance to stresses—many of these are crucial for the sustainability of the chickpea crop in Western Canada," ex-

in Western Canada," explained Tar'an.

The CDC, which has developed more than 400 commercialized crop varieties since its inception in 1971, provided the protocols for successful crossing between the wild and cultivated varieties of chickpeas during the early stages of the project.

stages of the project. U of S expertise and fa-

cilities such as the greenhouse complex, phytotron, analytical lab and field breeding lab were critical to analysing seed nutrition quality, stress tolerance and disease resistance in

and disease resistance in chickpea plants.
While the new primary seed material gathered for the project are maintained in a gene bank in Turkey, the progeny lines (more than 2,500 in all) were distributed to memwere distributed to member countries of the project. Research at the U of S has now generated more than 650 diverse seed lines that are available for the CDC's chickpea genetic improve-

ment program.

While the new progeny material can be readily used in breeding programs, it could take as many as 10 years until the traits are fully integrated into commercial varieties because plant breeding is a long-term endeavour, Tar'an said.

Tar'an said.

"The research we describe in Nature truly reflects the value of global collaborations with common goals and sharing expertise among different groups," he said.

Sarath Peiris is assistant director of Research Profile and Impact at the U of S



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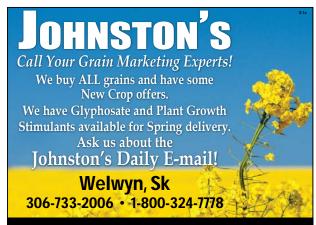




## Redvers holding Ag Safety Day on April 16



Chantal Bauche says it's important for kids to learn ag safety, especially if they are growing up on a farm.



Celebrating 33 Years of Service to the Ag Industry!

By Kara Kinna
Students from schools
around the area will be
heading to Redvers on
Tuesday, April 16 for the
Redvers Progressive Agriculture Safety Day being hosted there that day.
From 10 am to 2:30 pm,
students will be going
through various different
stations to learn all about
ag safety.

Chantal Bauche, who is one of the organizers of the event, says this is a first for Redvers, but they thought it was something important that needed to

important that needed to be done.

"I had the idea for a few years, and Maryfield did it two years ago," she says. "Progressive Agriculture Safety Day is an organization that supports safety in North America. You register supports safety in North America. You register with them, and if they say yes, there are funds for you to do this, and you say how many kids you think you'll host. And then they approve you to get their funds and access to all their program-ming. They have sessions drawn up that you can then use for these differ-ent farm safety topics.

"I applied with Pro-gressive last year—you have to do it one year in advance—and they gave me the green light for 2019."

Bauche says a commit-tee was formed to help

organize the day.

Why does she feel it's important that Redvers have something like this for students?

"It's important to me because I am on the farm—that's my back-ground and what I do as a career—and there has a career—and there has never been anything like this before," she says. "Nobody puts a focus on safety for kids. For myself, everything we learned on the farm, we've never had any training, and this is to just raise awarness. is to just raise awareness for the younger ones who are going to grow up in it."

Bauche farms eight miles east of Redvers, studied agriculture in school and is an agrono-

mist. She says there will be 25 different stations at the ag

safety day in Redvers. "There will be every-

"There will be everything from large equipment—like awareness
of blind spots and being
aware of your surroundings—to grain safety,
chemical safety, then
there is electrical, and
firearm safety, and also
things like home alone,
emergency awareness,
and different things like
that. that. "We

"We are partnering with the fire department here in Redvers. They are going to help us out quite a bit by running a few stations and by bring-ing their equipment on site too, and we've gone to a lot of the other busito a lot of the other busi-nesses in town and ev-eryone's been super good and willing to donate and volunteer their time. The John Deere dealership is John Deere uearson, on board with any equip-ment we need—they're

on board with any equip-ment we need—they're willing to bring it in. "It will all be volunteer based. John Deere is go-ing to run one station, the public health nurse is go-

ing to run one.

"Because Maryfield has done it before, we've partnered with Maryfield and they're sending a few and they're sending a few people from their ag soci-ety. We don't have all the spots filled, but I don't think will have any issues finding the volunteers. "We've approached Enbridge and Tundra Oil

and Gas for pump jack safety, and Advantage Co-op is going to do the chemical safety, the agro department is going to do the chemical safety booth, and we've talked to the RCMP and different people like that."

Bauche estimates there will be around 200 stuwill be around 200 students attending the event. She said they have talked to Bellegarde, Redvers, Maryfield, Manor, Moosomin, Carnduff and Car-

lyle schools.

The event will be held at the Redvers Rec Cen-

tre. What does Bauche hope

"I hope they have fun but it's to also make them aware of the differ-ent safety issues that can pop up just in day-to-day life as well and to just to make them aware of it."



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## Advancing productivity of Canadian corn



Soil scientist Mario Tenuta at the University of Manitoba is leading a team of Canadian researchers in determining how best to apply nitrogen fertilizer in corn crops in ways that not only increase yields and economic benefit for farmers but lower environmental losses and greenhouse gases.

The Cross-Canada Agronomic and Environmental Benefit of Advanced 4R Nitrogen Management of Corn research project, part of the larger program led by the Canadian Field Crop Research Alliance, brings together Tenuta, U of M colleague Don Flaten, and researchers from multiple Agriculture and Agri-Food Canada centres, McGill University, and the University of Guelph.

"The project will help corn growers to maximize profitability and lower environmental impact through use of 4R Nitrogen practices" said Tenuta, a soil science professor in the Faculty of Agricultural and Food Sciences at the University of Manitoba

"Corn yields have steadily increased in the Manitoba and corn growers want to know how to adjust nitrogen management for Manitoba conditions. Especially important are ways that we can balance a supply of adequate nutrition for corn as the growing season develops while not drawing down soil resources or losing valuable plant nutrients from the soil", said Lori-Ann Kaminski, Research Manager, Manitoba Corn Growers.

Nesearch Manager, Mantoba Corn Growers. Nitrogen (N) is the largest operating cost for grain corn production and may be subject to increasing costs with proposed carbon tax models. It can also be among one of the most difficult essential plant nutrients to manage, with significant losses during and after application. Nitrogen sources containing urea can be subject to volatilization (or loss of nitrogen as ammonia gas), and once converted by soil microbes to nitrate, at risk of leaching and draining losses through water movement. Nitrous oxide, a powerful green-house gas, can also be

produced.

The four Rs refer to applying fertilizer at the Right Source, Rate, Time, and Placement.

and Placement.
"If investment into 4R practices by growers is to pay in the short term, there must be compelling evidence that they can get more yield from the amount of nitrogen used," said Tenuta. "We seek to determine what it pays to use 4R practices"

pays to use 4R practices"
Through three years
of replicated plot trials
at locations in Manitoba,

Quebec, and Ontario, the team will examine increasingly sophisticated 4R practices, including using a novel approach of layering rates of N application with combinations of enhanced efficiency fertilizers, application timings, and placement methods. Over the course of the project, they will be looking at adjusting N rates for profitability and environmental stewardship.

"The effect of 4R prac-

"The effect of 4R practices on the best economical rates of fertilizer N is often overlooked but it should change if we are using N fertilizer much more efficiently" said Tenuta.

An important second objective will be the development of tools for growers to determine inseason application rate recommendations, using hand-held spectrometers and aerial drones to estimate corn N uptake in season and response to top- and side-dressing fertilizer sources.

top- and side-dressing fertilizer sources.

"Corn is a long season crop with most of its N uptake being later than that of other grain crops. This is an opportunity to monitor the crop inseason and better match demand and added fertilizer N."

Funding for the Cross-Canada Agronomic and Environmental Benefit of Advanced 4R Nitrogen Management of Corn was announced by the Government of Canada on January 23, 2019, as part of a \$4.1 million investment over five years to the Canadian Field Crop Research Alliance (CFCRA) under the Canadian Agricultural Partnership's AgriScience Program (Projects).

nadian Agricultural Partnership's AgriScience Program (Projects). The CFCRA is a notfor-profit entity founded in 2010 with an interest in advancing the genetic capacity of field crops in Canada, particularly barley, corn, oats, soybeans, and wheat. The CFCRA is a national collaboration

comprised of provincial producer organizations and industry partners, including: Atlantic Grains Council; Producteurs de grains du Quebec; Grain Farmers of Ontario; Manitoba Corn Growers Association; Manitoba Pulse & Soybean Growers; Association; Manitoba Pulse Growers; Prairie Oat Growers; Prairie Oat Growers Association; SeCan; and FP Genetics. In addition, Fertilizer Canada, Nutrien Inc. and KOCH Agronomic Services are supporting the 4R N project led by Dr. Tenuta.









## **Weed experts** watching spring melt conditions



1. Dog strangling vine 2. Kochia 3. Northern willowherb 4. Scouring rush 5 & 6. Yellow evening primrose. Photos courtesy of Dave Bilyea, University of Guelph.

BY OWEN ROBERTS
Mother Nature is throw ing another curve ball this spring at weed forecasts, thanks to appreciable snowfall in some parts of the country's farming areas

that may spark flooding. If that happens, weed seed distribution can be extended significantly by floodwaters.

This is an immediate

concern in Ontario's south-west, where snow melt and ice jams on the Thames River cause problems, and in Manitoba, where eyes are fixed on the Red River

"A lot depends on the snow melt right now," says Rob Gulden, a weed ecolo-gist at the University of Manitoba. "Some overland flooding is expected in Canada and the U.S., and that may result in a wider distribution than normal of weeds, including some en-

weeds, including some encroachment from resistant weeds from the U.S. Flooding will also influence weed emergence times."

Weed pressure expected to be high Observers like Gulden were already expecting a flush of some weed species such as green foxtail and pigweed. That's because the weed seed bank for these seeds was well replenished last summer replenished last summer and fall, owing to the dry weather.

Now, when the heavy snow accumulation melts, soil moisture levels will be high. That will provide that replenished seed bank an opportunity to take hold once the weather warms

up.
"These are good conditions for early weed re-cruitment," Gulden says. Ontario's watchlist

In Ontario, weed science technician Dave Bi-lyea at the University of Guelph's Ridgetown Cam-pus compiled a list of a dozen weeds to watch for this season in the province,

along with other problem weeds and noxious weeds. Half of them have al-ready developed some measure of herbicide toler-

- Annual bluegrassNorthern willowherb
- Kochia Scouring rush
- Yellow evening prim-

Yellow evening prim-rose
 "They're not widespread yet, but they're up-and-comers we need to watch," Bilyea says.
 One of them, water-hemp, is a huge problem in the United States, he says,

where it's developed resis-tance to more than three modes of action. Now, it's creeping northward and already arrived in parts of

Ontario.

Another weed from the U.S. to watch is palmer amaranth, which is found in the United States around the Great Lakes and will in-evitably arrive in Canada. Weeds are

Weeds are hiding in plain sight Bilyea says waterhemp is an example of "a weed that hides in plain sight," with its close resemblance to native pigweeds. The same goes for dog strangling vine, another weed on Bilyea's watch list. In eastern Ontario, some

In eastern Ontario, some pastures have been beset with this weed, which dewith this weed, which de-velops in nearby woodlots amid other weeds such as poison ivy and wild grape. It too hides in plain sight until it starts creeping into fields and pastures.
Bilyea says early detec-

tion of any weed species is

key.
"It's all about scouting and awareness," he says.
"Knowing what's regular in your fields will help identify new weeds that need to be addressed. But need to be addressed but need to be addressed but need to be addressed. even the ones to watch aren't everywhere. If we know they've arrived, we have a chance to control them before they spread."

them before they spread."

Bottom line
Weed forecasts are influenced greatly by significant snowfall in many of the country's farming areas that may spark flooding. Field scouting will be critical this spring for weed monitoring and staying on top of any possible problems, especially from herbicide resistant weeds.





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## NRGene crop research partnership maps lentil genomes

In cutting-edge research aimed at breeding better lentils, a partnership between University of Saskatchewan (U of S) crop scientists and world-leading genomic big data company NRGene of Israel has successfully sequenced two wild lentil genomes—the largest legume genomes ever assembled.

Largely due to advances in plant breeding at the U of S, Canada is the world's leading exporter of lentils, delivering millions of tons of lentils to India, Pakistan and Bangladesh where this vegetable-based protein serves as a critical food source.

The research, part of the \$7.9-million Genome Canada-funded "Application of Genomics to Innovation in the Lentil Economy (AGILE)," is led by U of S scientists Kirstin Bett and Bert Vandenberg. With the help of NRGene's genomic assembly and analysis technology, the research is expected to empower future breeding efforts aimed at enhancing lentil yield and quality.

aimed at enhancing lentil yield and quality.

"NRGene's technology has dramatically accelerated our research, which aims to shed light on lentil domestication and adaptation," said Bett. "Through identifying beneficial traits from wild relatives and integrating them into the genome of the domesticated lentil,

we can now develop lentil varieties with much improved vigor, resilience and productivity. Maintaining sustainable lentil production will play an important role in addressing the world's need for an ecologically sound protein source that is also highly nutritious."

Professor Bett's group leads the international lentil genome sequencing initiative which has resulted in the release of a "reference genome" (a complete genome sequence) for a Canadian-cultivated lentil variety. Now with additional genomic information from the wild species, the researchers have a much broader view of genes and pathways that enable lentils to thrive in volatile climatic conditions.

She noted that to date,

She noted that to date, breeders have only been able to access a small fraction of the total germplasm diversity in existence, which hinders Canadian producers' ability to meet growing global demand. With its focus on wild lentil genomes, the project is aimed at introducing genetic diversity with great precision and speeding up the breeding cycle to provide breeders with faster access to better lentil varieties.

The U of S Crop Development Centre (CDC), which to date has developed 400 commercial crop varieties, is working with NRGene to sequence



Crop scientists Kirstin Bett and Bert Vandenberg examine lentil plants.

several of the world's major crops. A huge step forward in crop genomic research was the release this year of the wild Emmer wheat genome sequence generated using NRGene technology and involving U of S scientists. Emmer wheat is the wild form of all the domesticated

wheat in the world. The work was published in Science in July of 2017.

Knowledge gained from this innovative research is expected to have an immediate effect on the world food supply since the scientists at the CDC are directly applying genomics to breeding of superior varieties grown on millions of acres. NRGene data provides the underlying understanding that can lead to breeding seeds for higher yields with fewer

higher yields with fewer resources.

"Our partners at the University of Saskatchewan are aggressively pursuing the quest to identify essential traits that strengthen the genetics of the crops that feed the world," said NRGene CEO Gil Ronen. "We look forward to our continued partnership to disrupt the cycle of world hunger by offering hardier, more nutritious plants."



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Directions: From REDVERS, SK, go 10 km (6.2 miles) East on Hwy 13 to Bellegarde turn off, then go 0.08 km (0.04 mile) South, then East into yard. GPS: 49.5671508, -101.5458611 Legal Land Description: SW 18-07-30 W1

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The floor of the Redvers Ag Ex Trade Show at the last show two years ago.

## Redvers Ag Ex Trade Show coming up April 11

## Sask Minister of Agriculture David Marit is guest speaker

By Kara Kinna The Redvers Ag Ex Trade Show is com-ing up on Thursday, April 11, with David Marit, the Saskatchewan Minister of Agriculture, as one of the guest speakers this year. Marit will speak at 3 pm. Leah Olson, the CEO of Dot Technology Corp, is the other guest speaker. She will be speaking at 1:30 pm about the future of autonomous

The Redvers Ag Ex Trade show runs biannually, alternating each year with the Redvers Oil Show at the Redvers Rec Cen-

"What we try to do is promote our lo-cal businesses involved in agriculture and we try to bring things that are new in ag-riculture into the show so that our local producers can be aware of the latest technology," says Blain Hjertaas, chair of the Redvers Ag Ex Trade Show Committee. "We have room for just over 90 booths

in our show. Most years we have them filled right up—in fact we usually have a waiting list. Usually we have a full line of exhibitors.

"Maybe 20 per cent are local and the rest are businesses from other areas. We try to make it as varied a show as we can. "It's just a one-day event. We have break-

fast for the exhibitors at 8 in the morning



Above and below: Booths at the Redvers Ag Ex Trade Show in 2017.

and lunch for everyone. This year it's the local Redvers Day Care raising money, so they will sell lunch to whoever wishes to purchase it.'

Hjertaas says they try to have something for everyone at the show, even for kids.

"We try and encourage the schools to come. We believe part of our mandate is to teach kids about agriculture, so we have a few interactive displays."

The Saskatchewan Association of Agricultural Societies and Exhibits will have hands-on displays at the show, and there

will also be a petting zoo.

"One of our local guys from Storthoaks has quite a collection of animals, so he's bringing a petting zoo," says Hjertaas. "So we encourage school tours and the small ones to come, too. We try to make it a well-granded shows or therefore methylic for rounded show so there's something for everyone."

The show runs from 10 to 4 pm that day.

The show runs from 10 to 4 pm that day. The Redvers Ag Ex Trade Show has been running for over 30 years.

"There's a long history," says Hjertaas.

"The Wheat Pool probably started it way back in the '80s. Then the Western Canadian Wheat Growers ran it for a few years, and then it kind of became a community event about 20 years ago. And we ran it every year for many years, and then about 10 years ago, the group of oil guys decided it would be a good thing to have an oil show too, so we said okay, we will back off a bit. And so they do an oil show one year, and we do an agricultural show the next year, so we've been alternating now for about the last five years."

There have been some changes to the show over the years.

show over the years.

show over the years.
"For a while we had livestock in it," says Hjertaas. "We encouraged people to bring the best pen of heifers or we had bulls. Some years we had up to 20 pens of livestock. But the last eight or 10 years it's been more difficult to attract producers because there are so many bull sales at this time of year. The last two shows we this time of year. The last two shows we haven't had any livestock. "Other than that I think it's been pretty

much the same for the last few years. The booths are always different but it's the same basic idea.

"Ann Wiszniak (one of the board members) does really good work in trying to find booths that are different, companies that are different, and we all look when we go to Agribition. But we always let our lo-cal people in first and then anybody else is more than welcome."

The show draws a large crowd each

Usually we have anywhere from 400 to 600 and sometimes up as high as 700 people come," says Hjertaas. "It's a fairly major event. It's good for the community. It's hard to keep local communities going, it takes work."



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### Dual purpose value of perennial forage grain for food and feed focus of a new study

By CRYSTAL CHAN

The dual purpose value of perennial forage grain for food and feed is the focus of a new study

Maintaine.

Maintaining beef cattle on pasture in the fall/winter season using a variety of different grazing strategies is common practice in western Canada.

Yet there can be challenges with late season grazing in terms of providing suffi-cient nutrients to meet cattle performance needs, requiring supplementation with other feedstuffs which increases both feed

and labour costs.

Drs. Emma McGeough and Doug Cattani at the University of Manitoba are leading a first-of-its-kind study on the perennial grain intermediate wheatgrass (IWG) as a dual-purpose crop to provide both a cash food grain crop and high-quality forage regrowth for grazing cattle into the late fall and early winter.

the late fall and early winter.

"This is new territory," acknowledges
McGeough, assistant professor in sustainable grasslands/livestock production
systems, Department of Animal Science.

"This crop offers the possibility of growing both grains for human consumption
and high-quality forage for grazing in a
single growing season on the same piece
of land multiple years in a row from a single planting." gle planting.

In recent years IWG has gained a lot of attention from food processors and con-sumers alike – particularly in the United States where it was developed – because of the novelty and environmental benefits associated with its being a perennial grain.
"Yet IWG was initially brought into western Canada as forage to produce hay,"
says Cattani, assistant professor in perennial crop breeding, Department of Plant

Cattani has been selecting prairie-hardy IWG germplasm for consistent performance through a variety of weather conditions since joining the university in 2011. Over this time he has developed seed selected for producing high-quality grain protein and strong yields –seed that will be used in this study.

Agronomic research in Canada has



306-435-4211

shown IWG to be highly adaptable to the prairies, being able to withstand cold, drought and excess moisture, sometimes all in a single growing season. It also has the potential to provide a much needed the potential to provide a much needed high-quality alternative forage for late fall/early winter grazing. Cattani's preliminary analyses of forage regrowth nutritional quality indicate it might be suitable for meeting the requirements of a range of cattle classes. "This is especially important for classes of cattle such as backgrounders or bred heifers that have higher requirements than cows," notes McGeough.

This three-year project will encompass

This three-year project will encompass ssessments of agronomic and cattle performance, grain and forage quality, envi-ronmental sustainability indicators such as enteric methane emissions, nitrogen and carbon cycling, ecosystem services in terms of songbird and nesting waterfowl

habitat, greenhouse gas footprinting, as well as the economic potential of the combined IWG-based crop-livestock system. The data gathered from this project will provide novel information on the value

of IWG under western Canadian grow-ing conditions and offer beef producers an alternative option to help cope with the challenges that arise from conventional annual and perennial forages, such as low-er feed quality and the need for synthetic fertilizer inputs for late fall/early winter

cattle grazing.

"We anticipate there will be soil, environmental and ecological benefits with this dual-use approach," says Cattani.
"But there will also need to be economic benefits for this to be a feasible strategy for beef producers.'

The economic analysis will assess the profitability of IWG-based crop-livestock production systems accounting for both

the grain and cattle productivity compo-nents. "The more integrated that produc-ers can get by being able to harvest a com-modity crop and feed cattle at the same time is a novel opportunity to capture ad-ditional economic rewards from a single land area," says McGeough.

and area, says wick-eough.
As a provincial mandate exists in Manitoba to grow the beef cattle population,
this project will provide industry stakeholders with science-based data on an alternative beef production strategy to help achieve this goal and remain competitive

### The research team

McGeough and Cattani are part of a diverse, multi-disciplinary research team with the University of Manitoba's Na-tional Centre for Livestock and the Environment that includes Kim Ominski, professor in forage/beef production systems, Derek Brewin, professor in economics and agri-business and Francis Zvomuya, professor in soil science. Also part of the research team are Agriculture and Agri-Food Canada researchers Roland Kröbel, rood Canada researchers Roland Krobel, Aaron Glenn and Mae Elsinger, University of Saskatchewan forage breeding and ge-netics professor Bill Biligetu, Jim DeVries with Ducks Unlimited Canada, and ecolo-gist Tim Crews with the Lands Institute in Kansas. Additional supporting partners include Manitoba Beef Producers, Manito-ba Forage and Grassland Association and Manitoba Agriculture.

Project funding provided by NSERC Strategic Partnership Grants for Projects and Manitoba Beef Producers.

Crystal Chan is an undergraduate student at the U of M, completing her final semester of a B.Sc. with a major in Microbiology. She has been working as a Research Assistant with the National Centre for Livestock and the Environment since October 2018. In her short the matter than the National Centre for Country and the Environment since October 2018. In her short them with NATIC the base and adultable in the NATIC of the second adultable in the NATIC of the N orronment since October 2011. In ner snow, time with NCLE she has gained valuable insight into current research within Agriculture and its importance for producers, the public, and the environment. Combining her passion for science and her carring nature, she plans to pursue a career in medicine.



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## Making plant based meats 'foodilicious'

A team of University of Manitoba re-A tealt of University of Maintiobale-searchers led by food engineer Dr. Filiz Koksel are among a select group of in-ternational scientists awarded grants from the Washington-based non-profit Good Food Institute (GFI) to explore plant-based and cell-based meat pro-

plant-based and cell-based meat processing.

GFI's inaugural Competitive Research Grant Program selected 14 projects from eight different countries to receive up to U\$\$250,000 over two years. One of the program's key goals is the generation of open and accessible research and tools, and all findings generated through research supported by this program will be published under the Creative Commons license.

Koksel's project will identify the optimal processing conditions for plant-

timal processing conditions for plant-based meats, research that will be critical to the food manufacturing industry as it seeks innovative techniques to cre-ate nutritious and appealing protein-

rich plant foods.
While gaining popularity, plant-based meats are a relatively new consumer product which sometimes lacks

sensory appeal.

"The recent changes to Canada's Food Guide, and the current U.S. Di-etary Guidelines, place strong empha-sis on the inclusion of plant-based pro-teins into the North American diet," said Koksel, assistant professor in the Department of Food and Human Nutritional Sciences.

"We continue to investigate improve-ments in the sensory and nutritional quality of plant-based meats, and a key to that puzzle lies in understanding how processing conditions, like tem-perature, affect mechanical properties of various protein sources and the resulting food microstructure," she said.
"This will help processors formulate nutritionally-rich palatable foods."
The challenge in plant-based meats,

which are most commonly produced through extrusion, is the limited in-





formation available about how certain

formation available about how certain textures are generated during processing of cereals and food legumes.

With the use of a twin-screw extruder, the protein-rich fractions of these crops will be texturized at high moisture contents to produce highly structured meat analogs that mimic the juicy and fibrous texture of animal meat.

The team, which also includes University of Manitoba nutritional biochemist Dr. James House and physicist Dr. John Page, and food processing

Dr. John Page, and food processing expert Dr. Mehmet Tulbek from AGT Food and Ingredients Inc., plans to develop a quality control tool using lowintensity ultrasound.

Ultrasonic techniques are not only rapid and non-invasive, they are wellsuited to studying optically opaque

The tool will be adapted to operate on a food extruder to non-destructively characterize changes in plant proteins during processing and allow process interventions to be made in real-time.

As this tool can be used directly on the food production line, it will enable food processors to reduce material losses and down-time while ensuring end-

product consistency.

"This will be the first time that ultrasound will be used to quantitatively characterize melt mechanical properties in an on-line manner during food extrusion in real-time," said Koksel. "I believe our work has the capacity

to lead to break-throughs in value-add-ed processing of plant proteins. It is ex-citing for our team to be at the forefront of an emerging field of food processing

Top photo, Dr. Filiz Koksel, who is leading a team trying to advance pro-cessing of plant proteins

Bottom photo, Dr. Filiz Koksel and her team extruding healthy snacks from ce-real and pulse flours



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- 3. Where no acceptable bids are received, the land may be available immediately after the tender opening, at a minimum acceptable bid.
- Successful tender must pay the Moosomin/Martin Gravel Committee the full annual amount of the tendered price within 15 days upon receiving notification that the tender has been accepted.
- 5. Acres as stated are approximate. Bidders must rely on their own personal inspection of the land.
- 6. Conditional bids will not be accepted.

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## **China halts Canadian canola imports**

China has expanded its restriction on buying canola from one company to all Canadian exporters, says Canola Council of Canada president lim Everson

Canada president Jim Everson.

The move follows a decision by Chinese officials earlier this month to stop buying canola from Richardson International, Canada's largest grain company.

ada's largest grain company.

The canola council posted a notice on its website on March 21 announcing the newest development.

"We felt it important that we be transparent about the fact that Chinese importers appear at this point to be unwilling purchase Canadian canola seed," Everson said.

China has not issued a notice that it has stopped buying Canadian canola, and the restrictions are thought to be aimed at new sales not contracts already in place

sales, not contracts already in place.
"We have been seeing this develop over a period of time as opposed to the decision that was made earlier in China to impose a restriction on one company," Everson said. "We have seen a kind of an erosion of an opportunity to sell to China for other exporters."

China buys 40 percent of Canadian canola seed, oil and meal exports. The council says canola seed exports to China were worth \$2.7 billion in 2018, but the entire canola trade with China is valued at \$3.6 billion, representing about half of Canada's agricultural exports to China.

Briefing notes prepared for a meeting with Chinese officials in 2017 stated that canola is a "crucial element of the bilateral commercial relationship" between Canada and China.

Everson said Chinese demand for Canadian canola "has been very strong until recent disruptions."

"We believe it is fundamentally a strong market in the sense that China has ... in past years ... been buying increasing volumes for canola seed."

umes for canoia seed.
Following a meeting in November between Chinese trade officials and Lawrence MacAulay, who was Canada's minister of agriculture at the time, Canada announced its intention to double agricultural exports to China by 2025.

When China announced a purchasing ban from Richardson, problems with "hazardous pests" were cited, but tests of canola in Canada have not confirmed the presence of pests.
"We're very confident of the quality of

"We're very confident of the quality of Canadian canola from all of our exporters," Everson said. "It's my understanding that the work the (Canadian Food Inspection Agency) has done has indicated that they have not been able to detect these pests as have been alleged by China."

have not been able to detect these pests as have been alleged by China."

It's thought by some Canadian officials that China's actions are intended to pressure Canada into releasing Meng Wanzhou, chief financial officer of the state-owned telecommunications firm Huawei, who was detained in January in Vancouver at the request of the United States pending extradition.

Since Meng's detention, China has arrested two Canadians for allegedly stealing state secrets, and a Canadian who had previously been sentenced to 15 years in jail was retried and sentenced to death.

Still, the best way to address China's ban on Canadian canola is to examine the technical issues and ensure an ongoing dialogue with Chinese officials. Everson said.

logue with Chinese officials, Everson said.
"I do think the way of dealing with this issue is to take Chinese concerns very seriously and be able to have a dialogue at the technical and science level with the Chinese to get to the bottom of why it is they have one view and we have another."

Such a dialogue is taking place, he said. "There's been an exchange of information and exchange of dialogue between officials of the Canadian food inspection agency and their Canadian counterparts in China."

Asked if there is any reason for optimism

Asked if there is any reason for optimism for a quick resolution to the dispute, Everson said complex issues such as this can take time.

"When it deals with questions around sanitary and phytosanitary restrictions where the interpretation of data and even the methodology that can be used to test products can be different, my experience is those issues are not quickly resolvable," he caid.





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## Improve soil to boost crops and profits

By RICHARD KAMCHEN
With another growing year approaching, experts advise farmers know their soil to get the most out of their fields

neuts.
"It's a living system and the organisms that live in that soil can really help us out, but we have to help them out as well," says David Burton, a professor at Dalhousie University's plant, food, and environmental sciences department

### SOIL TESTING

Soil sampling and analysis are vital to understanding available nutrients and the fertility program required to maximize economic yields, says Jocelyn Velestuk, a Saskatchewan farmer and agronomy consultant at Western

Ag.
How soil sampling and analysis help in understanding available nutrients and the fertility program required for

available futurels and the leftinity program required to best economic yields. Tweet this "Nutrient balance is important to growing a healthy crop that has a lower chance of disease and is more com-petitive with weeds," adds the Saskatchewan Soil Con-servation Association president.

Velestuk points out that nutrients change from year to year, depending on the previous years' crop uptake, precipitation and management, making benchmark site choices important to understanding how soil functions over time.

Also, test different fields and even areas within fields separately. They are likely to vary in their fertility and therefore need different levels and types of nutrients, says University of Saskatchewan soil fertility professor and agrologist Jeff Schoenau.

### ORGANIC MATTER

"One of the things we're doing is encourage a broader concept of soil testing that encompasses both physical and biological aspects of the soil in addition to the chemi-

cal," adds Burton.

Low soil organic matter is affecting the physical structure of the soil and its ability to hold water, highlighting the need for practices other than providing nutrients to

plants in order to build up soil organic matter.
"We're looking at things like cover crops, adding animal manures, reducing tillage, as ways in which we can try to promote more organic matter in the soil," says Bur-

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Schoenau lauds manure's efficacy in improving organic matter content and fertility in soil, but warns against excessive tillage and burning: "You don't want to open that soil up to erosion by wind or water."

### SOIL COVER

Burton emphasizes the importance of covering soil as

much as possible.

"Leaving the soil bare over winter is not a good thing," he says. "Ensuring that there's continuous cover is a very effective way of stimulating the biological activity in the soil and maintaining soil organic matter."

Perennial forage crops provide additional organic mat-ter to the soil and improve structure, Schoenau says. A three-year perennial forage crop can return more

than twice the soil organic matter as annual crops like cereals or pulse crops.



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Soil experts say testing soil is the best way to best adjust management and fertility programs for the highest yields and profits. Additional steps of using cover crops and animal manure, as well as reduced tillage, also add nutrients to the soil.



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## Time for a code of practice for grain production

CANADA

I was on a speaker's panel a few weeks back with a farmer who said he never wanted to hear the word sustainability again. but we, as an industry, are going to be hearing that word more and more from customers and consumers around the world.

Farmers shy away from sustainability because they see people who want to shut down modern agriculture. They see more forms, paperwork, and bu-reaucracy. These are legitimate concerns. But it does not have to be that way. Canadian farmers have

a good sustainability story to tell. I don't know of a single producer who does not want to turn their land over to the next generation in better shape and more productive than when they started farming. Preserving the air, land, and water for the next generation is the very definition of "sus-tainability." But we cur-rently don't have the tools to tell our story in a coher-

The time has come for the grain, oilseed and special crops sectors accept both the responsibility and opportunities that come from concretely demonstrating the sustainability of mod-ern agriculture. In reality, the vast majority of farm-ers have already adopted sustainable practices. If we are not able to demonstrate this fact those that want to go back to the farming practices of the 1900s will win the hearts and minds of consumers and the long run profitability and competitiveness of grain pro-duction in Canada will be in jeopardy.

We do not have to re-

invent the wheel to move

forward in a proactive and concrete manner. Ani-mal agriculture has long been under pressure to demonstrate good animal welfare and sustainability welfare and sustainability practices. These industries have responded with the development of Codes of Practice that help define the right (and wrong) way to raise animals in Canada. These voluntary codes pro-vide ranchers and farmers vide ranchers and farmers with the tools needed to demonstrate good practic-es and the ability to defend themselves with scientific backing when agricultural practices are challenged. The grain industries should

The grain moustness should follow this lead.

What will a Code of Practice for grain production look like? It is critical that the Code's recommendations use best available most recent scientific studies from accepted sources. Recommended practices Recommended practices should be practical, manageable and consider economic implications. If they are not, farmers will not follow them.

follow them.

The Code will be voluntary. That means that
it will not require farmers to fill out additional
forms and paperwork. A
voluntary Code can also
serve as the foundation of
something more robust something more robust, such as verified production contracts upon the mutual agreement of willing buy-ers and sellers. This is a balance between custom-ers who might be looking for stronger verification and farmers who are concerned that we are moving beyond market demand.

How will the Code be developed? Farmers must be directly involved in the development of the Code of Practice. If the Code is going to build the trust of consumers who are in-terested in the question "where does my food come from" farmers cannot be alone in the room when the

Code is developed. The development of the Code must also include scientific expertise, non-gov-ernmental organizations with interest in sustainability, customers, and processors. And the Code must be open to public review upon its development and publicly available when

publicly available when completed.
What happens if we successfully do all of this? The development of a defined code of practice and assist in efforts in gaining and maintaining public trust in Canadian agriculture, both domestically and in ternationally. I believe that ternationally. I believe that there are specific existing market access issues in the grains sector that could be eased by the development of a Code of Practice. This is in addition to alleviating issues that will cause market access and public trust concerns going forward. Canadian farmers, ex-

porters, and processors will have a concrete tool to demonstrate sustainability to our customers. We will be able to show, with the be able to show, with the backing of science, what we are already doing to preserve our land, air, and water. This is a tool to help increase the competitive-ness of Canadian agricul-ture and not a threat to modern farming practices. modern farming practices. Further, the development of a Code of Practice will be a valuable tool in communicating beneficial man-agement practices to farm-

The development of a Code of Practice is going to be a policy discussion with-in the industry in the com-ing weeks and months. For example, the Grains Round Table, which includes farm groups, industry and gov-ernment representatives, recently endorsed explor-ing the development of a Code through the Cana-

dian Round Table for Sus-tainable Crops (CRSC). The CRSC will be working to refine the principles around which the Code will be developed and form the Development Committee.

Farmers are members of producer organizations through check-off funds. through check-off funds. Your Commissions will have the direct opportunity to be involved in the development of the Code through participation in the CRSC and through national value chain groups like Cereals Canada, the Canola Council of Canada or Pulse Canada. I encourage you to use your farm groups to follow the development of the Code, the potential benefits to your farm and to be heard if you have concerns about the direction being taken. The work on the Code of Practice is just beginning. Now is the time to be engaged.



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U.S. on used farm equipment is also recommended.

## Prepare to battle herbicide resistance Caution against invasive spe-cies seed arriving from the

As spring approaches, the crop protection community is set to work with producers to help stem the tide of herbi-cide resistance, encouraging the use of multiple modes of effective action for weed control, rather than a single method.

The balance sheet may show it's cheaper in the short term to use a single mode to control weeds, but such practices also promote the long-term threat of resistance. It's an issue in Eastern Canada and in the west and can affect generations to come.

"You want to keep your

fields clean, but you also have to consider succession," says Adam Pfeffer, Bayer Crop Science Weed Management Agronomic Systems Man-ager for Canada. "You want

the family farm you hand down to be sustainable. So, you need to take measures to prevent weeds from coming in, not just treat them once they arrive. They might not be identified until they are a problem."

Weed forecasts everywhere

weed forecasts everywhere focus on resistance
Resistance is on the minds of weed control forecasters everywhere, as tolerant weeds spread through major agricultural regions across the

Pfeffer says the main problem is overuse of single modes of action, along with the lack of new chemistries. No popular chemistries have been developed for decades, leaving producers with lim-ited options. Overuse of single modes of

MANITOBA SURFACE RIGHTS ASSOCIATION

ANNUAL GENERAL MEETING

**WEDNESDAY, APRIL 3** 

PIPESTONE HALL, PIPESTONE, MB

Please RSVP to msra@rfnow.com or through the website by Saturday, March 30

10:30 meeting Open to all previous, current or new members

with payment of 2019 dues (\$30 includes lunch). Elections of new Board Members.

Agenda to be announced on the MSRA website.

12:00 Lunch · 1:00 Open meeting commences

weed treatment can lead to herbicide resistance in crops

- something experts say we need to avoid. Tweet this For example, the trend is creeping down but Pfeffer notes an estimated 75 per cent of glyphosate used for preseed burndown on the Prai-

ries is still applied singularly.

Most new tank mixes combine old chemistries which separately have already led to

separately have already led to resistance, in some cases. "Four-way resistance is now seen in some weed spe-cies, and that takes options away if you're counting on bringing old products back to life," Pfeffer savs

Can't give in to weed pres-

Dale Cowan. agronomist with AGRIS and Wanstead Co-Op in south-

western Ontario, says suc-cessful management will recessful management will require a broad range of ap-proaches. These include till-age methods and precision agricultural technologies to

agricultural technologies to optimize spray applications.
"Manage all aspects of crop production that allow the crop plants to get the best possible start, to make them

as competitive as possible with weeds," he says. As well, Cowan cautions that Canada's borders need to be protected against inva-sive species seeds arriving via used farm equipment that could be herbicide tolerant, such as palmer amaranth,

which is a huge problem in United States soybean and cotton fields.

He says chemicals will con-tinue to have an important role in weed management if

they're used wisely.
"We must be as vigilant as "We must be as vigilant as possible in the face of dwindling options," Cowen says. "We need to help existing chemistry do its job by not overusing it. Think about the future – we have to look after this problem now."

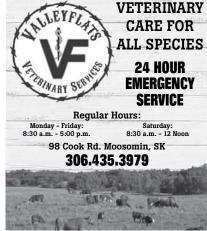
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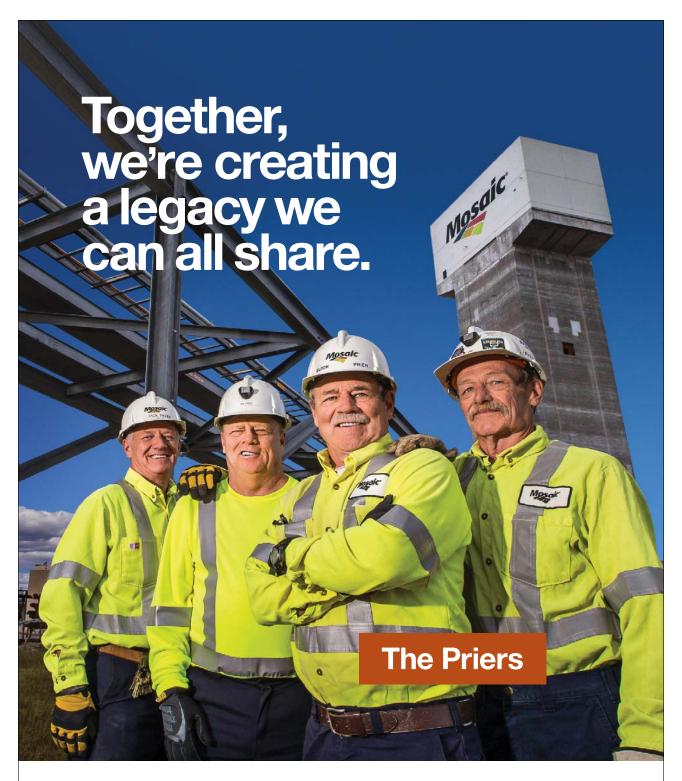
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At Mosaic, we believe our success is rooted in our people. Generation after generation, we've built a company and community where they can grow. Through innovation, sustainability and strength – our commitment reflects their efforts to create a legacy we can all share. Together, we can see tomorrow from here.





## **Rocky Mountain Equipment looking to the future**

Rocky Mountain Equipment Chief Sales and Operations Officer Jim Wood was in Moosomin Tuesday. He sat down with World-Spectator editor Kevin Weedmark for an inter-

What brings you to Moosomin today? What brings you to Moosomin today? For my main concern I always like to try and get out to the branches, and especially just before spring to get a feel for what our customers and our staff are feeling. In a lot of locations we'll have lunch with the customers in the area and then a town hall with the staff too. A lot of branch manage-ment I see often, but I don't really get the chance to see the local staff, so it gives them a chance to voice any concerns or see how things are going.

## How big of a company is Rocky Mountain Equipment now? We just released Q4 results so we're just

over a billion dollars with 37 locations across Western Canada.

### Still growing? Still adding to that?

Yes we're always looking for acquisi-tions as long as they make sense. We're really geared towards organic growth. We have a lot of room to grow within our own trade areas.

## Does the footprint go right from Manitoba to Alberta?

We have 19 stores in Alberta, 11 in Manitoba and the remainder in Saskatchewan. We just bought two stores in Saskatchewan last summer—Tisdale and Outlook—and then Olds in Alberta.

Over the last 20 or 30 years we've see a big change in the industry from independent stores to larger and larger chains. What is driving that?

I think it's more to do with consolidation. If you look in the '30s to the '50s it was really replacing horses with mechanical, whether it was tractors, and then as the implements get higger, the peed for the implements got bigger, the need for farm equipment and the need for trac-tors got bigger. When you sell larger implements you need larger facilities, and with larger facilities you need to generate more revenue. I don't think it's any different than farming—if you spread your expense load over a larger amount of ground like the farmers do, and for us it's more branches.

more branches.

For us if we can centralize our accounting and marketing and things like that, you can gain a little bit more efficiencies than having one or two stores.

I think from a manufacturer standpoint

too, they look at it and go we've got a lot of smaller locations throughout North America, if we had the same location, same footprint, but had less people to deal with, I think that is the way that manufacturers look at it too.

### What kind of changes are coming to the industry? Lots of technology, lots of automation.

Lots of technology, lots of automation. In the past, the farm equipment business was always focussed on "we'll sell equip-ment and then we'll keep it running." Well, I think for most farmers the expecta-tions are a little higher now. The relationtions are a little ligher now. The relationship the customers have with us is changing. The expectation is "There is all this technology in equipment—how do we use it?" The manufactures are putting a lot of technology into that equipment. How do customers use it to get the data out or the information out to make their decisions? We have a full time gentlemen out of this store, that is all he does is just deals with the technology in the equipment.

Where do you see Rocky Mountain Equipment going from here?
We will continue to grow organically. We will always try and grow our footprints if the deal is right. We are now in the U.S. We put a store in Kansas. It's a used equipment store so it's not a licensed CASE IH store. All we do is sell premiumary 1 and we have two employees there.

## How did that come about for you guys

to get into that market?
It was something we wanted to try. We knew we wanted to go to the U.S. We knew we wanted to expand, and this gave us kind of a low cost entry to just kind of see that market. Kansas is very central. It's got Oklahoma, Missouri, Iowa and it's all



Rocky Mountain Equipment Chief Sales and Operations Officer Jim Wood and Moosomin Branch Parts Sales Manager Brian Beckett at the Moosomin branch of Rocky Mountain Equipment Tuesday.

very central, so we just thought we would give it a try and it's been good so far.

### How does the Moosomin store fit into

How does the Moosomin store it into your company?
It is a very good store. I think we've got a very good, solid, strong customer base in Moosomin. This was the original Miller's store. There is a lot of heritage here. Jason Miller is our branch sales manager, Brian (Beckett) is our parts manager and Julian (Pike) is our service manager. Moosomin has just been a fantastic anchor for us and it has always performed. Even though it is either a flood or drought, they seem to be able to be able to have a decent year.

### Is Moosomin unusual for being a town of 3,000 that's got all the main dealer-

ships?
There are others. I was just in Westlock, Alberta last week and it's a town of about 4,000 and we are the New Holland and Case store it's got a John Deere Store, Ag Co. So I think a lot of these communities serve a greater, external community. I'm sure Moosomin does draw a lot of the surrounding rural people in, and that's how in the farm equipment business you can have three or four different brands.

## Do you have any plans for the future in Moosomin? Will you need to expand

your dealership at some point?

The staff have been doing a great job with the facilities they have. It's definitely time to look at something maybe a bit more modern, a little bit bigger, or an add on. We're just finishing our new facility in Kindersley. We always look at our locations and say when is our lease coming due? Is the facility functional for the business that we have, whether it's the current business or the future business? I would say definitely Moosomin is on the radar for something different.

How big do you build when you build new? In Kindersley for example.
Kindersley is going to be around 36,000 square feet. Most of it is shop space and parts. We don't really sell a lot of consumer products like lawn and garden like some of the other brands, and so really welf or forested on shore presented the part. we're focused on shop space and shop ca-pacity and parts—the more we stock the better we can look after our customers.

### In a company your size, how do you determine where you are going to make the investments?

That is a good question because I've asked that myself. Every store would like a new facility and a modern facility. It is really what the potential of the market is and how we're performing in the market and what the current status is between our landlord and us. Really, it is the size of the market, the current facility, the needs of the facility versus what we have, and you only have so much capital that you want to spend every year on facilities

What are some of the challenges facing the implement industry right now? Oh boy, you name it. The newest one is canola, the Chinese. I think canola is an is-sue, commodity prices have been okay. I

sue, commonly prices have been okay, sold farm equipment when it was 95 cents a bushel for barley and \$1.05 for wheat, so it's better than that of course.

I would say the biggest challenge in the industry is to keep up with the technology and make sure the customers are actually writer the scale of the baselogs. using the value of the technology. Fuel is more expensive, it's hard to find trained technicians, and any manufacturer will tell you that, any dealer group will tell you that good people are hard to find.

Is there more room for Rocky Mountain to grow on the Prairies or is that why you are looking into the States?

Definitely there is more room. I would say there is more room in Saskatchewan than there is in Alberta. In Manitoba on than there is in Alberta. In Manitoba on the Case IH side we've got 11 out of 12 stores. In Saskatchewan there is room for growth and then definitely down in the U.S. It is way easier to grow in Canada than in the U.S. It's more complicating expanding in the U.S, from the taxation from when you do the acquisition, and in terms of integrating the stores into the way we do business—it's just much easier in Canada.

## How do you set goals and targets for the company? Is it simply a matter of growing sales volume or market share?

We always go through a budgeting pro-cess. You take a look at the industry or the market size and that gives you a basis we market size and that gives you a basis on how you're performing compared to the rest of the industry, whether it's John Deere or New Holland. So we get those reports and it really gives us a flavor for how each branch performs based on their potential.

And then basically it's how do we grow And then basically it's how do we grow the business and do we need to acquire more business. And because we are a public company the investors are always looking for growth, they are looking for organic growth, and also looking for acquired growth, and corporately that does set some goals for us. set some goals for us.

## Is it a challenge for the dealerships to eep up with the changes in technology? It is. We made an investment about five

years ago to actually take technology and make it a discipline within our organiza-tion. In the traditional dealership model you have parts, sales and service, and we actually have parts, sales and service and then technology alongside that.

Their main focus is technology, the training is all just on the technology and that gives us the ability to optimize that and work with customers to make sure they can use it.

1/2 mile North on Highway #9, East Side



## **USask launches new master's in field epidemiology**

BY HENRYTYE GLAZEBROOK
The University of Saskatchewan (US-ask) is preparing to take bold new steps in the study and control of disease in animal health with a new Master of Science de-gree program in field epidemiology. Scheduled to launch at the Western Col-

lege of Veterinary Medicine (WCVM) this fall, the master's program is the first of its kind in Canada, as well as one of only two similar training opportunities around the

globe.

"There is only one other formal program

of that is a lifeld in the world that I know of that is a [field epidemiology training] program for veterinarians specifically," said Dr. Tasha Epp (DVM), associate professor in the WCVM Department of Large Animal Clinical Sci-

"Our program differs from most train-ing programs because it is situated both within a veterinary and academic unit, and is specifically for veterinarians. The focus will be on animal health issues but will not rule out links to human or public health issues."

It's common for veterinarians at every level of their field to work first-hand on disease cases, whether it's assisting a government agency with a large-scale investi-gation or being the first eyes to look over a possible disease outbreak on a local farm.

This hands-on, project-based program is structured to provide students with opportunities to participate in ongoing, real-life animal disease investigations. It will help them to best understand the ways in which disease flourishes in an animal set-ting, how its spread can be carefully managed to prevent further outbreak, and how these skills can position them as future leaders in animal health.

"Veterinarians will always need skills to tackle outbreak investigations," Epp said. "Veterinarians are on the front lines of defending our country's food supply, animal health and economic trade with other

Epp emphasized the ways in which USask has an especially strong platform on which to found a program such as this, as



The new master's program in field epidemiology will allow USask students to participate in real-life animal disease investigations. (Photo: Traci Henderson)

the institution already blends such a large array of health-related studies within a single campus, under the One Health ban-

"This university is quite unique," Epp said. "We have all health sciences [colleges and schools] on one campus—medicine, dentistry, kinesiology, pharmacy and nutrition, veterinary medicine, public health, and nursing. The epidemiology that has been taught on campus has involved collaborations between veterinary medicine and human or public health for a very long time ... This linkage between human long time ... This linkage between human and animal health epidemiology learning

Windsor Plywood ... the greet

extends into practice as well."

The program's two-year timeline is designed to dovetail coursework, field study and the development of practical skills including data analysis, diagnostic testing and evaluation, outbreak investigation and surveillance assessment. The intent is to provide the students with the necessary skills they'll need to succeed as they begin

their careers.

"The goal is to provide them with experience in applying the skills to real-world examples," said Epp. "This will prepare them for entering jobs in federal, provincial or local animal [units] or even public

health units, where these skills are already

being used daily."

The program is only accepting one or two students each fall, since smaller groups will allow for a higher degree of one-on-one interaction with instructors and more easily facilitate field work. But

and more easily facilitate field work. But the positive reaction to the program's development has already made Epp confident that it will fill a critical gap.
"We already have interest for this year's intake of students," Epp said. "I think that speaks to the fact that we saw a need, proposed a program to meet that need, built it, and they came."

you need to know!



## Millennial Farmers

™ Continued from C1

"In more intensive livestock operations, like pigs and chickens, technology is huge: automatic feeders and milkers and infraautomatic feeders and milkers and infrared technology to detect sick animals. But there's a big difference in the cow-calf sector because there is no technology that is going to help you when a cow has a calf backwards and you've got to flip it around before it comes out. At the end of the day, I don't see a robot replacing a rancher. It's more grassroots, if that's the right word. But maybe I'm not thinking outside the box enough. I don't know."

The technologies the Tapleys have incor-porated are ones that give them back time, like solar-powered watering stations for the cows; a new machine that plants rows of corn to feed the cows through winter; and smartphone apps to expedite paper-work in calving season, although Kristine has yet to find one she likes.

More specialized technologies can be bought, like computer networks that read

bought, like computer networks that read electronic tags in a cow's ear to record when and how much it eats and drinks. "It's really cool," Graham says. "There's not enough of a return to pay for it though. Long-term, I don't think we'll see a huge adoption of digital technology in the cow-calf sector, which I don't mind."

### The business case

Money keeps Kristine up at night. Farmers are entrepreneurs. Acreage is a Farmers are entrepreneurs. Acreage is a pension so land is not just handed down. Young farmers have to find and buy their own fields if they come of age before their parents decide to sell. The Tapleys used a provincial program that reclaims derelict land, and they are still converting parts of the old quarry into good pasture. In 2015 they received the Manitoba Beef Producers Environmental Stewardship Award for ers Environmental Stewardship Award for

ers Environmental Stewardship Award for their efforts.
"I think money is any entrepreneur's issue. You're at the beginning. You're borrowing a lot at the beginning and it's hard," Kristine says.
"To me, every time I talk to someone who's not from a farm, as soon as you staff shout technologies and seifness and seifness and seifness.

about technology and science and effi-ciency, they think, oh, you must be a giant factory farmer. They romanticize the idea of the farm. They forget we're a business and in any other business you would want and in any other business you would want to be more efficient, produce more with less, all of those things. A good example is growth hormones. That's a really impor-tant technology for the beef industry that makes the animal grow 10 or 20 per cent bigger with the same resources. And a lot of people hate it. That's what technology looks like. I don't use growth hormone right now but I don't have a good reason

right now but I don't have a good reason to not. The cost to gain is a win-win."
Health Canada and the World Health Organization both say growth hormones are a safe practice and do not harm humans. The process involves a small implant under the skin of a cow's ear that slowly releases estrogen, directing growth to muscles instead of fat. According to Alberta Beef Producers—an industry. Alberta Beef Producers—an industry lobby—and the University of Nebraska-Lincoln, a serving of meat from an animal



raised with growth hormone has 1.9 nanograms (ng) of estrogen, compared to 1.1 ng from an animal raised without. For com-parison, a can of beer has 15 ng of estrogen

parison, a can of beer has 15 ng of estrogen and a small glass of soy milk has 11,250 ng.

"It's not going to be an easy conversation and it's going to take time, but this conversation has to happen. We need to tell people what technology is and how it will help us all." Graham says. "We spray [herbicide] not because we're brainwashed but because it helps.... It has saved tonnes and tonnes of soil because before this, weed control was a cultivator."

A U of M team, however, has found a

control was a cultivator.

A U of M team, however, has found a third option. The Natural System Agriculture research group, headed by plant scientist Martin Entz [BSA/78, MSc/81], runs Canada's oldest organic-versus-conventional crop comparison study. Working closely with farmers, the group wants to fundamentally change agricultural practice by leveraging natural systems, something even conventional farmers are sometning even conventional farmers are keen to do now that many weeds are de-veloping resistance to common herbicides. Among their findings, they discovered how grazing animals and specific crop ro-tations naturally manage weeds, and they are even experimenting with autonomous weeders. But for stubborn plants that re-sist all these methods, like Canada thistle, they are testing a machine called the CombCut that kills without chemicals, or tilling—which many organic farms do too much of. Only about one per cent of Manitoba's

farms produce organic products (the na-

tional average is closer to two). But most of the world's farms are small, unmechanized plots in developing countries that rely on organic systems because they can't afford synthetic chemicals. Entz and his team work with them a great deal, but they are also changing things here, driven by consumer demand: 58 per cent of Canadians buy organic products every week, the Canadian Organic Trade Association

reports.
Young farmers will ultimately decide if or conventional methods are best for their business, but either way they face the same mounting pressure from society: researchers in the December 2016 issue of the journal Precision Agriculture note "the agricultural sector is supposed to fulfil several goals and societal values simultaseveral goals and societal values simulation-neously (e.g., increased food production, preserving and developing cultural heri-tage, biodiversity, climate change and rer-reational values), while at the same time being both sustainable and economically

viable on a long-term basis."

The Faculty of Agricultural and Food Sciences contends with these lofty expec-

We're producing food for people. The whe producing tood or people: he end game is always that," says Dean Karin Wittenberg, "We are counted upon by so-ciety to provide a healthy food product. What society wants as food may change, but at the end of the day it's a fundamental need and it's a key responsibility that our farmers have, and members across the industry have, to create healthy, safe food at reasonable prices. It's a big responsibility.

**Balancing** act

The modern farmer, journalist Geoffrey Carr argues, must be adept at matrix al-gebra. They must juggle variables such as soil moisture and chemistry, weather and climate, pests and disease and the costs of taking action against them, global markets and local trends. "If you come from a farming back-

ground you develop a love of the land and that is everything that has to do with that land: biology, ecology, soil chemistry." They have to be environmental stew-ards, mechanics, marketers, accountants,

husbands, wives, parents, community members and citizens devoted to our high ideals so we can eat and then casually

complain about the cost of lettuce.

Farmers can deal with this pressure,
Wittenberg thinks, because they have a
strength of character that is bred in the

"I can share with you that if you come from a farming background you develop a love of the land and everything that has to do with that land: biology, ecology, soil chemistry," she says. "You start to underchemistry," she says. "You start to under-stand more about how you can use science to manage the land and the diversity of the land. Some people like Kristine get re-ally involved and if we didn't have people like her managing that land, it could fall into ruin. That soil won't be reclaimed. We teach our students the technical sides we have to but the love is something they. we have to, but the love is something they

bring."

Kristine does love the land, though cautions this love alone isn't necessarily enough to keep young professionals like her and Graham on the farm. Her ancestors may have worked non-stop, but she seeks greater work-life balance.

seeks greater work-life balance.

Her son Walker helps punctuate her exasperation by throwing cottage cheese on the floor from his high chair. She gives him a smile, cleans it up, and continues.

'I think people romanticize farming to the point that they lose the concept that we're people who want to put their kids in gymnastics, or whatever you do. I think our generation demands more of their workplace—people want more holidays and to work less to enjoy life. That's pretty hard in agriculture, but people are making that work too, which I think is really exciting for the industry because that is exciting for the industry because that is what will keep the industry sustainable, if people want to be here, be part of the rural community."

Outside their home, you hear only the wind and songbirds. No distant cars or boats or planes to break the silence. But-

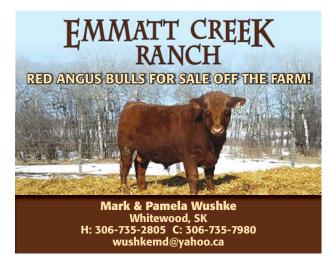
bods of pales to break the sherice. But-terflies flap between wildflowers.

Down the highway, Graham sits in the office of his day job, overlooking an aban-doned gas station in Westbourne, Man. He reflects on his commitment to ranching

reflects on his commitment to ranching and sighs.

"There are definitely days when I wonder, What the hell am I doing? This is hard'...but at the end of the day it goes back to that goal, that lifestyle. You put in a long day's work but at the end of it, you are working for you. That means a lot to me."







## Sask ag budget up

The Ministry of Agriculture's budget will increase three per cent in 2019-20 to \$391.3 million, ensuring programming to support the success of farmers, ranchers and agri-businesses continues.

The budget fully funds business risk

management programs and sustains investments in agricultural research. This

vestments in agricultural research. This will encourage the agriculture sector to continue to grow.

"This provincial budget provides a stable foundation for Saskatchewan's farm and ranch families with increases to the right programs and services," Agriculture Minister David Marit said.

"This budget provides program enhancements and continued investment in research."

In response to feedback from stakeholders and producers on the Pest Biosecurity.

ers and producers on the Pest Biosecurity Program introduced last year, funding to

will increase by \$350,000 to \$1.25 million. This increase funding will be directed to grants paid to rural municipalities and First Nation bands, to cover the cost in-

curred for rat inspections and bait.
The 2019-20 Budget contains \$271.9 million to fully fund business risk manmillion to fully fund obstiness risk man-agement programs offered under the federal-provincial Canadian Agricultural Partnership (CAP), including Crop Insur-ance, Agristability, Agrilivest and West-ern Livestock Price Insurance.

The Crop Insurance program includes a Ask us about our

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number of enhancements for 2019-20, including higher coverage on tame and native grazing land to better reflect the losses

producers experience during a shortfall in forage production.

Approximately 30 million acres are anticipated to be insured under Crop Insurance this year.

The government continues to invest \$31.9 million in agricultural research, with funding for research projects, demonstra-

tion and adoption of new technologies.
The research funding is part of the \$71.2 million that will be invested this fiscal year into strategic programs under the five-year CAP agreement.

year CAP agreement.

This budget continues to support a number of industry organizations, with funding for groups that include Agriculture in the Classroom Saskatchewan, Saskatchewan 4-H Council, and Farm and Food Care Saskatchewan. These organizations, among others, help build trust in agriculture, develop future leaders and support a sustainable industry.
Saskatchewan's agriculture sector is an

Saskatchewan's agriculture sector is an important part of the province's diverse economy.

Producers harvested a crop of more than 35 million tonnes in 2018, the sixth consecutive year the provincial harvest has been more than 30 million tonnes

Saskatchewan's 2018 total agri-food exports were \$13.4 billion, an increase of more than 60 per cent since 2010.

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At Nutrien, our purpose is to grow our world from the ground up. As the world's largest provider of crop inputs, services and solutions, Nutrien plays a critical role in feeding the future by helping growers to increase food production in a sustainable manner.

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2018 Ford F-150 Super Crew 4x4 XLT

> XTR Package > 5.0L V8

> \$15,000 DISCOUNT!

SALE PRICE \$44,749

PLUS 2.99% FINANCING OAC!



2018 Ford F-150 Super Crew Sport Turbo Charged

SALE PRICE

47,249

PLUS 2.99% FINANCING OAC!

> 3.6L Ecoboost

**>** V6

\$15,000 DISCOUNT!



2018 Ford F-160 Super Crew

**Lariat Sport** STOCK# 8T136

> 5.0L V8

\$15,000

DISCOUNT!

**SALE PRICE** 60,048 PLUS 2.99% FINANCING OAC!

2018 Ford F-150 Super Crew Lariat

Sport Turbo Charged
STOCK# 8T304 INCLUDES FREIGHT & AI

> 3.5L Ecoboost

\$15,000 **DISCOUNT!** 

\$54,319

SALE PRICE

PLUS 2.99% FINANCING OAC!



2019 Ford EcoSport SE 4x4

> Moonroof

SALE PRICE

\$1,000 **DISCOUNT!**  \$28,739

\$205 BI-WEEKLY X 84 @ 3.99% OAC



2019 Ford Escape SE 4x4

> No Charge 4x4!

\$2,300 DISCOUNT!

**SALE PRICE** \$30,589

\$219 BI-WEEKLY X 84 @ 3.99% OAC



2019 Ford Edge SEL AWD > No Charge AWD!

\$3,500 DISCOUNT!

**SALE PRICE** \$39,639

\$289 BI-WEEKLY X 84 @ 4.49% OAC



2019 Ford Explorer 4x4 No Charge 4x4! **SALE PRICE** 

\$3,500

DISCOUNT!

\$47,739 \$339 BI-WEEKLY X 84 @5.99% OAC



2019 Ford F-150 Super XLT

> XTR Package > 5.0L V8

\$4,000

\$349 BI-WEEKLY X 84 @ 0.99% OAC

**SALE PRICE** 



2019 Ford F-150 Super Crew Lariat

Special Edition

\$8,000 DISCOUNT!

SALE PRICE

\$64,869 \$4,000 IN LIEU OF OF 0% FINANCING



STOCK# 9T026 INCLUDES FREIGHT & AIR TAX

> 6.2L V8 2019 Ford F-250 Crew Cab 4x4 XLT

\$3,000 DISCOUNT! **SALE PRICE** 

FINANCE FOR 2.49% FOR 60 MONTHS

\$1,000



2019 Ford Expedition Limited

> Stealth Edition > 3.5L V6

DISCOUNT!

**SALE PRICE** \$02,595 FINANCE FOR 2.99% FOR 60 MONTHS

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