FARMING SMARTER

SPRING 2019 EDITION

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Farming Smarter is published bi-annually by Glacier FarmMedia LP for Farming Smarter, 211034 Hwy 512, Lethbridge County, AB, T1J 5N9 with the support from the Agriculture Opportunities Fund

Editorial Board: Ken Coles, Jamie Puchinger Editor: C. Lacombe



Cover photo:

Fall 2018 caught crops in the field with the earliest snowfall on record in some areas of the province. PHOTO: FARMING SMARTER

Thanks for your feedback

BY DOUG BRODOWAY

arming Smarter exists to help farmers in southern Alberta succeed through understanding advanced technologies and agronomic practices. We allow producers to see first-hand the advantages or disadvantages of the latest technology both on dry land and irrigated land.

We focus on practical and practicable projects to give our followers information they can use as soon as they find it fits with their operation.

Farming is big business and faces many challenges such as high-priced land, high priced machinery and fluctuating crop input costs. Farming Smarter has the same struggles but continues to move forward just like your farm operations year to year. We see agricultural research funding sources becoming fewer and smaller. This makes competition for funds greater and number of projects funded per year less. Our status as a non-profit, charitable organization allows us to apply for many grants, but guarantees us nothing from year to year. Also, there are very few grants that support sharing what we learn with others. That means our website, events, e-news, magazine and all other communications rely to a large degree on sponsorship support. Fortunately, we have some great sponsors.

Our recent survey results told us that farmers and the public are interested in what we do and want to support us. Overwhelmingly, respondents said we provide valuable, unbi-



ased research and easy to access information. Respondents want us to explore practical and adaptive research as well as innovative practices and technologies.

Now Farming Smarter must find the right path that will lead our organization in a direction that helps you most while ensuring we can be here for years to come. The Board of Directors will map out our direction in strategic planning sessions this spring. —

Doug Brodoway Farming Smarter President

General Manager's Report

We are Farming Smarter!

BY KEN COLES

Reminiscent of one of the most commanding and prideful marketing campaigns ever — We... are... Canadian. Leave it to a beer company to tap into our national spirit eh? Heck, I know three people with lifelong reminders of that campaign because they tattooed it on their legs.

We're not hoping you'll tattoo our logo on your forehead, but we are trying to build something that goes well beyond a service provider/client relationship. To be clear, we are not for profit ASSOCIATION. Not government and not a business. So, what does that mean? What is Farming Smarter? What is our purpose, who are the members and moral owners? We're polling our followers and intend to strengthen our relationships. The goal is to build value well into the future and to Farm Smarter.

As the General Manager, it's my job to make it all happen. We work hard to provide

services that are valuable and cost effective. One of the challenges we face is funding stability and flexibility. This is particularly true for our research program. Currently, we submit proposals to various grants and partner with others who do the same. Then, what we work on depends on which proposals are successful in aligning with funders' priorities. This a little game I like to call research roulette. Unfortunately, this leaves holes in our research program. It also means that more and more resources are spent chasing funds. We'd like this to change.

To build some stability and flexibility, one of our new ventures is to create new Farming Smarter Service Packages. We're currently looking at a digital, live events, agronomist and a farmer package. This will include early and expanded access to information and additional perks.

We also hope to up our game by publishing

our work in scientific journals and leverage our funds through partnerships. Lethbridge College has partnered with us in a proposal to hire an NSERC Industry Research Chair. We also applied for 12 research and extension projects through the Canadian Agriculture Partnership. Please keep your fingers crossed got us!

We're excited to build this together and invite you to join the club. Together we... are... Farming Smarter. —

a labo

Ken Coles Farming Smarter General Manager



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Stewardship

BIOBEDS: a simple solution to effective sprayer rinsate management

BY MADELEINE BAERG

Pesticides, applied as and when necessary, are a beneficial and generally accepted agricultural reality. Pesticide rinsate, however, which is often disposed in a dedicated field or strip of land, is a lot more problematic. Despite being diluted via rinse water, rinsate exposes the ground to significantly higher concentration of pesticide due to the volume of material dumped in a small area. This can reduce soil fertility of the exposed area, can lead to pesticide run-off/leaching, and may one day soon prove problematic from a public relations perspective.

Lethbridge-based Agriculture and Agri-Food Canada research scientist Dr. Claudia Sheedy has a simple, proven, relatively new-to-Canada solution: pesticide rinsate biobeds that contain and naturally degrade pesticide residue. Currently, Sheedy has research facilities across the country testing biobeds in various farming cropping systems. Whether via legislation or producers' choice, biobeds may soon be reality on many Canadian farms.

"Pesticide rinsate is that thing no one talks about, but farmers don't like it either. No one likes unnecessary pesticides in the environment. The issue is that once you dump the rinse water from your tank, you have no control over where that rinsate goes," says Sheedy. "The biobed approach works because it's practical, it's not too expensive, it's simple and effective, and it helps manage rinsate disposal."

A biobed is a lined, waterproof, below-ground pit or above-ground box designed to remove pesticides from sprayer rinsate. Filled with a substrate of straw or wood chips, compost and/or peat plus soil, the biobed contains the rinsate and provides an ideal habitat for naturally-occurring soil microbes and bacteria to break down the pesticide residues.

"Naturally present bacterial and fungal communities seem to thrive after rinsate application. The majority we could identify are not known to be pesticide degraders, so there is a lot of research potential there. The more you apply rinsate, the more the communities thrive because it becomes their source of food," explains Sheedy.

Depending on the size of the sprayer, collection can occur via a collection platform/pad or through a V-shaped trough. Thwe rinsate is pumped into a collection tank then slowly drips onto the biobed surface. The most effective biobeds are two-cell systems where effluent percolates to the bottom of an initial biobed then gets pumped to the top of a second biobed.

A biobed can effectively manage 10 litres of rinsate per square metre per day. Translated to a 100-day growing season, a single square metre of biobed can process 1,000 litres of rinsate per year. According to Sheedy's research, the liquid at the bottom of the second bed contains between 90 and 98 per cent less pesticide than the original rinsate applied to the top of the first biobed.

"We seed the surface of both biobeds with grasses," says Sheedy. "The first



On-farm pesticide rinsate biobed in Lethbridge, Alberta. The biobed is a two-stage biobed (two biofilters). The biomixture surface is seeded with grasses: grasses do not grow on the first biobed surface (exposed to the rinsate), whereas biobed two (receiving biobed one effluent) surface is covered with grasses. PHOTO: CLAUDIA SHEEDY



AAFC currently works with five on-farm pesticide rinsate biobeds in Alta. and Sask. From 12 o'clock and in clockwise order: Biobeds in Lethbridge, Grande Prairie, Simpson, Outlook and Vegreville. The biobeds in Lethbridge and Outlook are two-stage above-ground biobeds locatedon AAFC experimental farms. The Simpson biobed is located in a bird sanctuary, with the collaboration of Environment and Climate Change Canada. The Grande Prairie biobed is a one-stage below-ground structure operated by the County of Grande Prairie, and the Vegreville biobed is a one-stage above-ground biobed located on a private farming operation. PHOTO: AAFC (GARY MAKOWECKI, LARRY BRAUL AND CLAUDIA SHEEDY), ECCC (KERRY HECKER) AND COUNTY OF GRANDE PRAIRIE (KIM ROBSON)

biobed, nothing grows on it at all. But on the second biobed, there is a lot of growth. It is a great way to visually see the effectiveness of the system."

Pioneered in Sweden several decades ago and now numbering at least 3,000 across Europe, biobeds are only now gaining attention in Canada. Currently, Quebec leads the charge approximately 17-20 biobeds operational in both experimental and private farm capacities. Interest is slowly growing in other provinces. There are currently five experimental biobeds in operation across the Canadian prairies and two new ones coming at orchard and vineyard research stations in BC and Quebec in the spring of 2019.

Sheedy and Farming Smarter are awaiting a research funding decision to construct a biobed at the AAFC-Lethbridge experimental farm. If funding is approved, the project's primary objective is to test a trough system adapted to sprayers with large booms. This biobed, with an existing one already on site, would allow management of 100 per cent of the pesticide rinsate produced at the farm.

Though Sheedy says biobed technology is ready for on-farm implementation today, she intends to continue biobed research from various angles. Top priorities include researching exactly which bacteria are most effective at consuming which pesticides; whether microbial inoculants may be useful to manage certain harder-to-degrade pesticides (like clopyralid, bentazone and imazethapyr); and whether more frequent fungicide-based rinsate applications is detrimental to the biomix's bacterial communities.

Several European countries mandate biobeds. In Canada, Ontario may legislate their use. Whether (or when) Canada opts to follow Europe's lead, the most cost effective time to install a biobed may be now, since CAP funding in certain provinces may support a significant portion of a biobed's \$10,000-\$12,000 installation cost.

"I think it's just a matter of time before they are common on Canadian farms. Our goal has always been adoption by growers. I am glad that the research we are conducting on pesticide rinsate biobeds serves our growers' needs," says Sheedy.

Interested in more information? Check out AAFC's biobed construction, operation and maintenance manual at: http://publications.gc.ca/collections/collection_2018/aac-aafc/A42-123-2018-eng.pdf. —

A Cherished Award for Dr. Blackshaw

BY KRISTI COX



Lewis Molnar and Dr. Blackshaw at the Farming Smarter Conference Dec. 2018. PHOTO: FARMING SMARTER

r. Bob Blackshaw embodies all that is the Orville Yanke Memorial Award with a lifetime of research and extension work that enabled producers to adopt conservation tillage methods.

Farming Smarter annually selects someone that made significant contributions to soil conservation in Southern Alberta to receive the Orville Yanke Memorial Award.

Dr. Blackshaw grew up on a grain and livestock farm outside Virden, Manitoba and combined his passions for agriculture and science in his pursuit of further education. A summer position at the Agriculture Canada Research Station in Brandon, Manitoba solidified his career goals.

"I realized that here are these people who are working on problems in agriculture and they're using science and research to find answers to what needs to be done on the farm," said Dr. Blackshaw. "That was really fascinating to me and encouraged me to go on and do graduate studies in agriculture."

Dr. Blackshaw started at the Lethbridge Research and Development Station with Agriculture and Agri-food Canada in the mid 1980's. This was a key time in the process of moving away from fallow and tillage to continuous cropping and conservation till systems of agriculture. When he started his position, much research into the methods and equipment needed for these practices had been done, but they were still cost prohibitive for producers to adopt them. Dr. Wayne Lindwall recognized the need for research into effective and affordable weed control in conservation tillage and convinced the director at the time to grant Dr. Blackshaw a dual appointment in the Crop Science and Soil Science sections.

"We tackled how to control the weeds at the time of seeding," Dr. Blackshaw explained. "If we're not going to use tillage to control weeds, then what do we do before we plant a crop or right at the same time as we're planting the crop?"

There were also specific weeds that became more problematic in a no till situation than they were previously.

"Weeds such as downy brome and foxtail barley were hugely problematic in Southern Alberta, and so I tackled those specific weed species and was able to provide some solutions to farmers on those particular problems, so I was pleased to be involved in that." Dr. Blackshaw said.

Foxtail barley was well contained when tilling land, but in no till systems it thrived. They obtained funding for longer term studies and came up with some good solutions. The paper that came out of that research won the Outstanding Paper award in the Weed Technology Journal that year.

"It was touted as really the first scientific paper that outlined using a truly integrated approach to weed management," said Dr. Blackshaw.

Dr. Blackshaw's work also included Stork's bill and round leafed mallow control; herbicideresistant and hybrid canola; diverse crop rotation; cover crops and weed resistance.

"I've always worked on diverse crop rotations because I believe that's a cornerstone of sustainable production," explained Dr. Blackshaw

It was important not only to have the research, but to get the word out and support producers during the transition. Dr. Blackshaw always enjoyed doing extension work and connecting with producers. He was involved in numerous clubs and organizations either as a presenter or organizationally.

"I liked interacting with farmers and producers in the industry and it was important to get the message out there," explained Dr. Blackshaw. "Also, I learned a lot from you guys and certainly what your concerns were, what your problems were and that was very important because that drove my research program."

Award presenter, Louis Molnar spoke of Dr. Blackshaw's mentorship. Bob Blackshaw hired Molnar out of University for a six-week job that turned into 24 years and counting at the Lethbridge Research and Development Center.

"I worked as a technician with Bob for 23 years until he retired," said Molnar in his presentation. "I've always been amazed by his depth and breadth of knowledge. I consider him to be a mentor and a friend."

Dr. Blackshaw is pleased with the progress that's been made in conservation tillage. Since 1995 fallow has been reduced by more than 90 per cent and there is a more diverse cropping system in place.

"It's been fun and very rewarding for me to be part of that story," said Dr. Blackshaw

"Bob is a pillar in the ag industry," said Farming Smarter's General Manager, Ken Coles. "He was a mentor to me. He's been such a major contributor to my own personal growth and to Farming Smarter that I couldn't think of a better person to receive the award."

When receiving the award, Dr. Blackshaw said, "I have been fortunate enough to win some other awards in my career, but I will tell all of you today that I think this one is the most special because it's local. It comes from you. It comes from the people that I worked with over the last 30 years."

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Deep Banding Project





Plots after deep banding but before seeding. PHOTOS: FARMING SMARTER



Toby Mandel takes a soil sample post harvest.

Lewis Baarda and Toby Mandel collect soil samples post harvest.



You can see the disturbance caused from deep banding as Toby Mandel places the nutrients.

May 2018 deep banding disturbances.



Checking depth of deep banded nutrients.



Hey! Can you tell me where my barley field is?

TOP 5 Agricultural Podcasts of 2018

BY DECEMBER BURGESS

Here is our top five list of podcasts we think you should check out!

SASKATCHEWAN AGRICULTURE TODAY

If you're looking for a quick, reliable newsbyte then Saskatchewan Agriculture Today might be right for you. Farm beat veteran, Jim Smalley uses a traditional radio news format with a long form twist as he reports on a variety of pertinent issues and topics. This ranges from trade and tariffs to hail storms and subsequent insurance.

His work contrasts greatly with the rest of this list because he offers unbiased, factual information rather than opinions or stories. However, the first two minutes of each episode are always a write-off as he reports on the local weather patterns and other instances that aren't applicable in our region.

The podcast is also lower on the list because a lot of the information requires an element of timeliness. Most people don't want to listen to news broadcasts from three months ago, they want to listen to today's news. So, if you miss an episode, it probably won't be relevant by the time you get to it.

That being said, it's a great podcast if you just want to jump right in and not listen to anything in succession.



SHINING BRIGHT (FARMHER)

Sometimes we listen to podcasts for the host. Sometimes we listen for the information. With Shining Bright, we listen for the stories.

We all know some fantastic females! Whether it be your mother, wife, sister or friend, there is a woman in your life who deserves some well-earned recognition. Shining Bright gives women the opportunity to do just that, shine bright.

Marji Guyler-Alaniz hands the mic off to powerful industry women following their

passion. Whether that be the charity work of a cancer survivor or the ambitions of an educator to help inclusion within her field, it's motivating to hear about women working hard and succeeding. Shining Bright offers listeners a brass ring for change while tackling industry issues one female at a time.

Though this podcast is not everyone's cup of tea, it's greatly compelling and worth a try.

FARM TO TABLE TALK



If Rodger Wasson doesn't practice his voice daily, then I should eat my

heart out because there is no way that someone can sound so smooth and professional without training! I am impressed. Nerdy awe aside, this podcast is truly a gem among... stones? I don't know. Bad metaphor.

He has a high production value, interesting information and a unique concept. Wasson chats with a variety of colourful characters from across the food supply chain (researchers, farmers, policy makers, legal experts and sometimes even philosophers) about their professional journey of success.

Each interview provides a different perspective that can change or educate the way listeners look at a variety of topics. Whether he is discussing regenerative agriculture with Josh Tickell, the author of Kiss The Ground, or chatting with city boy, Chef Jose Salazar about his farm-to-table restaurant where the food is locally grown — no matter what the topic is, you will learn something.

The only downfall derives from location! Farm to Table Talk takes place in Central Illinois so some of the information or hot topics discussed aren't always relevant to outhern Alberta. Still, it's a good listen and offers fresh, uncommon perspectives to big concepts.



RURAL ROOTS

The episodes are shorter and newsoriented but don't sidestep the hard issues. Front man Craig Lester discusses regional and national concerns in under 20 minutes (usually), with a great show of intellect and brevity. Rural Roots allows proximity and impact to overlap, with familiar and local names chatting about perspectives on topics such as mental health in agriculture and how to best grow our industry internationally.

Not only does this strengthen Lester's connection to his listeners, but it also serves as a reminder that our neighbours are our greatest resources.

Rural Roots is fantastic in that the information is at the forefront of everything. Sure, Lester has a lovely personality and his guests are instructive and interesting, but the listener can tell the organization is focused on providing Alberta with the best information they can provide.

With high production value, newsworthy topics and a large dose of entrepreneurial spirit, Rural Roots comes highly recommended.

THE IMPACT FARMING SHOW

Not to be confused with Impact Farming — because trust me, that's a mistake I made way too many times while researching this article — The Impact Farming Show is on a mission to help Canadian Farmers succeed. Host Tracy Brunet introduces her audience to successful industry leaders and advisors with the hope that she can help farmers create a sustainable and expanding line of work.

Brunet does a fantastic job going in-depth with her topics while keeping her podcasts short enough to keep the audience's attention. She discusses heavy material with her guests, such as intergenerational farming and fearbased marketing, but still manages to make the presentation enjoyable.

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Clean enough to drink from the trough

BY OLDMAN WATERSHED COUNCIL

rinking water from an old rubber tire alongside your cows may seem like a bad idea, but that's exactly what we did at an Oldman Watershed Council tour in May 2017. After seeing the care put into managing the land and its natural springs for long term environmental health — and hearing the passion in the voices of the ranch family — we were confident that we could safely enjoy the water. This rare luxury is one of the beneficial results of having land managers with a strong commitment to stewardship.

A strong and committed stewardship ethic is prominent in southwest Alberta. Like the downstream flow of our rivers, this trait is typically passed from older to younger generations. The OWC works hard to support this stewardship ethic and those who have embraced it as part of their everyday lifestyle on their farms and ranches.

Since 2009, the OWC has provided seed money for more than 60 rural stewardship projects through our Watershed Legacy Program investing in projects like riparian restoration through fencing or trough placement; weed removal through biocontrol insects; mapping high value habitat; and educational tours.

IN 2018, WE SUPPORTED:

- Two riparian restoration projects along the Oldman River using streambank fencing and off-stream water troughs to keep cattle and bison out of the river and off the streambank.
- The 16th Annual Blueweed Blitz, a popular community event to remove blueweed by hand in the Pincher Creek watershed.
- The release of biocontrol insects to manage invasive weeds in sensitive areas in the MD of Willow Creek.
- The Transboundary Water, Weeds, and Stewardship Tour; a multi-day event to showcase the value of partnerships across borders, celebrate successes and raise awareness about current watershed challenges to address.

The OWC accepts funding applications through the Watershed Legacy Program from December to February each year and encourages all land managers in the Oldman watershed to get in touch to discuss project ideas. Application forms are on our website (https://oldmanwatershed.ca/wlp-whatsbeing-done/); simply click on the 'apply



OWC + Cows and Fish staff and funders drinking from a spring fed trough in May 2017 at Timber Ridge Conservation Site west of Claresholm. PHOTOS: OLDMAN WATERSHED COUNCIL



Participants learn how to identify plants at the 15th Annual Southern Alberta Grazing School for Women.

now' button located near the bottom of the webpage.

A committee of local experts ranks applications and the OWC announces the projects selected to receive funds. The projects commence following the signing of agreements and cheques, issued each year in March. In 2019, we expect to invest in another five to seven projects, thanks to the generous support of our funders.

Supporting practical, hands-on training for land managers is another investment worth every penny. In 2018, the OWC was proud to assist with organizing the 15th Annual Southern Alberta Grazing School for Women; the school hosted 47 female ranchers in the Stavely area in July for two days of new ideas, education and information sharing. Range and riparian health assessments and plant identification continue to be the most popular and valuable lessons — an excellent indicator of how much producers truly care for the land they manage. The 2019 Grazing School will be July 16-17 in the County of Warner. Mark your calendars!

The OWC will continue to invest in rural stewardship projects that improve watershed health and make even more troughs safe for drinking. Please visit our website www.oldma-nwatershed.ca, email info@oldmanwatershed. ca, or call 403-330-1346 to get involved. We look forward every year to all the new project ideas and 2019 is no exception!

Thank you Alberta Real Estate Foundation, Hanen Society for Resource Conservation, S.M. Blair Family Foundation, Alberta Beef Producers and Hays Stock Grazing for supporting OWC's rural stewardship programs in 2018! —

Soil benchmarks coming to Alberta

BY ALEXIS KIENLEN

lberta is on its way to benchmarking its soil health to create a picture of soil health across Alberta.

Farming Smarter, along with 10 research and forage organizations, works with Dr. Yamily Zavala on an Alberta Soil Health Benchmarking Project. Zavala is the soil health and crop management specialist with the Chinook Applied Research Association, (CARA) based in Oyen.

"The goal of this is that we will create some baseline information for soil health that will allow us to know about soil conditions and give us more information. We will know the soil conditions for the whole province," she said. "This will allow us to do assessments to see which indicators that we will be measuring in the soil health and what are the major soil constraints," she said.

"I can say right now that the biology in the soil does not have enough diversity. It has less activity than it should. But it has not been measured," she said.

It's also known that there are a lot of problems with aggregation in the province and this needs to be measured and documented.

"I can also say that we have compaction issues," she said.

Zavala, who has been with CARA for five years, has always been aware that there is soil degradation in the province.

"In other words, there are constraints there," she said. "The idea is to create a benchmark, so we can characterize the real issues we have in the soil. Pretty much what has been done so far is soil samples to see chemical conditions. The chemical conditions measure how much fertilizer producers need to put in there, but we don't need to know how much chemical has been put in there. We need to look at the physical traits; which are compaction, aggregation and infiltration. Then we need to look at the soil as a biological component," she said.

Currently, there is little information available on how soil microbes have been affected by past practices. There are areas of soil infested with harmful insects, but it's not clear if the insects are there because of management practices, improper rotations, or a lack of beneficials.

"There are a lot of issues in soil health that have not been addressed before," she said.

Once the data is collected from this project and benchmarked, it will be easier to design and implement best management practices and monitor the situation.

"Every farm and field is completely different. The idea for this is that we will be able to do more of the site-specific evaluation and monitoring and with farmers involved. They will be monitoring things based on these changes and see what the best management is for their field," she said.

Each of the groups will have 20 soil samples collected from farmers' fields, said Zavala. The idea is that each participating organization will able to select farmers from different areas of their region. Each organization will have a soil health kit and be able to go and take samples or show farmers how take their own. The sampling is done at no cost to the farmer. Farmers will also learn how to measure infiltration and use a penetrometer to test compaction. Measurements taken will include soil compaction at different depths, soil water infiltration, and bulk density.

Each year from 2018 to 2022, each group will take 20 samples adding up to over 1,000 samples by the end. The areas will be mapped with global positioning systems, so farmers or the research organizations will be able to go back to the same spot and monitor it.



Yamily Zavala presented a soil health workshop at Cypress Field Day in July 2018. PHOTO: FARMING SMARTER

The project is funded by the Canadian Agricultural Partnership (CAP).

CARA's soil health lab will analyze the data. The lab has all the tools to measure the biological and physical constraints of soil that have not been measured before. The lab will be ground zero for all the data analysis for the project.

"Farmers will also be able to go to the lab and be trained how to see the microbes in soil," she said.

Through the project, Zavala expects to find information to see which soil health indicators influence soil health conditions. The research and forage organizations will also have a picture of the different issues in the various areas of the province. Final reports on all the information will be developed at the lab. This information will give producers the knowledge to tackle the issues in their soil.



Scientists hurrying to catch up with innovative farmers on cover cropping

BY MADELEINE BAERG

hough an increasing number of farmers swear by the multiple advantages of cover crops, science lags in measuring how significant those advantages are exactly. Farming Smarter and the universities of Manitoba and Saskatchewan want to fill that gap. Together, they are one year into a five-year collaboration to determine the economic, soil health, environmental and crop productivity impacts of growing post-season cover crops.

"Farmers use cover crops because they see the benefits. Does it make those benefits less real because a scientist hasn't measured them? No," says the study's lead researcher, University of Manitoba plant scientist Dr. Yvonne Lawley.

Still, she says there is real benefit to rigorous scientific assessment of cover crops.

"There's a lot of excitement but not a lot of data on how best to grow cover crops in various regions. This study isn't going to answer all of those agronomic questions, but hopefully it will lay the groundwork for the big questions we have about cover crops' impact."

The five-year, small-plot study has four sites: Farming Smarter's research fields in Lethbridge, the South East Research Farm in Redvers, Sask.; the University of Saskatchewan's Research Farm in Saskatoon; and the University of Manitoba's Research Farm in Carman, Man.

At each site, researchers will grow a four-year crop rotation suited to each growing region. Each location will grow each crop in the rotation every year, both on its own and in conjunction with a shoulder season cover crop, for a total of eight small plots. The specific crops grown at all locations have been selected to suit each site, but will all include canola, wheat, a pulse, and a grass each year. Cover crops are paired to complement each crop type and include rye, clover, radish or a legume like peas.

"What we're doing is comparing each rotation on its own and then comparing those to the same crops grown with cover crops," says Lawley. "In some ways, it's a simple design: we're just comparing with and without cover crops. But, it gets complicated because every year we're growing every crop type, and we have different cover crops paired with each crop type."

The research team will also grow two checks at each site: the tight (exclusively canola/wheat) rotation used by farmers to maximize profit, and a soil health maximizing, perennial grass/legume stand.

To round out the study with real-world economics, the researchers will work with farmer Adam Gurr, who established a field scale strip trial on his farm near Brandon. Though his trial will not have as many treatments as on the research farms, Lawley say his results will allow the team to compare budgets to a working farm.

The researchers hope to measure a whole array of cover crop impacts from crop yield to biomass productivity and from greenhouse gas emissions to soil health indicators (including microbial properties, enzymes, and nutrient cycling). As importantly, the team will also analyze the economics of these many impacts.

"There are a lot of collaborators on the study,

which means we can look at this from a lot of angles. We're going to do some pretty cool stuff with these trials, especially as the treatments accumulate," says Lawley.

Over the years, various scientists conducted studies on long-term crop rotation, green manure crops in organic systems, and cover crops that replace fallow. What's new about this study, says Lawley, is that the team will look at the impacts of shoulder season cover crops grown within a regular crop rotation.

"There's a real paradigm shift for the types of cover crops and the timing of those crops," she says. "There are some really simple reasons why cover crops make sense. Hopefully in this study we will put numbers to the system wide benefits."

The prairie-wide project was originally developed in hopes of gaining funding from the Integrated Crop Agronomy Cluster overseen by Western Grains Research Foundation (WGRF). When it was not ultimately selected for inclusion in the Cluster, the WGRF, Manitoba Pulse & Soybean Growers, and Manitoba Wheat and Barley Growers Association decided to fund it instead.

"It's very exciting to see this work funded by producer groups," says Lawley.

Findings from the study could help fine-tune producers' management decisions, should encourage additional uptake of cover cropping, and may provide the background necessary for additional environmental goods and service payments.

After all, she says "What's the point of doing this work if it's irrelevant to farmers and just going to sit on a shelf? —

The right crop rotation could cut your fusarium head blight risk

BY JENNIFER BLAIR



Crop sequencing plots at Farming Smarter in Lethbridge County. PHOTO: FARMING SMARTER

new Prairie-wide research project could help growers choose the right crop rotation for fusarium head blight management. "Fusarium is one of those critical pathogens

that hits the pocketbook really hard and really suddenly," said Ken Coles, general manager of Farming Smarter.

"It's a pretty nasty pest that we've been trying it keep at bay for some time." In the early 2000s, fusarium head blight was limited to southern Alberta, but that's changed over the past 15 years, said Coles.

"It's no longer just a southern Alberta problem. It's been found in central Alberta and further north in some cases," he said, adding that disease also grew in severity as it spread.

GROWING NEW IDEAS / GROWING KNOWLEDGE / GROWING STEWARDSHIP

BY TREVOR LEWINGTON

n the risks of economic prognostications, there's a quote that states "an economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen today." Nonetheless, we at Economic Development Lethbridge are forging ahead by offering some data on key economic indicators for local businesses to consider as we move into 2019.

The consensus forecast is that the Canadian dollar will remain in the 75 to 79 U.S. cent range for the duration of 2019, picking up where it left off in 2018 where it averaged between 75 and 78 U.S. cents. This forecast represents a continuation of current patterns rather than an abrupt change. This buffer between the loonie and American dollar should help make Canadian exports more attractive in the global market place. It also means that prices for imported supplies or inputs should remain stable assuming there are no unexpected changes to tariffs because of trade policy.

Projections for this year suggest the Alberta's Consumer Price Index (CPI) will increase by 1.9 per cent, roughly in line with the national figure. As a proxy for inflation, this is slightly lower than the 2.4 per cent annual rate we saw in Alberta in 2018. In general, this means we can expect costs of inputs (such as labour) to be slightly lower than they were last year.

The Bank of Canada has now increased interest rates five times since the summer of 2017 and has indicated more hikes could be on the way. Continued rate increases along with increasing costs of financing may have spillover effects on both housing market activity and business expenditures and put added pressure on businesses and consumers that are already leveraged. More recently, however, the Bank of Canada expressed growing concern about the global trade situation causing a growing number of economists to predict a prime rate reduction in 2019.

Indications are that the labour market in our area will continue to be tight after a year in which the unemployment rate in the Lethbridge-Medicine Hat region dropped by 0.6 per cent over 2018 to 5.1 per cent. While part-time work is down 4.8 per cent year-over-year, full-time employment was up 1.2 per cent in 2018 over the previous year. On a sector-by-sector basis, there has been sizeable employment growth in the construction, information, culture and recreation as well as transportation and warehousing industries. On the downside, the agriculture, health care and social services sectors experienced the largest reduction in employment in our region. These sectors witnessed declines at the provincial level as well, although the Lethbridge-Medicine Hat region has felt the pinch more acutely due to the important role these industries play here.

Looming large over the landscape for Alberta and Canada in 2019 are the upcoming federal and provincial elections. From a provincial perspective, businesses will want to carefully examine party platforms and question candidates on areas of interest like proposed changes in personal or corporate tax rates, changes to investment tax credits, government spending, carbon levies and adjustments to labour or safety laws. The status of pipeline capacity and access to overseas markets continues to loom large for Alberta's oil and gas sector with depressed oil prices continuing to put pressure on government revenues. The national election also promises to play a prominent role in shaping the economic agenda over the course of the next year. The proposed national carbon tax seems likely to play a central role in the election campaign with the Liberals and Conservatives already carving out diametrically opposed perspectives on this issue. Other issues likely to rise to the forefront campaign include immigration levels and workforce development strategies, infrastructure funding and industry competitiveness within new global trade agreements.

Elections provide an important opportunity for producers to challenge candidates on party policy and ensure that agriculture is front and center during an election. Attending debates, joining constituency associations and directly engaging with individual candidates to better understand their platforms is crucial to make an informed decision on how to cast your vote. Alberta's last general election saw voter turnout of just 53.7 per cent; which was a record high when compared to many prior elections.

The economic fundamentals in Lethbridge remain strong but there is increasing uncertainty ahead. The amount of change and uncertainty on the horizon for our country and province brings to mind another famous quote: "May you live in interesting times." Through all of this, Economic Development Lethbridge will continue to be here to support local entrepreneurs and businesses as well as promote our community as a place where businesses and citizens can thrive.

And in years when the conditions are right, fusarium head blight can be devastating — particularly in fields with short, cereal-heavy crop rotations.

"The wheat-canola rotation is very popular, but when you do that, you end up making things like fusarium head blight worse," said Randy Kutcher, professor of plant pathology at the University of Saskatchewan.

"The more diverse your crop sequencing, the less pest problems you have." Right now, researchers across the Prairies work with Kutcher on a crop sequencing study that will help farmers determine which crop sequence will work best to reduce the impact of fusarium head blight.

"We know that, when you grow a cereal, the

amount of disease inoculum in the residue is going to depend on what grew there previously," said Kutcher.

"Our objective is to come up with sequences that are the lowest risk and then show growers how the risk increases as you increase the number of susceptible crops in your rotation." That will become even more critical as corn acres continue to grow across southern Alberta, he added.

"Fusarium likes to grow on corn stubble, so we expect that to be an issue," said Kutcher. "If we're going to grow corn, it may get even more difficult to manage the fusarium. But we don't know. No one has ever tested it."

Kutcher's research should answer some of those questions. Over the three-year study, researchers

will evaluate between six and nine crops — durum, dry beans, hemp, quinoa, corn, field peas, canola, barley, and spring wheat — on eight plot sites across the Prairies (including Farming Smarter's site near Lethbridge.)

But it's a bit different than the typical crop rotation research done in the past, Kutcher added. "A crop sequence is an efficient version of a croprotation study."

Each of the plots were seeded in 2018, and then this year, researchers will seed perpendicular across the plots, creating 81 different sequences.

"What you're left with is this huge matrix where every crop gets seeded on every stubble," said Coles. "Then we can look at how that affects things like disease pressure."



Make Canadian agriculture shine

BY C. LACOMBE



This photo generated the most impressions for May 2018 on Farming Smarter's social media accounts. It shows Mike Gretzinger very happy to get the Blue Books from Alberta Agriculture last spring. Make it fun and go for it! PHOTO: C. LACOMBE

he Canadian agriculture community is a minority today amid a population otherwise distracted by so many anxiety-inducing, well-staffed bullhorns that it's time to form Team Canada Ag and get our own narrative into the fray.

It's not an easy thing to do, I know, but much is at stake. With only two percent of the Canadian population directly involved in agriculture, we can't afford infighting.

So, I was disappointed to see the release of the new Canada Food Guide spark articles about livestock producers or dairy farmers speaking poorly of plant proteins; and this on the heels of International Year of Pulses to promote plant protein just two years ago.

I know when I saw the "plate" for the first time, I thought, "Ya, that looks about right as far as any nutritionist would say." But my very next thought was, "I don't see any cookies or chips there though. Where's my COOKIES!"

The thing is all you have to do is look around and you can see that the Canada Food Guide is a nice idea, but we all know none of us are going to stick to it. Heck, I've been trying to adopt that eating style for about 20 years and I'm not even close.

Besides, all the people of Canada are a mere molecule of the world population and

the world wants more meat. Plus, dairy has a solid place in the human diet all over the planet and always has — even before agriculture.

So, we don't need to divide Team Canada Ag along crop lines whether they be livestock, grains, dairy, pulses or oils. What we do need is the entire world to believe, deeply believe, that Canada produces the best, purest and verified agricultural products available for export to the highest bidder.

Farming Smarter hosted Kevin Folta and FarmTech hosted Jay Baer to talk to Alberta farmers about joining the online conversations and making sure positive messages outnumber the less than complimentary ones. We don't do that by brawling with each other over 25 per cent of a plate!

As Folta said, much of the disparaging messages about agricultural production come from a very small percentage of the population. They work for well-funded organizations or businesses that have a goal in mind; I call them anti-activists because they are anti a lot of things. There is a huge population that just wants some solid information. Food industry advertisers keep trying to portray farming as bucolic as though farmers weed with a hoe and a piece of straw dangling from a grin. We all know how far that is from the truth today. However, farming is still a fairly pure profession whether it's conventional or organic; which is another distinction we need to dump. But that's another column.

Farmers, or primary producers if you like, face politicians all over the world making decisions that they are not qualified to make based on the loudest raucous typically made by people incited by that small minority interested in effecting change whether that change is beneficial. GMOs and glyphosate are just the current targets. When those topics cease to garner the attention and money, the anti-activists will pick new ones.

This is why I say Team Canada Ag has to be all about the best, purest and verified agricultural products available for export to the highest bidder. The best part of this is that everything you need is right in your pocket! Whip out that smartphone, snap a photo of the wonderful Canadian countryside, food looking pretty in its natural habitat, cute animals or farm people. Post it to your favourite online app — FaceBook, Twitter, Instagram etc. Don't forget to make it public so that all your friends and family can share it all over the world-wide-web. Go Team Canada Ag! —



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The future is bright for hemp in Alberta

BY JENNIFER BLAIR

Hemp. PHOTO: FARMING SMARTER

hanges to the regulations for hemp production and processing could create new opportunities for Alberta farmers. "I look at it as a four-cylinder engine that's

been operating on one cylinder to date," said Ted Haney, executive director of the Canadian Hemp Trade Alliance.

"When we fire up the other three cylinders adding feed, fibre, and fractions — to the existing food market, that does paint a very bright future for hemp."

Last October, the Federal government enacted the Cannabis Act, moving the regulations for cannabis and hemp (including industrial hemp) out of the Controlled Drugs and Substances Act into the new, less restrictive act. Under the new act, farmers will no longer need to grow at least 10 acres of hemp or submit a criminal background check to apply for a license to grow hemp.

And those changes will create some new markets for hemp; which was limited to the food market, said Haney.

"It's not often you get to introduce brand new revenue streams into a crop without requiring significant new capital investment or operating costs. And that's what we're looking at."

As in the past, grain will need to go through a licensed hemp processor for the food market and there will be no restrictions on the sale of stalks for the fibre market. But now, licensed hemp growers can also harvest hemp chaff and sell it to licensed cannabis processors for the extraction of cannabinoids — primarily cannabidiol (CBD) that has no psychotropic properties (meaning, it doesn't make users 'stoned.')

These three revenue streams could be joined by a fourth as the industry works to register hemp grain and its derivatives — whole seed, screenings, hulls, hearts, oil, and protein — for use in the livestock feed market.

"It hasn't been allowed as a livestock feed before, but we're moving through that process and hope to have that registration process completed within a year," said Haney.

"That would allow an alternate market for product that doesn't meet the specifications for a food processor, albeit at likely lower prices than the food market. We look at that as being a really vital fourth revenue stream." But it will take some time for each of these markets to develop — particularly the fibre market, Haney cautioned.

"There is far more hemp straw produced in Western Canada today than there is capacity to process it," he said. "That is an emerging market but isn't yet a viable market. It's not a revenue stream today where most producers would be able to generate income."

New investments by Sunstrand Sustainable Materials — that will double its capacity at its decortication facility in Maskwacis — and another unnamed new entrant will increase fibre processing capacity in Alberta over the next three years, said Haney.

"Those two new expansions will start to create a market for fibre, but we likely need three or four more new entrants or expansions to start to balance off the supply and demand for hemp straw in the fibre sector and create a market for the product," he said.

"As long as you're in an oversupply state, a market can't form."

That's why it's critical for hemp growers to find a home for their crop before they put it in the ground.

"We strongly advise producers to enter into commercial discussions with clients prior to the production of hemp," said Haney.

"You should, where possible, have agreements in place that will allow you to sell your grain to a licensed hemp processor and to sell your chaff to a licensed cannabis processor if you plan on collecting it. If you are producing a cultivar that's going to produce significant straw, you should seek a potential market for that as well."

Some processors have preferred cultivars that will need to be part of the discussion before making any planting decisions. In the past, hemp cultivars have been optimized for grain yield, but that will likely change as new markets come online — particularly the CBD market, which is looking for chaff and flowers that are higher in cannabinoids.

"New cultivars will likely start arriving on the market over the next couple of years and will continue to do so over the next five years as we try to produce for these multiple revenue streams."

Food, fibre, and chaff processors also have

stringent specifications that producers will need to meet when selling into those markets.

"Meeting customer specifications is an absolute requirement," said Haney.

"That's why our strong guidance is to enter commercial discussions prior to the growing season so that you can ensure the product arrives in a way that meets the processors' needs.

"Right now, growing hemp is a risk, and that means you need to cover your risk by knowing your client and producing what they require."

Building those customer connections will be key for hemp growers as the market develops and acreages increase, he added.

"It comes back to having a good relationship with your client and producing for the client rather than producing for a general market," said Haney.

"This is really a contracted, producer-processor aligned market right now and will be for some time."

But for producers who can make hemp work as part of their operation, it's a good time to get in on the ground floor of a growing industry, said Haney.

"Because the primary income stream has been based on food processing, the industry has been quite volatile and that's been one of the weaknesses of the industry as it developed," he said.

"That's changing. Since 2010, there has been a really strong trend toward increasing commercial acreages."

And the industry expects that the rise in acreage will accelerate as these new markets come online and grow.

"The industry believes that a 450,000-acre target by the year 2023 is reasonable and we're focused on meeting that level of production in Canada," said Haney.

"That will take us from a \$140 million industry to a \$1 billion industry."

The time is right for producers to consider growing hemp, said Haney. And he does mean that they should actually consider it. "Study and understand how hemp can fit within their rotation."

"It's an exciting time," said Haney. "We're introducing three new revenue streams to a crop that has grown and developed on one revenue stream, so I think we'll see revenue constraints disappear and hemp become one of our core crops.

"Hemp is going to be part of our world for a very long time."

The link between blockchain and farming

BY DECEMBER BURGESS

onsumer concerns about traceability, integrity and verification of source may alter the reporting demands in the supply chain. However, an emerging technology has the potential to revolutionize the way the agriculture industry addresses this and make it much easier.

"There's a trend in the world right now moving people to want to know where products come from and they want it to be verified," explained Jefferson Gardner, a certified blockchain expert.

Blockchain is a system for storing data where different segments or 'blocks' of information are stored on computers that are linked to each other, creating a 'chain' of information. Experts expect this technology will lower transaction costs, open new markets and improve traceability and food safety.

Decentralization is a key component to blockchain, allowing information to be easily accessible for all players and creating a system where no single person has authority over all the data.

Blockchain uses a peer to peer network; which means the information is constantly recorded and shared between the participants connected. That makes it far less vulnerable to being hacked, exploited or lost.

"Centralization is one of the big problems we run into in the world," said Gardner. "Big corporations are pulling all of this information and protecting it. They don't want to play in the sandbox with anyone else."

Gardner likened this to consumers posting videos on Facebook, saying that once the data is uploaded to servers across the world, the company is what manages and controls that information as the central point of storage.

Industry leaders and companies are already starting to implement blockchain in their businesses. In December 2016, AgriDigital became the first in the world to sell 2346 tons of grain using blockchain technology.

However, blockchain is still in its fledgling stages and people don't know enough about it to make it mainstream.

"The first step of implementation — what comes before that — is education," he said.

He went on saying that industry professionals will benefit from learning about blockchain and understanding its uses, but the most important part of the transition lies with data.

"If you're a farmer, how much data are you creating that you know you are creating? How much data are you collecting that just isn't structured," he asked. "Are we confident in that data over the long term?"

Gardner recommended industry professionals outfit management strategies towards automation before developing their blockchain.

"There's a common saying: 'Garbage in, garbage out.' And if they have bad data that's incorrect, what's the use of it?"

Though consumers are part of the main drive for getting this technology stream-lined, Gardner said there are benefits for the industry in the long-term.

He compared an early adopter to the late majority 10 years down the line, stating that if a producer's competitor has been on blockchain for a shorter period, their data may be perceived as less trustworthy.

"You can provide them [collaborators] a much better integrity for the data set that helps you make decisions as well as them," he said.

He also emphasized that professionals need to be thinking long-term for blockchain to be right for them.



Trevor Lewington and Jefferson Gardner talk about the basics of blockchain at the Lethbridge Conference 2018. PHOTO: MORTON MOLYNEUX

"The return of investment for a local farm may not be immediately realized," he said, "We need to collectively come together and think about our industries more as an entire ecosystem."

He also said that while blockchain alone may not be entirely useful for a farmer or a seed producer, the convergence of artificial intelligence and automation allows for greater opportunity.

The example he gave followed environmental variables and impact on yield.

"A seed producer would be able to capture moisture levels, verification, location [both previous and current], the conditions of the environment that seed has been sitting in and then record and share that data across supplier value chains."

This helps seed producers make better decisions based on environmental factors and provide a better life for that seed before it gets to the farmer.

"After the farmer cultivates and records all that data that they're capturing, we can then say 'Hey, your seed under this condition and under the conditions that the farmer implemented were able to provide this much yield," he said, "and then we're able to identify patterns."

For farmers, Gardner theorized it could help with targeted pesticide use, something he believes may be beneficial to dissuade consumer concern.

"I could see a future where farmers are able to get a premium for their product based on the quality of seed, the verification of that seed, as well as the verification of the nutrient levels in their crops."

Gardner predicts it will take 10 years for these technologies to converge said that in the meantime, people need to prepare. For those wanting to get a jump on it, the University of Lethbridge hosts introductory blockchain workshops for business owners and industry professionals.

Mimic nature to increase yields and decrease inputs

BY KRISTI COX

arm soils require crop producers to make a transformational shift in thinking according to Dwayne Beck, Research Manager at Dakota Lakes Research Farm who spoke at the December Farming Smarter Conference.

He maintains that incremental changes might make small improvements, but to create a monumental difference takes a revolutionary change in approach.

Dakota Lakes Research Farm is a not-for profit organization owned and run by farmers in association with South Dakota State University since 1990. The approach on the farm is not to look solely at increasing production, but to consider its practices and methods from an ecosystem approach. Contrary to many current practices, they also operate with a long timeline in mind and make considerations out as far as 600 years when planning.

"My ancestors left Europe because they'd degraded the ecosystem to the point they couldn't support themselves," Beck explained. "Nobody wants to admit this but that's what our farming techniques have been is extraction techniques. We have to start thinking about things differently."

One of the first decisions was to operate as a no-till operation, but they didn't want to just make that single change and hope for success.

"We approached it from the standpoint that we don't know anything and let's look at functioning no till systems — prairies and forests — and see what they do and then try to a certain extent mimic what they're doing."

Beck went to the water cycle, nutrient cycle, sunlight capture and diversity as a benchmark of success.

"What we've always used as a benchmark is, 'Can we produce more than we used to?," Beck said. "I think we can produce more than we used to, but not necessarily if we set up with that as our goal. Our goal needs to be to optimize our ecosystem cycles. And if we can optimize the ecosystem cycles, the way they function, then the goal is to figure out how to make money doing that."

Beck acknowledges that profits are important to producers, but he cautions against making short term profits the main goal. He notes that for maximum short-term income, producers could sell their topsoil to the landscape industry. Obviously, this doesn't account for the longevity of the business.

So how can crop producers mimic nature? By adopting no-till, diversity, complex rotations, cover crops and residue.

"Mother Nature is an opportunist," Beck



PHOTO: DAKOTA LAKES RESEARCH FARM

explained. "If you've got weeds or diseases that are popping up and giving you problems it's because you've provided them the opportunity. Weeds and diseases are nature's way of adding diversity to a system that lacks diversity."

In a time where resistant weeds and diseases like clubroot challenge producers, thinking outside the box can be key to success. Diverse, complex rotations can include high-residue and cover crops. Simple rotation patterns are predictable to pests and can cause problems.

Beck related an example from the corn belt with corn rootworm. Adults feed on the silks of corn and lay eggs at the base of the corn plant. If you plant corn again the year after, the larvae hatch and eat the corn roots. If there were no corn roots available, the larvae couldn't survive, so everyone started doing a simple repetitive rotation of corn-soybeans.

"Next thing you know the insects in the western corn belt developed an extended diapause, meaning the eggs didn't hatch for two years," explained Beck. "In the eastern corn belt, they developed a soybean variant. The gravid female went to the soybean fields and laid their eggs because the ones that did that were successful because those soybean fields all went to corn. So, you selected for a subspecies that had this variant."

Unpredictable rotations don't allow for these types of adaptations. Dakota Lakes also added livestock to its rotations. Soil biology slows during times of low moisture and low temperatures and ruminants keep that going.

"If you're going to mimic a natural ecosystem, a natural ecosystem had livestock," said Beck. "It allows for more diverse cropping systems than if you didn't have the livestock."

Chemicals can cause diversity issues on a different level. Key natural pest control can be disrupted when fungicides and insecticides are used inappropriately.

"The number one predator for aphids are fungi," explained Beck. "The number two predator is something like a ladybird beetle that will eat 100 aphids in a day. What do they tell you to do when you say, 'I want to spray some herbicide?' The consultant will say why don't you throw some insecticide and fungicide in there at the same time, it's only a few bucks. What have you just done? You've killed all your predators."

While it's not always possible to eliminate the use of chemicals, high diversity can lower the amount needed.

"We have not had to apply broadcast insecticides at Dakota Lakes in over 16 years because of our diversity and because of our predator population," said Beck.

Water was a key motivator in the ecosystem approach at Dakota Lakes. Low disturbance, and the increase in organic matter ensures water gets where it needs to be, instead of pooling or running off the surface.

"The system at Dakota Lakes allows them to put on two inches in nine minutes and have no run off," Beck explained. "One of the things we do with visitors who come in the summer is we walk behind those irrigators after they've applied that two inches of water. You will not get your feet muddy and you will not sink into the ground because the water goes into the soil like it would in a native system, through macropore flow."

Beck feels with the right changes, you can quickly see improvements in resistant weeds and plant disease.

"We can fix that fairly quickly simply with crop rotation and lack of disturbance," said Beck. Although he adds that the current state of soil degradation and the duration it's suffered affect the timeline of getting to the long-term soil benefits. Building up organic matter can take more time.

"If you integrate livestock, I think it speeds it," Beck explained. "If you put in perennial sequences it's like hitting a reset button."

Every producer will have to find their own path. There's no one recipe for this, but the benefits could be great.

"Our guys have been very, very successful with this approach in our ecosystem here," said Beck. "We're consistently short of moisture and many of the farming practices were really wasteful of moisture and degraded soils ability to hold moisture. If you improve the water cycle and nutrient cycle, then you have the ability to improve your sunlight harvest — and that's really what you're doing when you farm — taking sunlight water and carbon dioxide and turning it into products you can sell."

Three crop reporting districts in Southern Dakota increased \$ 1.6 billion from 1986 to 2014 when comparing corn, soybean, spring wheat, winter wheat and sunflower production (based on August 2015 prices at Wolsey).

"The area is approximately 180 km east to west and 400 km north to south," said Beck. "Not all the producers have switched, but a majority have. The change is very profound."

CANOLA COUNCIL OF CANADA ADJUSTS OPERATIONAL PRIORITIES **TO REFLECT CANOLA'S COMING OF AGE**

BY MADELEINE BAERG

PHOTO: CANOLA COUNCIL OF CANADA

he Canola Council of Canada (CCC)'s plan to sharply reduce its operating budget in 2019 is evidence of a healthy and established industry and shows just how far the crop has come since the CCC established in 1967, says the CCC's president, Jim Everson. December 5 the CCC announced the 2019 budget of \$5.2 million is down a full 40 per cent from its \$8.7 million budget of 2017.

"Our priority is that the investment made by canola producers, processors, exporters and life sciences companies that are represented by the CCC is well stewarded and the work we do is results oriented," says Everson.

Until the CCC's change in budget direction, the canola value chain paid a fixed levy per tonne of canola produced, with each bump in production leading to more money for the Council. Now that so many acres of canola are grown annually in Canada and strong markets are established, crop promotion and other investments are not as necessary as they were initially.

"We said, let's focus on what we really need to do and set a budget at that level, rather than it being linked to production," says Everson.

For 2019, half of the CCC's budget going forward will come from provincial grower organizations via check-off; the other half will be committed by industry. Because the budget will be determined by priorities rather than production, funding will be stable and predictable, leading to simplified and more consistent operational planning.

Now that fewer check-off dollars are directed to the CCC, it will be up to each individual provincial organization to determine what to do with remaining funds.

The change reflects much more than purely budgetary change. Rather, Everson says it is a "directional thing" based on an intensive review of the industry's priorities conducted by the CCC board of directors in consultation with all parts of the value chain.

"We're very pleased with where we came out of the review. Our priority is to be agile as we meet the needs of industry," he says. "This is very much what we think we need to go into the future. We have a new set of priorities that will help us over years to come. We need to be mindful and evolving."

He adds that there is very strong consensus from the board, from industry, and from the majority of individual producers.

"We're very pleased that all segments of the value chain are fully behind the direction we are taking."

The CCC intends to continue investing in market access and competitiveness, focusing on maximizing efficiency and results by aligning its efforts with those of the Canadian Agri-Food Trade Alliance, the Canada Grains Council, the Canadian Canola Growers Association (CCGA) and the Canadian Oilseed Processors Association.

The CCC is wrapping up its consumer-oriented marketing in established markets and focusing on nurturing and supporting the Canadian canola brand. The CCC will also work with the CCGA to grow a canola promotion program in new and emerging markets.

"There is a major difference between when canola was a small crop and we were fighting to get our brand established and today...We need to continuously monitor and keep on top of promoting canola, but not to the same degree as when we needed to develop consumer awareness. That's just one

example where the Board thought we could reduce our cost and commitment," says Everson.

The CCC will continue to invest in crop production and innovation projects that build and maintain the supply of canola in Canada. It will reduce its role in conducting variety trials and transfer this responsibility to stakeholders.

In terms of leading the industry forward, the CCC plans to invest efforts in ensuring continuous, stable access to world markets and to prioritize canola production issues management, but to step back from individual producer outreach.

"The value chain feels our efforts in issue leadership — really understanding and leading blackleg mitigation, clubroot efforts and best management practices — is critical. As for knowledge transfer, that is really extension services. That's an area where we'd like to use commercial agronomy services as much as we can. That's another thing that has changed over the years: there are considerably more private companies offering quality agronomy services," says Everson.

Make no mistake: the drop in spending does not equate to a drop in enthusiasm for canola's future growth opportunities. Canola is on track to hit 52 bu./ac. by 2025. New technologies are coming on stream, plant breeding innovation is providing new opportunities for variety development, and new commercial traits are on the cusp of commercial release.

"We are really excited about the future. This (change) is a way for us to focus our investment in areas of the highest priority," says Everson.

"The people that created the Canola Council had great foresight. What they were doing was meeting the evolving needs of industry. Since that time, the needs have changed," he adds. "The central ingredient the founders of the Canola Council had was the value chain coming together: gathering producers in the same room as processors, exporters and life science companies to work together on strategy. That central success factor is still very much in play today."





Lethbridge Conference and World Record





PHOTOS: FARMING SMARTER



About 90 people took part in the hand threshing challenge to set the world record. We cleaned 365 grams of wheat.

Left to right: Janson Zienstra, Aaron Groenenboom, Adrian Moens, George Lubberts and John deBoer.



During breaks from speakers, conference participants flocked to the 4H silent auction to check on their bids.

This Man's Fetish Benefits Farming Smarter

BY KRISTI COX



Darren Taylor's crew working a field north of Coaldale, AB. PHOTO: FARMING SMARTER

aving a helpful neighbour is valuable. Having one who also has great equipment and the expertise to use it – priceless! Darren Taylor of Darren Taylor Harvesting Incorporated and DRT Farms is exactly that neighbour to Farming Smarter and a key partner in its operations.

Taylor's father started Taylor Harvesting in 1980 and focused on custom combining. They would start in Texas every year and work north. Taylor took over the business in 1999 and spent over a decade growing the business, eventually maxing out at nine combines. In 2010, he made the decision to downsize and brought his business back to two combines and farming 2000 acres of land.

"I still do custom work locally. I custom spray and custom combine just enough to justify keeping modern equipment," said Taylor. "I'm kind of a farmer because I like equipment – I do like farming, don't get me wrong – but I've got an equipment fetish that I wish I could cure."

One of the key areas Taylor contributes to Farming Smarter is providing custom spray and combine services for Farming Smarter's land around the research plots. This work requires care above and beyond standard farming because of the proximity to research plots and Farming Smarter's General Manager, Ken Coles, recognizes the importance of having someone who understands.

"When he comes here, we're saying 'You've got to be careful around this plot or that plot and farm around this and farm around that," Coles explained. "I think that would drive some guys crazy, but he's very accommodating for us. It's a huge help that let's us focus on the research. That's been going on for quite a few years now and we hope to continue."

Farming Smarter has also drawn on Taylor's skills to help with on-farm research work because he has the best equipment and is excellent at what he does.

One project was using electro conductivity soil mapping and variable rate nitrogen application. Another looked at multiple years of canola yield maps studying the high, medium and low productive areas, assessing the efficacy of yield-based management zones and implementation of variable rate technology.

"His attention to detail is really precise and that's valuable for when we do on-farm research," said Coles.

Taylor is also an important contributor to Farming Smarter's Field Tested Program. The long-standing relationship with him gives Farming Smarter the confidence that they will be able to conduct quality on-farm research.

"You can't just build a protocol for on-farm research and expect every-

one to be able do a good job with it," explained Coles." "It is a long-term commitment. There's an important relationship there, along with the skill-base that he and his staff developed. We will always be that on-farm research coordinator and we'll work with guys like Darren where we have long standing relationships. We think that in the end we'll be able to produce better quality data that will be meaningful to farmers and researchers."

Taylor is happy to work with Farming Smarter, contributing to their work, and having them as a resource.

"It's great to work with people that are on the forefront researching," said Taylor. "Farming Smarter educates farmers on where we can spend our money. It's really important that farmers have these third-party companies that aren't the manufacturers trying to sell you something."



Can you call the Guinness World Records ,I just ate 40 acres.

MANAGING CLUBROOT:

Mitigating misconception

BY DECEMBER BURGESS



Diseased root next to a healthy root. PHOTO: FARMING SMARTER

anola experts warn producers against 'sticking their head in the sand' as ignoring or misidentifying clubroot can lead to irreversible damage on their fields.

John Guelly, Vice Chair and Region 5 Director of Alberta Canola said researchers are beginning to understand how to effectively fight against the disease and that its important growers stay on top of new research.

"We're finding it's spreading throughout the prairies. It's east of Calgary and headed in your direction [southern Alberta]," said Guelly, "I don't think anyone is really insulated from it."

Autumn Barnes, Agronomy Specialist of the Canola Council of Canada agreed, saying that producers need to keep their spore count low and local.

"You really want to find the disease early," she said, "If you can find it when the galls are small and the spore concentrations in the soil are low, it's a lot easier to manage."

She adds scouting is key and that if growers want to find clubroot before it gets bad, she suggests getting in the habit of pulling plants and checking for symptoms. She specified to check areas where the land may be wetter and areas where more traffic comes through.

"A lot of growers or people make this mistake they look for dead patches, and certainly that's one way to find it, but if we're waiting for big dead patches of above ground plant material, then we're waiting to have a huge problem before we find it," Barnes said.

It's important growers take proper sanitization measures to reduce spread. She said this could take the form of knocking soil off equipment before going out onto the field or reducing tillage.

"People think of it as a canola problem but it's not, it's a soil problem," she said.

According to Barnes, many fields identified

with clubroot show symptoms at field entrances, so it can be effective to designate a separate exit, so equipment isn't leaving from the most infested part of the field.

PATCH MANAGEMENT

Patch management is an underutilized tool for people suffering from clubroot.

"Usually when you first see clubroot, the patches aren't any bigger than a kitchen table or the foot print of a truck," said Guelly.

Dan Orchard, Agronomy Specialist of the Canola Council of Canada, said the small spots lend themselves to patch management, stating the method can help spores break down before they distribute and contaminate the rest of your fields.

"There's definitely opportunity when you find it early enough to manage the small patches separately," he said. "We're pulling those plants and getting them out of the field so that no spores go back in the soil, and even grassing that patch."

Growing a perennial ground cover like perennial rye grass can benefit producers because it makes those areas identifiable so that no one tracks the spores across the rest of the field. It also keeps the soil in place and decreases the odds that it will erode or blow the spores around.

MITIGATING MISCONCEPTIONS

Barnes said growers have been misinformed by early estimations regarding crop rotation.

"A lot of people think you need a four or fiveyear crop rotation to prevent spore build-up, but research is showing different," said Barnes.

She cited research done by Dr. Stephen Strelkov that supports the idea that two to three years out of canola can be enough to keep spore loads low. Fields with elevated spore counts need longer breaks between host crops, as there are more spores to break down.

Experts also worry that growers becoming reliant on genetics will fare poorly in the battle against this persistent disease.

"Some people think they'll use the resistant varieties and that's the silver bullet. They think that genetics will be the solution but that's not really the case," Guelly said.

He explained that seed companies have secondgeneration varieties but that it'll be six or seven years before they develop something new. This is concerning as the pathogen evolves and as new types of clubroot are identified across the prairies.

"I would like to see all of Canada growing resistant varieties," he said, "Research has shown it will not breakdown resistance by using it too soon, there's not a lot of extra cost to it, and there's very little to no yield drag on my farm for the last five years."

He suggests growers use resistant varieties in collaboration with other management practices [such as crop rotations and scouting] to cover their bases. —

Managing herbicide resistant kochia for your (neighbour's) farm

BY JENNIFER BLAIR

t wasn't hard to spot large patches of green kochia among the dried-down crops and swaths in southern Alberta last fall.

"Kochia was abundant throughout the southern Prairies this year, more so compared with many other years in the past," said federal research scientist Dr. Charles Geddes.

"It's very problematic."

Over the past two years, dry growing conditions have driven kochia populations up across the Prairies. And as plant populations increased and kochia tumbleweeds scattered thousands of seeds from field to field, kochia has spread to new areas.

"We're starting to see kochia populations move out from these low-lying areas to the rest of the field," said Geddes. And kochia is getting harder and harder to control with herbicides.



Kochia stands tall above a lentil crop. PHOTOS: DR. CHARLES GEDDES

"Herbicide resistance in kochia is among the most important issues in the southern Prairies," said Geddes.

Group 2 herbicide resistance in kochia was discovered in 1988 and over the next 20 years resistance spread to virtually all kochia populations to the point that kochia is now considered to be fully resistant to Group 2 herbicides.

Then in 2011, kochia became the first glyphosate — or Group 9 — resistant weed in Canada when it was found just south of Lethbridge. By 2012, glyphosate resistance was found in about five per cent of kochia populations in southern Alberta, and that number spiked to 50 per cent by 2017. Dicamba (or Group 4) resistance was also found in 18 per cent of kochia populations that year.

Continued on next page

And of the kochia populations sampled in 2017, 10 per cent were triple-resistant, meaning they were resistant to Group 2, Group 4, and Group 9 herbicides.

"With triple-resistant kochia, there's a very large limitation in the modes of action you can use, especially with post-emergent herbicides," said Geddes.

"That's going to create issues, especially if a grower has cereals in their rotations. They'll only have a couple herbicides they can use to manage kochia."

As triple-resistance increases among kochia populations, stewardship of those remaining modes of action — particularly pre-emergent Group 3 and Group 14 herbicides — will become even more vital if producers hope to manage kochia effectively.

"You can imagine how quickly these populations will select for resistance to these other herbicide modes of action," said Geddes. "We need to try and rotate our modes of action." But increasingly, producers will need to turn to cultural management practices to control kochia.

"Moving forward, herbicides really aren't the answer," he said. "We're probably not going to be able to spray our way out of this herbicide resistance problem."



Large green patch of kochia.

That means increasing the crop's competitive ability. Each kochia plant can produce up to 30,000 seeds, and those seeds can spread out up to one kilometre. Any management practices will need to focus on decreasing the number of plants in the field and the number of seeds each plant produces.

"If we have a crop that competes very well with kochia, we can reduce the number of seeds that enter into the soil seed bank," said Geddes. One way to do that is by increasing seeding rates and decreasing row spacing.

"That allows the crop canopy to close earlier in the growing season and allows that crop to compete much better with kochia and reduce the production of the plant," he said. Extending your crop rotation is another.

"Crop rotation is going to play a very big role in managing kochia," said Geddes. "Including a wide range of crops in the crop rotation allows you to include a wider range of herbicide modes of action as well." Winter cereals will be another "big tool" that farmers can use to reduce kochia populations.

"A winter annual crop is already established in the spring when kochia is just trying to emerge, so it will be that much further ahead of the kochia and able to compete much more effectively," said Geddes.

But ultimately, managing herbicide resistant kochia in southern Alberta will need to be a group effort.

"Kochia is very effective at seed dispersal, so it really matters what each farmer is doing on their farm to manage herbicide resistance," said Geddes. "A grower can do everything possible to manage herbicide resistant kochia effectively on their own farm, but there's nothing stopping it from blowing in from the neighbours.

"Everyone should be responsible for managing it and preventing it from blowing from farm to farm. It really needs to be a communal approach."



New CAP program worth investigating

BY LEE HART

on't leave potential grant money on the table, folks.

That's an important message from Farming Smarter this winter as it submits funding applications for more than a dozen applied research projects for 2019.

While the applied research organization made its own applications, individual farmers are also urged to have a look at programs that may provide grant money for a wide range of improvements inside the farm gate under the relatively new Canadian Agricultural Partnership (CAP) programs.

Launched in 2018, CAP replaces the familiar Growing Forward 2 partnership programs, with a reduced, but still relevant list of programs that may be eligible for cost-shared funding, says Ken Coles, Farming Smarter manager.

"The CAP program hasn't been out that long, and they are a bit behind schedule in being fully operational, but I get the sense that a lot of farmers aren't aware of the new program and what it has to offer," says Coles. Full details on the joint federal/Alberta program can be found at https:cap. alberta.ca

While Growing Forward 2 was good, Coles says the Canadian Agricultural Partnership criteria is particularly well designed to provide project funding for commodity groups and producer organizations such as applied research associations, as well as individual producers.

CAP, that is a five-year program launched in April 2018, nationally has a joint \$3 billion federal-provincial budget, with some \$406 million earmarked for projects approved under the federal/Alberta portion. While Growing Forward 2 provided funding for about 27 different programs, CAP has narrowed it down to 15 believed to be the most beneficial to the industry and not necessarily covered by some other funding structure.

Major changes, for instance — while CAP itself does not cover business management programs geared toward new entrepreneurs, you can learn about those opportunities through the AFAC website at: afsc.ca. Amanda van Delden, CAP portfolio lead, points out CAP does include a program for building public trust in agriculture. Called the Public Agriculture Literacy Program it is geared toward sharing the cost of organizing events, training speakers, developing educational and communication materials and tools and other ideas, all geared toward helping the public better understand the agriculture industry.

There are five programs on the CAP menu most relevant to primary producers. While the CAP website doesn't reveal specific budget amounts for each of the programs, general advice is to apply early, funds may be limited and certain programs may become fully subscribed.

PROGRAMS MOST APPLICABLE TO PRIMARY PRODUCERS INCLUDE:

- Accelerating the Advancement of Agricultural Innovation — geared toward farmers testing and demonstrating technology new to Alberta or new to the agriculture sector that may have some real value on the farm. Next application deadline for this is April 10, 2019
- Adapting Innovative Solutions in Agriculture similar to the above, this program supports adapting innovations from outside Alberta to use under Alberta-specific farming conditions. Next deadline for applications is April 10, 2019.
- Environmental Stewardship and Climate Change —

the website lists about 12 pages of different types of projects that may qualify for 30 to 70 per cent grant funding. The improvement projects range from fencing off riparian areas, to year-round pasture watering systems, grazing management solutions, improved manure storage, developing improved livestock wintering sites, establishing shelterbelts and many more. There are several application intake deadlines ranging from March 7 to Nov. 20, 2019 so check the list on the website.

- *Farm Water Supply* Again there are about 16 pages of potentially eligible projects that may qualify for funding. These projects include new well development, dugout development, spring development, pipelines, dam development, pumphouses and many more. There are no specific application deadlines listed, but it says projects will be approved on a first-come, first-served basis.
- Irrigation Efficiency geared toward upgrading land or equipment used for irrigation to improve water and energy-use efficiency, as well as a program to develop a long-term irrigation management plan. Again, the website doesn't list any specific application deadlines, but it is best to get applications in early.

Applying for grants for any of these programs requires some reading to review the rules and eligibility requirements, and time for completing an application form, but the effort may be well worth your while.

On the association side, Ken Coles hopes several of the applied research projects he submitted on behalf of Farming Smarter receive a favourable funding nod under the Accelerating the Advancement of Agricultural Innovation and Adapting Innovative Solutions in Agriculture programs.





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Cypress	June 27
Field School	Cypress Field Site
Farming Smarter	July 11
Field School	Lethbridge Field Site
Plot Hop	July 25 Lethbridge Field Site
Open	August 17
Farm Days	Lethbridge Field Site
Farming Smarter	December 11 – 12
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Watch for details on www.farmingsmarter.com

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