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Fall 2024 Edition

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FARMING SMARTER

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COVER PHOTO:
Ashley Wagenaar & Tatum Adair sort potatoes as Carlo Van Herk steers the harvester.
PHOTO: FARMING SMARTER

We take your tiny investment and reap rewards for all

No matter what you produce on your farm, there is one tiny investment you could make that would reduce risk, potentially improve production and ensure the longevity of your farm.

Support Farming Smarter Association in whatever way you can. Serve on the board, buy an Agronomy Smarts subscription, or donate directly. Also, once you realize the benefits of Farming Smarter, share your story with others.

Farming Smarter is a not-for-profit, registered Canadian charity devoted to finding innovations farmers can use right now to improve out comes on farms. I'm not just saying this because I'm President of the current board. I'm a seed producer and farming is my main business. More than once, I've learned how to do something different or new from following what this innovation hub does.

I've even worked with them directly to answer questions that come up in my operation. The beauty of collaborating with this team is that they have the focus, time, people and equipment to explore ideas and provide practical, applicable methods for on-farm success.

No matter how good my intentions, when the busy seasons hit, any lofty research ideas fall by the wayside while I concentrate on my core business. Farming Smarter's core business is timely research data collection and analysis making the findings useful for next season. Because of its focus, the staff also see compelling results in your data based on what they've learned in previous trials and can give your data relevant context.

Any time you find yourself asking a question related to on-farm production, go look for the answer on farmingsmarter.com. It is the largest, most active association investigating how late you can seed fall rye; how early you can plant spring wheat; optimum seeding rates and soil conservation tactics that work in high value crops.

Farming Smarter gets very little government funding to exist. It survives on research grants that require buy-in from the farming community. There is no such thing as a 100% grant funded research project. All grants ask for some in-kind or monetary investment.

To support its passionate commitment to public good research, Farming Smarter takes on commercial research with agricultural input companies. Over recent decades, more and more funds get cut from agriculture research by governments and downloaded to industry. On the one hand, this means Farming Smarter can pick up more money-making research projects to fuel its public good research. On the other hand, that means it must devote major resources to custom research. If it comes to the point where public money is so scarce all its income comes from custom research, we will lose the largest association working exclusively for farmers in Alberta.

Farming Smarter public good research added monetary and production benefits on my farm just for paying attention at events or reading its magazine. It doesn't have to cost you anything. However, if you want this high quality, highly relevant information to keep coming, invest a little something in an organization that works for you.

Ryan Mercer
Farming Smarter board president

Passionate students Tatum Adair, Christian Alloway, and Brady Vucurevich collecting data from one of our saving soil trials. PHOTO: FARMING SMARTER

Youth inject annual vigor

I'm a person that doesn't need a lot of praise and when I do get it, I brush it off. It's not a bad quality to have in agriculture, as I'm sure many of you are aware, it's often a thankless job. We love it anyway.

Then, when you least expect it, a praise bullet bursts through your armor while saying goodbye to students heading back to school after a summer break in the fields. Then Morton goes in for the death kill by showing me a collection of exit interviews that took all my macho strength to stop my eyes from welling up.

Each year, we rely on a small army of students to manage the tedious work associated with field research. We all put in a concerted effort into the screening, hiring, training, coaching and checking in and working together. They bring loads of energy, personality and enthusiasm despite the mosquitoes, sweaty spray suits and pesky weeds.

This year's crew included 10 post-secondary, three high school, and three exchange students from France for a total of 16. It was an interesting mix of backgrounds with about half of them having little to no experience in agriculture.

Conservation Agronomist Ashley Wagenaar checks potatoes with the help of students George Joseph & Tatum Adair.
PHOTO: FARMING SMARTER

I don't get to work with them much now that I'm securely chained to the office but I checked in often and enjoyed our monthly team events. As usual, what felt like a couple weeks after orientation day, they were saying their goodbyes. Thankfully, no one got hurt and I didn't even hear of any arguments. This would have been seen as a complete failure by my Ukrainian grandfather's standards who often said I'm not yelling, just talking loud when farming/arguing with his two brothers.

Sure, we might have a few dents in equipment, a mangled fender and a twisted sign from a runaway mower but we also have a group of students who loved their summer and can't wait to come back for another. They all learned a lot, loved the people and did a great job. Two of them even changed education programs to focus on agriculture. While I tend to focus on the impact we can have outside our doors, I'm blown away by what we can do within. And I'm dang proud of that and of everyone who makes it happen.

Have a great winter!

Ken Coles
Farming Smarter Executive Director

Searching for cover

BY KRISTI COX

Southern Alberta has a soil conservation challenge. Lighter soil, dry conditions and high winds add up to a lot of displaced soil if it is unprotected. Farming Smarter initiated the Saving Soils Program to run a suite of studies to examine how cover crops may mitigate soil loss while providing additional benefits including a potential added revenue source for producers.

Over the past 20 years, most farmers adopted reduced tillage farming systems. The stubble holds soil in place and captures moisture. Growers harvest specialty crops like potatoes, dry beans and sugar beets late and leave no stubble or roots in the ground increasing risk of soil loss.

"The biggest limitation to establish cover crops is the waning heat and sunlight as days get shorter in the fall," said Farming Smarter Field-Tested Manager Lewis Baarda. Farming Smarter wants to generate viable solutions.

"We wanted to put together a suite of projects that would help us develop practices and tools that farmers could use in a way that fits their system, that is economical, and that can protect their soil from erosion," said Baarda. "We put together about a dozen different trials to look at what farmers can do to protect that soil from being blown away."

Financial support from the Weston Family Foundation and RBC Tech for Nature enabled the dynamic and broad scope to the study.

"Both those groups supported our initiative and gave us a fair bit of flexibility and adaptability within the project," said Baarda. "We're pushing the limits and testing things we weren't sure would work, taking risks to see what's possible. It's nice to be able to try something, reevaluate and adjust for the next year."

THE STUDIES: POTATOES & SUGAR BEETS

Potato and sugar beets crops leave little time to establish a cover crop after a late harvest.

"If you've got a long, hot autumn, plenty of different crops will grow," said Baarda "But not every year will be like 2023. Sometimes we get frost in the middle of September and things cool off enough that nothing grows."

One approach to solving this challenge is to try different application methods including broadcasting seeds on growing potato plants so they germinate before the potato harvest. For sugar beets, they tried seeding between the rows in spring, to establish the plants before the beet harvest.

"On-farm research is where we get to work with farmers to fine tune something that they've been thinking about," said Baarda. "It's that open, real-world environment where you get to figure out some of the pieces you might not have thought about – some of the economics, or the right equipment. You run into challenges you might not in a small plot and find the practical limitations of some of the things you're trying."

SMALL PLOT TRIALS

Three small plot trials test options for cover crops: Roller crimping, living mulch and camelina.

ROLLER CRIMPING:

This study looks at the use of roller crimping vs herbicide application to terminate cover crops. Initially, the project used fall rye and winter oats for cover crops, but winter oats proved quickly to have low survivability, so winter wheat replaced it in the trial. To assess efficacy of the methods, they measure soil nutrients, yield of the main crop, soil moisture and weed density.

"This looks at how the whole system works," said Mike Gretzinger, Farming Smarter Research Coordinator. "How does roller crimping potentially benefit things further down the road? Hopefully, we'll be able to answer some of those questions for this project."

LIVING MULCH:

In this study, rather than roller crimping in the spring, the fall crop becomes living mulch. At spring planting, they strip till between the rows of the fall cover. Again, fall rye and winter wheat served as cover crops. Treatments included low and high seeding density of the cover crop and following with corn, canola or dry beans. The project compared this with conventional herbicide treatment and no cover crop.

Staff prepare potato research plots in spring 2024. PHOTO: FARMING SMARTER

RBC TECH FOR NATURE EXTENDED ITS SUPPORT FOR THE SAVING SOILS PROGRAM FOR TWO ADDITIONAL YEARS PROVIDING FUNDS TO CONTINUE TO 2027.

CAMELINA:

Camelina provides a new opportunity for a fall seeded cash crop. Its oil profile is good for biodiesel and is a good source of omega 3.

"It's an emerging market, so there's the challenge of getting the value chain set up," said Gretzinger. "In previous work, we found that fall seeding is a terrific option for Canada. You get fall cover, and the camelina itself could be a cash crop."

Treatments in this small plot study include varied seeding rates, planting depths and planting dates. Results examined include plant density, yield, days to flower, emergence and weed density.

RESULTS:

The goal is to develop practical, economical solutions that can help protect the valuable soil resources in southern Alberta. Overall, the project is in an exploratory phase. The funding support from Weston Family Foundation and RBC Tech for Nature enables Farming Smarter to try different ideas and learn from the results.

"Farmers are just as interested as anybody else in making sure they protect that valuable soil resource," said Baarda. "The support of a group like Farming Smarter helps them fine tune it and figure out what works and what doesn't. Using science, research, and all the tools at our disposal, we can get them close to practical solutions. We have six inches of soil here in southern Alberta. Once it's gone, it's gone. It takes years and years to put it back together. I think it's in everybody's interest to find practical ways that don't compromise production yield, but also provide that benefit of preventing soil from blowing."

Whether you're a grower facing challenges, or someone who wants to share what they've been trying, if you want to discuss solutions to soil erosion, Baarda and Gretzinger would like to talk with you.

"I'd love to talk to anybody about what they've been trying," said Baarda. "What's worked, what hasn't, and how we can potentially incorporate their ideas into some of our research, or perhaps incorporate some of our ideas into their farm."

Find contact information for Lewis and Mike in the staff directory on farmingsmarter.com. FS

Farming Smarter breaks into potato research

BY SEAN KJOS

Farming Smarter broke into potato production research to fill a noticeable gap in information needed by local growers.

The two projects started in 2024 include a potato agronomy project backed by Little Potato Company, and a fertility project with russet varieties done in partnership with a handful of interested companies.

Field Tested manager Lewis Baarda leads these projects supported by Farming Smarter Conservation Agronomist Ashley Wagenaar, who brings 10 years of experience in the processing industry and four years growing potatoes. She is excited to see what this research will provide to potato growers in southern Alberta.

As an expansion of southern Alberta's potato industry looms on the horizon, so too does the number of growers. The goal of these projects is to get ahead of this expansion to provide new growers with relevant knowledge.

Most research available to producers comes from other regions. "I think we'll be able to narrow down regional specifics we haven't seen before. Even with the specific varieties, we can get valid, very useful, and very localized data growers haven't seen before," states Wagenaar.

NEW RESEARCH BRINGS NEW TOYS

To conduct this new research, the team required new specialized equipment. A potato planter arrived in April and test trials soon followed. Baarda and Wagenaar wanted to properly calibrate the equipment long before seeding got underway.

An important part of the calibration was perfecting the hills and ensuring the potatoes would take root. With the equipment calibrated, seeding took two days in May with the assistance of summer students.

"Because this is all new to us, we didn't really know what to expect or where problems would arise. But that's part of the fun - learning as we go and discovering how to overcome these obstacles," says Baarda.

The Farming Smarter Potato Lab consists of a grader (front) and a washer (back). The team plans to expand the lab and add new equipment. PHOTO: FARMING SMARTER

Harvest crew keeps up with potatoes as they move along the two primary tracks to separate the spud from the soil. Taken during the first test run of the new harvester in a trial for Farming Smarter's russet potato fertility project, September 2024. PHOTO: FARMING SMARTER

> "I think we'll be able to narrow down regional specifics we haven't seen before. We can get valid, very useful, and very localized data growers haven't seen before."
> *– Ashley Wagenaar*

Learning the ins and outs of new equipment has also brought excitement to the team. Before students left in August, they hand-harvested a group of trials. The crew now has a harvester to expedite the process.

Every step of the process introduced something new for the team. Soil moisture created an obstacle at harvest. The crew ran into wet soil while testing the harvester, which clumped dirt on the tracks, covering the smaller potatoes. While they waited for the soil to dry, Baarda and Wagenaar familiarized themselves with new post-harvest equipment.

The Farming Smarter Potato Lab includes a washer and grader, set up in the corner of the equipment shop. Harvested potatoes go through the washer where pressured water streams spray them in a rotating drum. Afterwards, they're set out to dry before rolling through the grader.

The grader tracks individual potatoes and provides numerous data points on each potato in a spreadsheet. It tracks everything from weight to estimated starch quantity and delivers a spreadsheet.

This equipment replicates conditions growers would experience and provides the quality of commercial production processing.

"The equipment investment allows us to process potatoes equivalent to commercial production in a way that's not labor-intensive and sustainable for the long term. We should be able to produce high quality results with it," states Wagenaar.

Baarda and Wagenaar plan to grow the capacity of Farming Smarter's potato research as these projects continue. In upcoming years, they plan to add to the analytical equipment and eventually develop greater capacity. FS

Farmers now pay to grow

Government withdrawal from extension threatens Alberta's world-class potential

BY NATALIE NOBLE

In the late 1800s, American agriculturist Seaman A. Knapp began visiting farms with expert-led demonstrations held right in the field. "His belief was, if farmers applied new technology themselves, observed it and it worked, they would be more likely to adopt it," said John Knapp, former Alberta Agriculture deputy minister (no relation to Seaman). "He's widely regarded as the Father of Extension in North America."

Filling the gap between ground-level research needs, researchers and those who invest in it, extension in Alberta today is challenged, particularly in public investment. "It's a critical piece to everything we do that's overlooked. It's underappreciated," said Farming Smarter executive director Ken Coles.

"Extension is about our connections to farms, sharing knowledge, having relationships with farmers and a two-way communication channel feeding into the entire innovation system. We're siloed up. Government backed out, and honestly, they're not providing leadership."

While funding isn't a new problem, it's at a high point. "For decades, massive investment dollars have gone into research, such as improving production or pest management," said Rick Taillieu, director of engagement and analytics at Alberta Canola. "The challenge lies in getting the results out to farmers. It's a problem that's been around as long as agriculture."

Flash forward from the 1800s to 1977, when Knapp served as a rookie district agriculturist. There were 100 district agriculturists across Alberta, 63 home economists, and a network of specialists in six regional offices from Fairview down to Lethbridge. Across 60,000 farm families, approximately 600,000 contacts were made between Alberta Agriculture's district offices and rural clients — an average 10 contacts per year, per farm family.

"You can see contact with the district's office was deep and profound," said Knapp. "Clearly, they were a vital and useful part of advancing agriculture, helping (farm families) make more profitable decisions, achieve better quality and environmental outcomes."

With extension agents and specialists integrating producer concerns into a comprehensive set of recommendations, the system ticked along until the mid-'90s. The province downsized 20 per cent to a team of in-field specialists. Over time, a series of budget cuts dwindled public investment.

By 2020, the Alberta Government essentially exited from extension investment. "We don't have our own system of specialists anymore. That's something we need to put back in place," said Knapp.

Todd Green, Newell County director of agricultural services, described the outcome. "We still have 310-FARM, but we don't have the same level of expertise on the other side of that phone call," he said. "We used to work with people on things more directly relevant locally. Now, it's often bigger questions, broader topics and things I need to do more research on."

Russel Muenchrath, former Wheatland County manager of agriculture and environment, said the challenge in connecting producers with research has grown alongside funding issues since his day in the district agriculturist model with district and provincial specialists. "That local level of expertise was more accessible. Producers could stop into the office," he said. "It was easier for specialists to go out and do farm calls. Farmers can search on their smartphone now, but it's not the same as the local ground level support we had."

Government withdrawal from publicly funded extension forced most specialists into the contract market. "It became a fee-for-service model," said Muenchrath.

That transformation costs farmers. "In the absence of public money, the producer ends up paying for extension through check off dollars, association memberships, or event fees that require cost recovery," said Taillieu.

"Where farmers, through producer organizations, previously identified research needs and resulting extension, the federal and provincial governments matched funds to those needs. Now, priorities have changed at both levels, that alignment is missing and growers are on the line, directly or indirectly, to pay for the research or events they want."

The new model means projects launch under trial and error — a costly path forward. While excitement and criticism around the Ag Extension Alberta Working Group varied — a collaborative endeavor representing numerous sectors from poultry to grains – its recent halt exposed cracks in the current system.

From the outside looking in, Coles saw problems early. "There must be genuine dialogue from the onset, not, 'let's make a plan, check some boxes and then find out it's not going to work.'"

Noting that he and other proven extension players were not invited to the committee, Coles said rather than creating a new organization stacked with governance, power positions and roles, the money left on the table could better serve Albertans through already performing extension groups. "I'm frustrated, when we're all stretched thin, how

Research plots growing information farmers and agronomists need.
PHOTO: FARMING SMARTER

"You can see contact with the district's office was deep and profound. They were a vital and useful part of helping [farm families] make more profitable decisions. Average 10 contacts per year, per farm family."

– John Knapp

much money is wasted hiring companies to tell us what we already know," he said. "If they had taken all that money and invested it in extension, and those of us already doing it, we would be much further ahead."

In its second round of committee work, the Working Group planned a pilot project. "But you can't run a pilot project on a program that depends on people," said Coles. "They needed a human-centric, specialist approach with a budget around $20 million per year. Creating a short-term contract in a new organization is bound to fail. On top that, it would be nearly impossible to find any specialists without cannibalizing other organizations."

That suspension is a disappointment for those who hoped it would shoulder some burden the government's retreat placed on them. "I thought it was a unique approach and I was excited to see how it went," said Green. "I don't know that it got a fair shake. It was basically in its infancy and got shut down. That's unfortunate. It included some of the last, not paid-for-service extension people, which is what we are. It would be nice to have extra help."

Solution-wise, consistent, constant messaging helps, whether it's getting innovation out to farmers or influencing politicians to prioritize agriculture. Unity is also echoed. "Our agricultural service boards, often made up of local farmers, have connections to our provincial government. They are picking up some slack as a unified voice within their jurisdictions towards the province and filling that void that was left from Alberta Agriculture," said Muenchrath.

As agriculture is politically overshadowed by priorities like education and health care, its public good interest must be showcased. "We've been far too modest about social license," said Knapp. "We need a group effort by everyone — the commodity associations, government, municipal agriculturists, other policy groups — to come together and talk about it."

Knapp said Alberta has the fundamentals to lead agriculture on a global stage, except one. "There is a public good in having a capable group of producers and an agricultural system that meets international standards. It is flexible and nimble enough to move with changing market demands. It serves the social license in environmental and other issues. It supports our economy, helps build hospitals, roads and police forces." he said. "The missing link is that extension specialist piece. What is regrettable is the complete removal of public funding and the need to consider whether there should be some public role in extension at some point." FS

Cultivating local on-farm innovation

BY LISA KOPOCHINSKI

Various crops in small plot trials in a field just north of the Farming Smarter base of operations. PHOTO: FARMING SMARTER

This year the Farming Smarter team put a tremendous amount of effort into its research program to support innovation in southern Alberta.

"In 2024, so far there have been approximately 15 proposals," says Farming Smarter Executive Director Ken Coles. "Not all the proposals will receive funding. Sometimes southern Alberta priorities don't fit the provincial and national priorities of funders."

Coles says his perspective on agronomic research is that very few organizations think directly about farmers when it comes to innovation.

It tends to follow fads or flavours of the day such as digital ag, carbon sequestration, AI, or genomics.

"It's not that any of these are bad, but we're not exactly piling on the work in areas that matter to farmers. We search out grants that allow for regional priorities as opposed to provincial or national. We have a team actively connected to innovative farmers and agronomists that develop projects to answer practical issues or opportunities using solid scientific methodologies."

Farming Smarter has a full-time scientist on staff and two on contract as part of a team that regularly brainstorms ideas, builds proposals, and applies for funding through various streams.

"We're an unparalleled powerhouse in this regard. As others' capacity diminished, resources are scarce, and priorities have shifted, we feel farmers deserve to be well supported because when they thrive, everyone connected to the industry will too."

Thierry Fonville, Farming Smarter research scientist, agrees and says his aim is to test new research and technology ideas and help develop novel practices that farmers readily apply in day-to-day production.

"We have a variety of proposals that aim to improve farm operations for Alberta producers. I have a small team of fellow scientists that help prepare applications or contribute specialist knowledge for specific grants. We are preparing a double cropping project, which is when two crops are cultivated sequentially during the main growing season. Given the short window for crops in Alberta, this was often deemed unachievable, but novel crop varieties continue to evolve and we want to test some of these to maximize production on irrigated fields."

> "We feel farmers deserve to be well supported because when they thrive, everyone connected to the industry will too."
>
> – *Ken Coles*

Fonville says they also have a few agronomy proposals on precision planting. Precision planting has the potential to perfectly place the seed giving each plant the greatest chance for germination and maturing at the same time. This can offer various benefits in crop management.

"This year we strengthened our research team with the addition of Dr. Rigas Karamanos, a retired soil scientist that worked at the University of Saskatchewan and McGill University for over 10 years. His career includes private industry experience leading soil and agronomy research with Westco, Viterra and Koch. Rigas supports our projects by advising on soil science, fertilizer management and agronomy, as well as writing grants and papers."

SUSTAINABLE AGRICULTURE

Fonville's proposals revolve around the common theme of sustainable agriculture, without compromising yield, and maintaining optimal crop production.

"The topic area that takes precedence over others is our continuous work on improving the sustainability of farming in Alberta, while considering the economy of crop production," he emphasizes.

"Our projects aim to develop sustainable farming practices such as reduced fertilizer and water use, suppressing weeds by non-chemical practices such as cover cropping and maintaining soil cover to limit wind erosion and wind damage to seedlings."

New research areas at Farming Smarter include potato agronomy and irrigation. He has a few grant proposals aimed at improving water use efficiency and improving the sustainability of irrigated crops.

"Farming is a business and unless there are cost savings, higher returns on the existing crop or increased productivity, adoption of sustainable practices cannot be maximized," Fonville adds.

WATER SCARCITY

Coles says irrigation research projects address the region's pressing water scarcity issues. He says the two areas that need to be addressed are adaptability and immediate impact.

"While other projects offer improvements in crop types, growth habits, and production practices, they do not tackle the core issue of water scarcity. The reduced irrigation project provides a versatile solution applicable across various crops and growth conditions, ensuring that southern Alberta farmers can maintain productivity despite water limitations."

Implementing effective water management practices through this project can deliver immediate benefits by stabilizing yields and supporting sustainable farming. This approach not only enhances current agricultural practices, but also prepares farmers for future challenges related to climate change and water availability.

"Overall, the reduced irrigation project stands out for its direct response to southern Alberta's water scarcity challenges, making it a priority for ensuring long-term agricultural resilience and productivity in the region," adds Coles.

Potato crop at one of our Lethbridge sites with summer students operating farm equipment in the background. PHOTO: THEIRRY FONVILLE

PROPOSAL SUBMISSIONS

When submitting research proposals, Fonville says his team mostly submits its research proposals to provincial funding opportunities like the Agriculture Funding Consortium (AFC) and Results Driven Agriculture Research (RDAR).

"The AFC grants fund proposals via Albertan producer organizations such as Alberta Potato Growers or Alberta Beef Producers. It is perfect for tackling direct problems that farmers face or developing new practices for a specific agricultural industry."

The Sustainable Canadian Agricultural Partnership grant, which is a five-year agreement between provincial, federal and territorial governments, started in 2023.

"It focuses on innovation and resilience of the agricultural industry, so it allows us to develop practices that are not crop specific or target general production problem areas such as drought or soil health," Fonville explains.

The review period of grants is usually a few months to a year for proposals. The project starts as a letter of intent with key ideas, objectives and approaches.

"If accepted, we then prepare a full proposal that fleshes out the project in detail. For example, which varieties of crop to test, the timing of seeding and harvest and when, how and which fertilizer to use during the project," he adds.

"We have also found a successful relationship with Foundations including funding from RBC Tech for Nature and the Weston Foundation with our continuing projects looking at reducing wind erosion and improving soil health in agricultural systems. FS

Next phase hemp research underway

Research to meet the growing the needs of a new industry

BY LEE HART

There are plenty of questions to be answered about seeding and harvest as well as everything in between.

Farming Smarter initiated a couple of three-year industrial hemp research projects to provide answers that will help western Canadian farmers get improved crop emergence and better understand practices that enhance the process of getting harvested crop to market.

Mike Gretzinger, Farming Smarter research co-ordinator, says among the questions asked is whether commercially available seed treatments will help the crop withstand common seedling diseases leading to improved germination rates and more even germination. Other research trials explore the timing of harvest and various environmental factors that affect the breakdown of hemp fibres in the process known as retting.

"We've come a long way in our understanding of how to grow hemp," says Gretzinger. "But at the same time there are still plenty of unanswered questions. It is still a relatively steep learning curve. If we can help identify some of the variables that effect crop establishment and harvest, hopefully that will improve overall production efficiency." Alberta Government's RDAR program supports these projects.

Hemp production has had a slow acreage increase ever since it was first approved for commercial production in Canada in 1998. Although acreage fluctuates from year to year, Statistics Canada reports Canadian farmers grew about 55,400 acres of industrial hemp in 2023, with about 90 per cent of that in Western Canada.

Alberta is the largest producer with about 20,000 acres (36%); Saskatchewan is next with 16,100 acres (29%) and Manitoba has 13,400 acres (24%). All commercial hemp production in Canada is regulated and licensed by Health Canada.

A LOOK AT SEED TREATMENTS

With hemp having variable germination rate — 70 per cent is possible, but it can be as low as 50 per cent — 0Gretzinger launched the first year of a three-year project looking at the impact of commercially available seed treatments applied to hemp seed at four sites in Western Canada.

Lethbridge Polytechnic agriculture students help harvest hemp at Farming Smarter. PHOTO: FARMING SMARTER

Mike Gretzinger taking samples of hemp stocks in the plots. PHOTO: FARMING SMARTER

Hemp doesn't like to be seeded too deep; it doesn't like too much moisture — seeds may germinate but growth will just stall under cool, wet growing conditions — and it can be susceptible to seedling diseases such as fusarium and pythium.

"Hemp seed is expensive so we are looking at factors that effect crop emergence and hope to improve stand establishment," says Gretzinger.

That includes looking at how different cultivars are affected by various environmental factors. As the crop is often direct seeded into standing stubble, what might be the ideal stubble height to trap enough snow and moisture to get the crop germinated but not too tall so it holds too much moisture that adversely affects crop emergence? Is there a preferred stubble height?

"And the crop is susceptible to seedling diseases such as fusarium and pythium," says Gretzinger. "Can we apply a common fungicide such as a metalaxyl with a Group 4 mode of action, or a fludioxonil with a Group 12 mode, or perhaps a Group 7 product and control diseases and improve seedling survival and germination?"

Gretzinger says getting a proper fungicide coating during application is a challenge because hemp seed has an extremely hard shell that's also a bit oily.

"There are many fungicide products on the market, but we thought we would try just a few to see if there was any impact or response before we start looking at blends or multiple modes of action," says Gretzinger.

Farming Smarter at Lethbridge, Smoky Applied Research Association in the Peace River Region, InnoTech Alberta in Vegreville and Indian Head Agriculture Research Foundation at Indian Head, Sask. will conduct crop emergence research through to the 2026 growing season.

THE FACTORS AFFECTING RETTING

A producer has a good looking industrial hemp crop standing in the field, what's the ideal time for swathing and then how long does that swath need to lay in the field before fibres are properly broken down and suitable for the next processing step known as decortication?

Those are some of the questions another three-year long Farming Smarter hemp research project hopes to answer says Gretzinger.

"There are some general guidelines about the retting process," he says. "But they don't necessarily take into account environmental variables across hemp production areas." With research sites at Lethbridge, the Peace River region and at Vegreville the project will look at timing under variable conditions.

Retting is the process of separating plant fibers by letting them lay on the ground to break down in the weather. This process is used on bast type plants like hemp. Bast type plants have a wood-like interior (the hurd) and a fibrous exterior (the bast).

Once the crop is properly retted in the field, it is delivered to a processor for decortication. That's a process that separates the stalk's woody inner core (hurd, shivs, shives) from the exterior bast fibers.

The time it takes for the retting process — the break down of fibres — is affected by temperature, moisture and the amount of plant biomass. And the time of swathing is a factor too. The general recommendation is to cut the fibre crop around early flowering, but if the producer has more of a dual-purpose variety and hopes to harvest hemp grain as well, the crop won't be cut until seed maturity. So how does that time of swathing affect retting?

The hemp production manual also recommends the swathed crop be turned over at a certain stage to encourage even retting. Gretzinger is looking at when turning the crop should be done, and how often, and how effective is it?

"Under ideal conditions it might take a couple weeks for fibers to breakdown however if it is dry and cool it could take two months or more," says Gretzinger.

While the more natural field retting is generally recommended, Farming Smarter, working with InnoTech Alberta, is also looking at augmenting the retting process by applying a biological component to the swath, which is intended to enhance the retting process.

Other research plots will evaluate a longer-term process called winter retting.

"If a producer swaths a crop in a particularly dry fall, there may not be sufficient moisture for proper retting, so the swath may be left out over winter," says Gretzinger. "We will look at what impact winter retting has on the hemp fibre quality."

According to the Canadian Hemp Trade Association fibre from winter-retted stems are suitable if the crop is used for biocomposite applications; however, for high end textile applications, leaving the stems on the ground may lead to over-retting which weakens fibre strength and reduces its quality.

"The research is all about answering a wide range of questions about the proper timing, and how to manage the crop under variable environmental conditions," says Gretzinger. "Hopefully, if we can learn a few things, it will help farmers have more confidence in producing hemp." FS

Intercropping corn as a winter grazing strategy

BY KRISTI COX

"Agronomically, I would say the interesting thing is that the species performed differently in the different sites," said Yvonne Lawley, Associate Professor, Department of Plant Science, the University of Manitoba. "It is valuable to do research across the network of sites to see what practices are adapted to the prairies."

Farming Smarter was one of the sites over the last two years in a study Lawley headed on intercropping corn for grazing cattle. Small plot studies spanned across Alberta, Saskatchewan and Manitoba ensuring a wide range of growing season lengths, soil types and moisture gradients. The team conducted a three-month grazing trial with bred heifers last year.

Corn is a high yielding crop option for producers with high feed needs and low acres, but it has high input costs and low protein content that can limit its use for growing cattle with high nutrient demands. Finding intercrop species that provide that missing protein could increase the viability of corn as a grazing crop in the Canadian prairies.

The small plot trials grew Italian ryegrass, hairy vetch, crimson clover and forage radish between 60-inch corn spacing and compared to a control of corn grown with no intercrop at 30-inch spacing.

The study examined biomass yield and forage quality of the corn and different intercrops at their peak in September and then again in November to examine how nutritive value and yield would change over the late fall and winter. Varied weather in Lethbridge led to challenging sample collection.

"If you recall a couple years back, we had two feet of snow September 30, so this entire trial was perfectly covered in an early snowfall," said Mike Gretzinger, Farming Smarter Research Coordinator. "We need to sample for biomass and send it for tissue analysis, so we had to go in and pretend to be cows. We dug meter squares in the plots and cut up all the green biomass that was buried under the snow."

Research interns collect biomass after an early storm.
PHOTO: FARMING SMARTER

PHOTO: EMMA MCGEOUGH

There has not been much work done on optimizing the agronomy of intercropping corn.

"There are producers who are trying this on-farm, but there are no concrete guidelines on the optimal fertility rate, or the optimal seeding rate," said Emma McGeough, Associate Professor, Department of Animal Science at the University of Manitoba. "We're trying to fully understand how they perform under varying conditions. In some years, we had exceptional intercrop growth, and I think moisture is still the big driver. We've also had some challenges, but we are learning a lot about the management and what works and what doesn't work."

McGeough also pointed out that they were able to successfully graze intercropped corn with the bred heifers from October to December last year, despite very dry conditions early in the growing season.

Ultimately, it must be economically feasible.

"Corn is expensive. If we can increase the protein content of the stand, it offers the opportunity to better meet the needs of growing cattle" said McGeough. "It provides high yield per acre, wind protection and, if it's for grazing, you may not need to fertilize to the same level you would for grain corn. Producers must consider all these factors and determine whether it works for them or not. It's not going to benefit everybody."

Analysis of the data from the small plot study is still ongoing. There is a lot of data to analyze with results expected by next summer. McGeough explained that this study should provide answers about wider spacing to allow for increased growth of corn, whether the presence of the intercrop knocks back the growth of the corn, or benefits it, nitrogen fixation of legume intercrops, and the economics of intercropping for grazing corn.

"It's been a really great project," said Lawley. "There's been a lot of interest about how to improve corn grazing and how intercropping with corn could play a role in the overall feed strategy. Especially when we've had these dry years where maybe people have been short on feed from their other sources. Another big goal for this practice would be to enable integration of livestock onto annual cropland." FS

Tap into global innovation

BY SEAN KJOS

Andrew McGuire

Andrew McGuire, agronomist at Washington State University, completed a meta-analysis of 17 soil health studies to identify the most relevant information coming from the studies. From nutrient inputs to the environment, his analysis reviewed what to prioritize to aid your farm.

McGuire works in the Columbia Basin's irrigated cropping systems. He will share his work on high residue farming systems and cover crops to build healthy soils, save money, and maintain yields December 11 through Farming Smarter's Virtual Global Crop Production Conference.

Hear his evaluation of the claims surrounding soil health and regenerative agriculture's effects on biodiversity, soil microbiology, nutrient inputs, and crop yields. Learn the best strategy to improve your soil without wasting time on what doesn't work!

He joins experts from around the world speaking about soil health, regenerative agriculture, insight into global markets, integrated pest management, and more. This is your chance to attend and learn from the comfort of your home or office!

This opportunity eliminates every hurdle that gets in the way of you accessing important agronomical research. What better way to enliven a drab December day than discovering keys to improving your farm?

Take advantage of the early bird pricing throughout November and buy your ticket now! Tickets and more information are available on Farming Smarter's website. FS

PHOTO: FARMING SMARTER

Taps on! for irrigation research funds

BY CRAIG LESTER

The old saying "just add water" really doesn't hold water anymore, at least not when discussing irrigation.

In a time when water conservation, evolving pests, residue issues, and droughts are among the challenges in growing a crop, it is important that producers have current research to grow the best crops and steward the land.

Farmers look for innovative ways to face these challenges head-on, which means more research, data, and insight take on greater importance.

Farming Smarter conducts ongoing southern Alberta research that goes beyond the scope of water conservation and variable rate to explore the impact water has on pests, soil erosion, and other aspects of agronomy.

"There's a need for this niche research," says Field Tested Manager Lewis Baarda.

He says farmers are forced to solve problems on their own because the research has not kept up with the challenges faced in the field.

Baarda adds unlike common crops grown on dryland, irrigation-based farming requires specialized knowledge. Because it is often lacking, farmers need to experiment independently.

He says it's important for this research to be local, regional, and irrigation focused.

"We have the information, but we really don't have a good idea how it applies to our cropping systems, the culture of our farmers, our soil type, our environment, etc."

Baarda illustrates this by pointing out that irrigation farmers have two or three times the amount of above-ground biomass to deal with compared to their dryland counterparts.

He says irrigation completely changes the dynamics when seeding a crop, affecting everything from good seed bed utilization to depth control to managing the extra residue.

Enter Results-Driven Agriculture Research (RDAR) with funding and support for agricultural research projects that align with the priorities of farmers, ranchers, and the broader agricultural industry.

Trevor Prout, Research Program Manager at RDAR, says the 2023 revision of its strategic plan resulted in them developing three priorities, one was irrigation, which they wasted no time implementing.

"We established a panel of experts throughout the industry in the south that would help us feed into where are the priorities and gaps," says Prout, adding that historically, investment had been more on a broad agronomy space rather than specific to irrigated crop production.

He says it was also clear to them that the potential for irrigation research ran deep, echoing Baarda's comment that it went well beyond water conservation and variable rate.

Prout adds that the growing capacity for this type of research with Farming Smarter, Lethbridge College, the University of Lethbridge, Agriculture and Agri-Food Canada, and most recently, Medicine Hat College has made it even clearer that this is a priority.

They launched a targeted call for proposals to address specific irrigation research needs. After receiving strong interest, they are working through various proposals to allocate funding.

Quinn Hlus, a research program officer with RDAR, emphasizes that they want research that reaches farmers, encouraging producer-led trials and on-farm adoption of new technologies.

"There is a ton of opportunity for producer research involving irrigation on the farm, and that's where we're going to see the real results that will impact those producers," says Hlus.

Baarda applauds RDAR for recognizing the importance of irrigation-related research.

"When funding bodies step up and say, 'Hey, we're going to fund irrigation research and create a category for it,' that's music to our ears. It means someone recognizes this gap in research and is willing to create a specific fund to support it."

With recent announcements of expanding the number of irrigated acres in Alberta and the capital being invested by food processors such as McCain Foods, Cavendish, and others in the region because of the power irrigation gives farmers to grow 60-plus crops, both Baarda and Prout believe irrigation-focus is becoming more critical than ever and needs to grow. FS

Old friendship blossoms anew

BY KRISTI COX

Chinook Equipment set up an equipment display at Farming Smarter Field School in June 2024. PHOTO: FARMING SMARTER

A good partnership works when both sides win and this is exactly the case with the reciprocal agreement reached by Farming Smarter and Chinook Equipment. Through Farming Smarter's Smart Partners program, Chinook Equipment donated the use of a side by side for four months in the summer, and Farming Smarter provided a booth at their events and other promotional opportunities.

Chinook Equipment, a division of the Davis Automotive Group, is a dealership offering construction, excavation, agriculture, and heavy equipment sales, rentals, service and parts.

In 2020, they had a single location in Taber and a bigger focus on construction equipment than agriculture. Over the next few years, they developed agriculture equipment offerings and expanded to include locations in Lethbridge, Pincher Creek, Leduc and Nisku.

This company is on a rapid growth curve but maintains its commitment to small-town values.

"We are very much small-town, grassroots based," said Connor Derry, Territory Manager with Chinook Equipment. "We understand the importance of family and supporting family businesses."

One thing that sets Chinook Equipment apart from some of the other equipment dealers is the wide range of brands it carries. Its construction line includes the complete Hyundai line. For agriculture, brands include Kioti's line of small tractors and mowers, Bobcat's familiar lineup of compact excavators and loaders, Trioliet feed mixers, Vermeer round balers and rakes and Versatile's Canadian-made full range of tractors and tillers.

"We have products that can service the small acreage, all the way up to the 100,000-acre farm," said Derry.

Each brand selected stands behind its products and Chinook stands behind them too. All staff are local, take the time to get to know their customers, and ensure they get the machine best suited to their needs.

"Decisions get made right at the branch level," Derry explained. "If you make a phone call to Chinook Equipment, you will talk to somebody that's within a 15-minute drive of you. We are very much a local company."

Connor Derry had an existing relationship with Farming Smarter. Executive Director Ken Coles ran into him other at an event in 2023 and new ideas started from there.

"(We) went and had a talk with Connor, and laid out the program, which Conner was familiar with," explained, Farming Smarter Field Operations Lead Carlo Van Herk. "It grew into them donating the rental of a side by side over the four months of the summer, and we provided them a booth at our events, as well as other exposure."

"I knew how busy Farming Smarter is from previous work that I did with them, and how big their events are," said Derry. "We thought it was a great opportunity to partner with them and it has worked out well. I think it's going to be something that we will consider in the future and it'll be a long-term program between Chinook Equipment and Farming Smarter."

Farming Smarter is impressed with the quality of care Chinook Equipment provides as well.

"I've talked to lots of equipment dealers like themselves, and I've never come across any as willing to spend time or do the research that you need as Chinook equipment," said Van Herk. "They don't care if you're buying a $5,000 or $200,000 piece of equipment, they spend the time with you and want to help you." FS

FaRM program links farmers and tries ideas

BY ASHLEY WAGENAAR

Ashley Wagenaar examines an early season dig of potatoes direct planted into fall rye at Grassy Lake Potatoes farm. PHOTO: FARMING SMARTER

Ten farms dove into on-farm research to answer a specific question related to farm practices with the support of professional researchers at Farming Smarter.

A major challenge in the adoption of new practices is to figure out what works on a farm's operation. To address this, Farming Smarter launched a new program this year under the national Farm Resilience Mentorship Program.

I joined Farming Smarter as the new conservation agronomist working along side long time agricultural aficionado, Rob Dunn. Our program focuses on building the relationships with farms interested in learning, accessing resources, sharing, and building project ideas for good on-farm research and adoption.

With Farming Smarter's expertise and resources, Rob and I connected with farms eager to develop on-farm projects, allowing us to gather research and share findings at field events on-site.

The projects included planting different barley populations as a nurse crop to protect emerging canola, intercropping wheat and peas to attempt to boost silage protein content, evaluating potatoes direct planted into fall rye, under-seeding annual rye to a barley and pea hay crop for organic matter buildup and soil cover, testing nitrogen inhibitor products in wheat strip trials, and evaluating fall cover crop options with various cereal species and planting dates.

Each project was tailored to specific topic a farm wanted to understand to improve the resilience of their cropping system. One farmer involved in the project, Travis Elford, farm manager at Grassy Lake Potatoes, doesn't let the unknown scare him away from new ideas. He stresses that for him it is key to invest some of his busy schedule in on-farm research to stay involved to keep the focus where it is needed.

"As a farmer, you have to be involved in the conversation and sort of push the research in the direction that is relevant to us here, otherwise you might find the research is not focused on the things that are important to you."

In one of Travis' potato fields, he compared two different strategies in planting potatoes into a fall rye cover crop - one into a desiccated crop and one directly into a living crop.

"For me, it is important to be curious and have an open mind to be willing to try new management practices, embrace the struggle, and find ways to innovate and engineer, to continue to be successful and sustainable."

The direct planting was difficult and required a bit of planter modification but throughout the season, the potatoes looked healthy and Travis is optimistic that this idea has potential to minimize tractor passes on the field, create a healthier soil environment in a traditionally heavy tilled operation, and, of course, a better potato.

This is just one example of the different projects conducted this year. Each farm we worked with had an idea that stemmed from reading new research, talking with neighbors, or noticing something on farm that they wanted to test. Last year Will Van Rossell, owner of Specialty Seeds Farm in Bow Island, noticed a difference in his canola yield near an area in the field where his barley nurse crop had varied and wondered if there was a correlation between the two factors.

"I didn't want to assume the barley I spread before canola to protect it from wind was affecting the yield. It helps early in the season, but I also wanted to test different populations to ensure it wasn't impacting my crop."

We built a project that examined different barley rates compared to no barley and the available nutrients through soil tests as well as biomass samples of the canola. Through these tests we found it is not likely that the barley uses nutrients in an amount that would be a detriment to the crop, even at double regular rates. Find more information on these 10 projects at FarmingSmarter.com this fall once harvest wraps up.

Farming Smarter will continue this program next year. Our goal is to work with anyone interested in on-farm conservation projects, no matter the crop. We are here to learn, to listen, and to share our extensive research knowledge with those in southern Alberta agriculture.

Contact Ashley@farmingsmarter.com to learn about different projects or get involved in 2025. FS

The FaRM program includes hosted information sessions each project open to anyone. This one is at Specialty Seeds in Bow Island.
PHOTO: FARMING SMARTER

Students get advanced field learning

BY SEAN KJOS

Trevor Deering demonstrates how to properly use the electronic pipettes to Venus Mengstab and George Joseph during their first week as summer students at Farming Smarter. PHOTO: FARMING SMARTER

Each year, Farming Smarter provides local students an opportunity to accelerate their careers. This year, we had 16 students from May through August including three high school and an office administration student. Regardless of their position, each student had the opportunity to assist with research trials — for some, it was the opportunity of a lifetime.

Venus Mengstab, current Agriculture Studies student at University of Lethbridge, saw Farming Smarter as an opportunity to develop relevant skills for her future career. After developing a career in agriculture, she plans to operate her own vegetable farm.

Mengstab grew up on a goat farm, where she developed an appreciation for agriculture that molded her career ambitions. However, before this summer she had not had the chance to work with crops.

"There was never a dull moment at Farming Smarter. The experience of learning each stage of the crop from seeding to harvest was a great opportunity for me," says Mengstab.

Her summer at Farming Smarter gave her the opportunity to work with a variety of crops and soil types. Seeing how crops grew in each soil type at different locations gave her a new perspective for the future. Additionally, it let her see the work required to successfully grow crops and learn which duties she enjoyed.

"I loved spraying — I was like the spray master — I always volunteered to spray. Although I was not the biggest fan of rouging," she adds.

Developing a new appreciation for agriculture was common throughout the students this year.

High school student Braydon Oostlander had his aspirations of becoming an agronomist solidified this year. With the skills he learned at Farming Smarter, he feels confident to overcome the challenges ahead of him on this journey.

Coming in with the expectation that he'd spend most of the summer mowing trials and watching research from the side, he was pleasantly surprised to be thrown into the field to learn more.

"I was excited to go out to the field and work with the crops. Later in the summer, I got to learn a little bit about the data side of trials too," Oostlander states.

Oostlander's biggest takeaway of the summer was that Farming Smarter provides summer students with opportunities they want to chase. If the work gets done, you could try out something new!

"Farming Smarter does a really good job of making sure that people enjoy summer and students pursue what interests them," he comments.

Katherine Van Tol found exploring new opportunities outside of her typical duties. An accounting student at the University of Lethbridge, she joined the team as a summer office administrator. She was excited to have a job that bridged her current studies with her admiration of science. Farming Smarter was her first foray into agriculture work and gave her a new appreciation for the industry.

Van Tol was grateful for the opportunity to get hands-on experience with a variety of systems and programs used in her career. Alongside administrative duties to ensure research teams were able to run smoothly, she developed a new digital file management system. This gave her the chance to experience different communication styles, discovering how to manage and execute individual needs.

Though when the office work got to be overbearing, she enjoyed helping with trials in the field.

"The opportunity to take a break from the office and help with field work gave me a new perspective. It helped me understand the bigger picture of the work I was doing and I got to see how much work goes into agriculture," says Van Tol.

Her biggest highlight of the summer came when she got to briefly drive the combine.

"I'm grateful for the opportunity to work at Farming Smarter. I was able to learn so much in one summer, not only in my program but in the community around me as well," she adds.

Her new appreciation for agriculture caused her to enroll in an agriculture business class at the University. And she's not alone!

Tatum Adair, majoring in Economics at University of Lethbridge, refocused her ambitions to include an agronomic focus.

She met Trevor Deering and Lewis Baarda at a career fair, where she enjoyed a conversation with them. She found the conversation intriguing and applied to Farming Smarter shortly afterwards, setting the stage for an unforgettable summer.

Working on Baarda's Field Tested team, Adair was a pioneer in Farming Smarter's first venture into potato research. The opportunity to get a behind-the-scenes look into this endeavour inspired her to pursue a career related to agriculture.

"Everything I did was interesting; I was happy to do the mundane tasks, they needed to get done but they also added to the bigger picture," Adair states.

The environment Farming Smarter fosters allowed her to explore her newfound curiosity and provided a safe environment to learn. Just a few seconds into her first time driving the tractor, she experienced the team's attitude towards an honest mistake firsthand.

Brady Vucurevich, Tatum Adair, and Christian Alloway pose for a photo while measuring plant heights for a sugar beet project. PHOTO: FARMING SMARTER

"I crashed the tractor within 30 seconds," she recalls. Though this situation instilled the biggest takeaway of the summer.

"Farming Smarter has a wonderful and supportive environment. The team treats mistakes like that with patience and kindness," she continues.

Her admiration for the team and their work led her to continue working as a fall student. Now, between classes, she assists with data collection and analysis.

"Every trial that gets done and every person on the team is full of passion. They're committed to delivering the best results for the clients. And they make you feel confident, welcoming you into a great team," states Adair. FS

From drought to downpours

BY TIM PARENT

It was a bleak beginning to 2024 for southern Alberta with expectations of a severe drought looming large.

In the thick of an El Niño winter, often characterized by unusually warm and dry conditions, concerns cropped up about water levels, particularly in key reservoirs like the Old Man River and St. Mary's River basins. By February, the reservoirs were already starting to run dry.

However, that same El Niño weather phenomenon would play a big part in what happened next. A wet and rainy spring rose from the brink of an extremely dry growing season. David Spence, meteorologist for Rural Roots Canada, said there was an excessive amount of precipitation between March and May, which, if you're familiar with El Niño, you might have seen it coming.

"It was responsible for the drought itself, and in Western Canada, when you have an El Niño, you get warm, dry, and sometimes windy conditions, which we had all winter long," said Spence. "Something we don't talk about much, though, is El Niño's often overlooked characteristic — that when it starts to come to an end, it usually comes with a rainy period, and that's what happened."

The reservoirs never completely refilled and remain below average to this day. The heavy, spring rains provided a reprieve from the severe drought, bringing much-needed moisture to the parched soil. While drought concerns eased, some areas remain drier than usual, though fewer than anticipated.

With El Niño done, Western Canada enters a transitional phase. According to Spence, we're in the early stages of a developing La Niña, meaning we'll likely see a cold and snowy winter. "That's a good thing," he said. "We need the moisture before the spring melt to replenish the still below-normal reservoir and moisture levels."

Spence cautioned, however, that it's still too early to predict how La Niña will play out. "Nothing is certain in weather prediction, especially beyond three days," he said. "If it does what it's expected to do, we'll get enough snow to potentially alleviate the long-term drought conditions across the Prairies."

Spence continued. "On the other side, we need that snow to gradually evaporate or soak into the ground. It needs to evaporate slowly because we don't want flooding. We want a lot of snow with a gradual disappearance, and if most of it can soak into the ground and replenish the soil moisture, so much the better."

Aside from drought concerns, extreme weather remains an issue in southern Alberta, particularly hailstorms. There were several this summer that caused significant financial damage. While there may be a minor increase in the frequency of these storms, Spence suggested using caution when interpreting the economic impact because we often don't consider the change in the value of the property damaged.

"In 1981, hail destroyed my car. The insurance company gave me $1,500," he recalled. "If hail damaged that same car this year, the insurance company may have given me $15,000. A $400 million hailstorm in 1981 and a $1 billion hailstorm in 2024 doesn't mean that storm was worse than the one more than 30 years ago, it's just the value of the property damaged has changed."

"It's an issue that makes people believe storms are getting worse than they really are."

As 2025 approaches, southern Alberta braces for the winter months ahead. One thing is clear: whether it's hailstorms or drought, El Niño or La Niña, the region's dramatic weather swings will continue to play a significant role in its history. FS

PHOTO: FARMING SMARTER

Our Field School saw rain on our participants for the first time in years in 2024.
PHOTO: FARMING SMARTER

Facing the Kochia Challenge

BY TIM PARENT

Well established mature kochia outcompeting field crops in a dryland corner under drought conditions. PHOTO: FARMING SMARTER

Kochia remains a significant agricultural challenge. It's well suited for life on the prairies. It's tolerant to drought, and heat, and can survive in salinity. Alberta's drought conditions allowed Kochia to thrive.

Compounding the issue is its resistance to herbicides. Over the last decade, it adapted quickly to various herbicides according to Lewis Baarda, Farming Smarter Field-Tested Manager.

"Ten years ago, about 10 per cent of kochia was glyphosate resistant. Now, it's closer to 90 per cent," Baarda explained. "In a very short period, we suddenly lost one of our major tools for dealing with kochia."

This rapid evolution left farmers with few options to control a weed that spreads easily by tumbling across fields, scattering seeds as it goes.

"You know the tumbleweed that you see in the old Westerns? That's basically Kochia," Baarda said. "If the plant becomes mature, it breaks off and rolls across fields, dropping seeds everywhere. One plant can produce between 30,000 to 50,000 seeds, which causes major headaches for the next year."

The widespread nature of Kochia means even farmers who manage to control it can be affected by neighbouring fields where the weed may be left unchecked. "It's a community problem," Baarda noted, emphasizing Kochia's ability to blow away with the wind allows it to spread from farm to farm. "You can do all the right things, but if the neighbour upwind of you has a major Kochia problem, suddenly you have one too."

Once established, Kochia can have a considerable impact on crop yield. While precise numbers vary, its presence can severely reduce productivity, and potentially take years of work to restore the balance.

In response to the weed's growing resistance to herbicide, Farming Smarter began to explore alternative strategies to keep Kochia at bay. The best approach is to grow a successful crop as kochia doesn't compete well with healthy crops. However, the challenge lies in areas where crops fail to establish a strong foothold, such as saline patches. One approach is to increase seed rates to boost crop competition. Another is to planting salt-tolerant crops in Kochia-prone areas.

Site-specific weed management, using field mapping to target areas of high kochia concentration also shows promise. This could mean adding different herbicides than what is used in the rest of the field in high-risk areas or adjusting rates. Equipment manufacturers introduced dual tank sprayers, allowing farmers to apply different herbicides with one sprayer, which could benefit site-specific management.

Kochia tumbleweeds caught in a fence following a major wind event in southern Alberta. PHOTO: FARMING SMARTER

"That site-specific approach might make sense," added Baarda. "We have the tools and equipment. It just takes a little bit of time and energy to come up with the appropriate plan to decide where to apply these controls. We have to ask ourselves if we are prepared to sacrifice whatever crop might grow there in the interest of controlling Kochia."

The next research stage involves further testing of residual herbicides and other tools to combat Kochia, particularly in areas where crops are less effective at outcompeting the weed. With a new project focused on controlling Kochia in saline areas, Baarda remains hopeful research can find a long-term solution.

"That's the direction we're going. We've done the work to figure out how to use site-specific controls, but we don't always know which controls to deploy. I think this next stage of research should help us do that." FS

PGRs address barley lodging

BY JENNIFER BLAIR

Minimizing lodging in barley. PHOTO: FARMING SMARTER

Farming Smarter Research Coordinator Mike Gretzinger 's best piece of advice for farmers making product purchases over the winter is to know the existing challenges in your barley crop and look at solutions to address them.

A recently completed study by Lakeland College hopes to bring some hard data to the decision-making process around plant growth regulators.

"We get asked all the time by farmers whether they should put down plant growth regulators. Whether they will be cost-effective or do anything to impact yields," said Gretzinger.

"But the jury is still out. There is so much variation in environmental conditions regionally that even though these products have gone through the registration process, farmers really need to have quality research data — especially regional data — available for their farms."

Some of that work has been done as plant growth regulators hit the marketplace over the past decade.

"This project is an extension of plant growth regulator work that's been done before," said Gretzinger as it wrapped up its final year at Lakeland in Vermilion, Farming Smarter in Lethbridge, and SARDA in the Peace Region. "In this case, we're looking at Modus application in barley, some on-label and some off-label treatments, and then the impact on yield and lodging."

But the variable that researchers are most curious about is the cultivar, he added.

"We're really hoping to see the impact on barley cultivars and their end usage," said Gretzinger. "We're comparing the differences between very different barley cultivars phenotypically and looking at a combination of lengths and timings for Modus itself."

Three varieties are of interest for the project: CDC Austenson, the industry-standard two-row feed barley; AB Hague, a recently released high-yielding two-row feed barley; and Esma, a short-stature two-row feed barley that took over some acres in Alberta.

Researchers tested Modus, a plant growth regulator registered in 2021, on these cultivars using different treatment options to explore the impacts of things like timing on the product's performance. That's particularly important with some of the challenges with staging that farmers have had with products like Ethrel and Manipulator in the past.

"With Ethrel, farmers had some confusion over when and how to use it," said Gretzinger. "Farmers who applied it out of stage found that it can have some negative impacts if applied at the wrong time. Manipulator has a wider range of safe application timing, but ideally growth stage 30 or 31.

"But with Modus, which we've been using on barley the last couple of years, there's a large application window from the start of tillering all the way up to flag leaf. That's a big two-, almost three-week window for application timing, so homing in on the optimal timing is something that will be significant."

That timing may be later than expected. Researchers surprisingly found that Modus did a better job of decreasing crop height and lodging with a later application, closer to flag-leaf timing.

"We saw that it has minimal impact at the 21- to 24-growth stage, which would be around herbicide timing when it's just starting to tiller," said Gretzinger. "That's a little too early for a lot of these plant growth regulators."

Researchers also explored a split application, where farmers can apply their herbicides and then come back two weeks later to apply fungicide with a mix of plant growth regulators and herbicides.

"For the most part, we likely aren't seeing a negative impact on yield even with some of the off-label applications," he said.

"That's good news. It means they're likely relatively safe for the application window and that would be a way to save on some of the logistics of going over your field just to put on a plant growth regulator application."

While data compilation and analysis are ongoing— expect results in spring 2025 — it's safe to say that plant growth regulators produced at least a visible impact on lodging, said Gretzinger.

"The plant growth regulators work insofar as we saw very visible effects in the field," he said. "From one week to the next, we could see more affect where we applied earlier."

But whether variety makes a difference from year to year is "still up in the air," he added.

"Interestingly, last year, cultivar had a huge effect. I don't know if that's because we were so hot and dry, but whatever the impact from last year, we saw 20 to 30 bushel per acre difference between some of the cultivars," he said, adding that the data analysis could show the differences are regionally specific.

"This year, it looks like the yield impact was almost the same for all the cultivars. Esma may be slightly higher, but only but a couple of bushels compared to the other two. Without the statistical analysis, it's hard to say."

"If you're significantly challenged by lodging, it makes sense to figure out what you can do to fix that, especially when it's on a high-value crop like barley the last few years," he said.

"It's going to look different for everybody and from year to year. But overall, if you know lodging is an issue, plant growth regulators are probably worth investigating." FS

Deep banding nutrients may improve nutrient availability

Published research at Farming Smarter stands to answer farmers curiosity across Alberta

BY SEAN KJOS

Researchers at Farming Smarter gauge how deep their fertilizer is going for during the Deep-Banding Immobile Nutrients study in 2021 PHOTO: FARMING SMARTER

From 2018-2021, Farming Smarter completed a three year study with SARDA Ag Research and InnoTech Alberta to compare the effectiveness of annual shallow-banding and once in three years deep-banding of P, K, Cu and PKCU.

In temperate dryland systems, where soils quickly lose their moisture content as the growing season progresses. Growers typically band fertilizers (P, K, Cu) around a soil depth of five centimetres in these conditions, which commonly leads to nutrient stratification in the root zone. Deep-banding fertilizers deeper into the root zone may improve nutrient availability under dry conditions, possibly improving crop production.

This study compared the growth and yield of canola, field peas, and wheat, and the nutrient concentrations in these crops and soils between once in three-year deep-banding and annual shallow-banding.

Trials were held at the three facilities across Alberta to represent a variety of growing conditions for most areas of Western Canada. Three times the recommended application rate for nutrients was used for the deep-banding treatments in 2018 and the recommended rate was used for the annual shallow-banding treatments in all three years. All phases of the pea-wheat-canola rotation were grown at each site to generate nine years of data for each crop.

To identify performance, the density, NDVI (normalized difference vegetation index) and biomass of plants were evaluated, along with crop yields, and nutrient concentrations in seed and biomass between treatments and the control plot. This gave an accurate understanding of how effective deep-banding immobile nutrients once every three years could be.

The research paper, published in the Journal of Agricultural Science includes a discussion on which crops and soil conditions saw improvements with this once in three-year deep-banding and where the typical shallow-banding benefitted.

Farmers and agronomists interested in adopting this practice can learn more about this study and more would benefit from visiting the Publications and Reports page on farmingsmarter.com for published research relevant to Western Canada agriculture. FS

People build Farming Smarter

Each year, Lethbridge Polytechnic students come for hands-on experience in Farming Smarter fields. Here the students help take biomass samples in the hemp research trials. PHOTO: FARMING SMARTER

The new Quonset housed our first annual Field School tradeshow June 2024. Watch for your chance to showcase in here in June 2025. PHOTO: FARMING SMARTER

Rabobank brought a group from Australia to tour Farming Smarter research plots in July 2024. PHOTO: FARMING SMARTER

Farming Smarter entered potato research in 2024. It made capital purchases of new equipment to facilitate the research. Here Carlo, Thomas, and Lewis take the planter to the field to practice. PHOTO: FARMING SMARTER

Farming Smarter added a large Quonset to its compliment of shelters in the summer of 2024. Here all available staff took part in putting the canvas in place. PHOTO: FARMING SMARTER

Farming Smarter attracted over 300 visitors to its Alberta Open Farm Day event Aug. 17, 2024. Participants engage in agriculture at information booths and on a crop tour.
PHOTO: FARMING SMARTER

Try Camelina in your rotations

Farming Smarter explores an emerging crop to possibly bring a new rotational option to producers interested in fall crops

BY SEAN KJOSZ

OPPORTUNITY FOR GROWTH AND SOIL CONSERVATION

Camelina offers farmers a flexible alternative to their regular rotations and could provide a multitude of benefits. Its deep roots assist in moving soil moisture while its canopy protects topsoil from wind erosion. Additionally, it has minimal disease crossover with more common crops in southern Alberta.

While its market presence pales in comparison to oats, barley, wheat, and canola, Trevor Deering, lead of Commercial Innovation at Farming Smarter, believes it merits consideration.

"As long as you have minimal trash, you don't have to worry about what you're seeding into with camelina," says Deering.

Camelina tolerates drought well and interrupts pest and disease cycles that threaten common cash crops. The biggest threat to establishing camelina lies in its tiny seed size. With a well-prepared field, you eliminate the majority of threats towards the crop.

These traits encouraged our curiosity to explore its potential as an off-season cover crop.

CAMELINA EMERGES AS POTENTIAL OVERWINTER PICK

We wrapped the first year of our study examining camelina as an overwinter cover crop at the end of July. Our goal is to evaluate the emergence and winter hardiness of camelina to identify benefits to fields and crop rotations.

The study aims to gather data on as many site years as possible from 2023 – 2026 to confidently inform growers across southern Alberta about the opportunity to include fall-seeded camelina in their rotations.

A late addition to our larger Saving Soils project funded by Weston Family Foundation and RBC's Tech for Nature grant, this study evaluates the performance of fall-seeded camelina in dryland and irrigated fields.

In both environments, the camelina was seeded on two dates in September – an early date in the first week and a later date in the third week – at various rates and depths.

What started as a good year for winter crops with little variance in trials quickly changed with spring.

"We saw some difference between moisture locations, as the irrigated crops emerged nice and early. It looked beautiful going into the winter, as our early seeding dates developed big canopies that gave excellent soil coverage. What emerged from our later seeding dates was tiny," Deering recalls.

Though, as a hard freeze would reveal, an early seeding date wasn't as big of a benefit as initially thought.

"The crops were looking really nice, I thought they were going to be the best. Then we had a hard freeze that took out lots of the early crops. Everything that was seeded later survived much better," Deering states.

Deering believes the seeding dates outlined in the project could yield an optimal window for survivability and canopy coverage. Going forward, special attention will be paid to how each crop stage responds to early spring weather.

FUTURE CONSIDERATIONS UNDERWAY FOR RATES AND DEPTHS

The seeding depths element of the study yielded interesting observations that the team is eager to explore.

Regardless of seeding date, trials with more moisture exhibited better emergence when seeded shallow. Meanwhile, the opposite showed to be true when there was less moisture present in the soil.

Deering is excited to see if the trend continues to exist as the study continues.

Seeding rates didn't demonstrate any noticeable differences, requiring the team to dig through the data to identify noteworthy observations.

Stay tuned for future updates on this project, including an upcoming project page! FS

A low seed rate, shallow depth camelina trial seeded in early September 2023. While it had great emergence, spring frost dealt a heavy blow to the crop. PHOTO: FARMING SMARTER

A plot border and row of our camelina trials demonstrate the variety of crop responses with the chaotic winter and spring weather in southern Alberta throughout late-2023 and early-2024. Photo taken May 2024. PHOTO: FARMING SMARTER

Come July, camelina plots began to improve dramatically as harvest approached. The project left plenty of data for the Commercial Innovation team to parse through!
PHOTO: FARMING SMARTER

Congratulations Dr. Eric Bremer!

BY SEAN KJOS

Dr. Eric Bremer speaks to a group of guests in front of winter crop adaptability trials for a project he and Trevor Deering worked on at the Farming Smarter 2022 Field School. PHOTO: FARMING SMARTER

Dr. Eric Bremer received the Soil Science Industry and Professional Leadership Award for 2024 by the Soil Science Society of America due to his outstanding contributions through education, national and international service, and research.

The award recognizes Bremer's achievement in managing the global use of Plant Root Simulator (PRS) probes for soil nutrient research since 2011.

While working at Western Ag Innovations, Bremer led numerous innovative research partnerships with Farming Smarter. He evaluated new cropping systems, such as winter crops, and supplied continued research into PRS probes.

Through Farming Smarter, Bremer helped producers in southern Alberta improve operations. He's always eager to visit the sites and brings a smile with each visit.

Long time Farming Smarter staff have fond memories of the work Bremer contributed during the early days of the organization. Before there was a dedicated scientist, Bremer was always ready to help if asked. His assistance with statistics and guidance on project or trial designs allowed the team to submit high quality reports.

To them, Bremer's award is well deserved. His practical sense always kept farmers interests at the heart of research.

"Eric's insight helped us build our early brand and reputation. The reassurance he provided emboldened us and put confidence into the research we did," says Ken Coles, Farming Smarter Executive Director.

Commercial Innovation lead Trevor Deering appreciates the unbiased perspective Bremer brings to the field.

"He's diligent and looks at a problem from every angle. Soils are so complex, yet he always brings an unbiased perspective to the field," Deering states.

As Farming Smarter's Commercial Innovation program team lead, Deering researches a multitude of products. Bremer's humble nature and unbiased perspective are what draws Deering to appreciate his products.

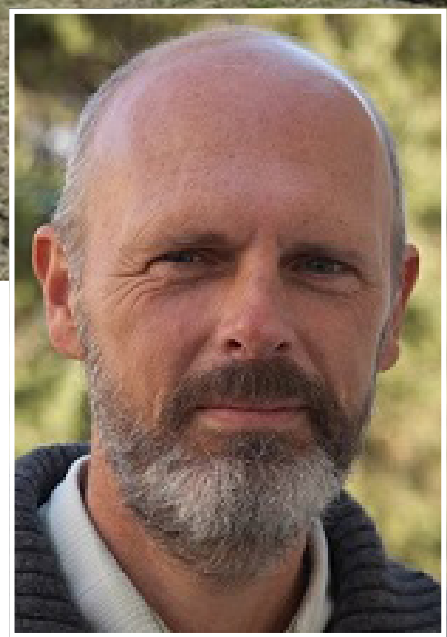
"Eric doesn't sell to sell – he's more eager to expand science and help the farmer – he sells what he sells because it's the right thing and backed by research," says Deering.

Since 2022, Deering and Bremer have worked together on multiple projects to continue knowledge surrounding PRS probes. Bremer also works alongside Mike Gretzinger Research Coordinator of the Agronomy Research program.

"His expertise with the PRS probes is pivotal for our Saving Soils projects. He has fantastic insight on the placement for desirable tracking of soil nutrients," says Gretzinger.

For Gretzinger, Bremer's biggest boon is his ability to stay focused on the purpose of the trial.

"Eric always reminds us to focus on the main project question. It's always back to the objective and then apply the science from there," he adds.



Eric Bremer. PHOTO: WESTERN AG INNOVATIONS

Gretzinger is no stranger to Bremer's lasting insight. Both he and Lewis Baarda, Field Tested lead, attribute Bremer's mentorship on project statistics as pivotal moments in their early careers.

"When I started here, I was doing a lot of work on statistics and Eric's mentorship gave me tools that helped me better understand the full picture," Baarda comments.

Bremer's support and work with Farming Smarter helped not only the full-time staff, but the leagues of annual summer students as well.

One of Bremer's most appreciated traits is his humility and ability to treat everyone he mentors as an equal. It's all smiles when he visits to teach students about the PRS probes as he showcases his exceptional mentor skills.

He demonstrates a phenomenal ability to convey instruction information in a way that's fun yet lasting. Returning students anticipate his visits as they know they're in for a joyful day and new students leave confident in newfound knowledge. FS

Consistency in canola crop

BY LISA KOPOCHINSKI

There was no statistical difference in plant density or canopy closure measures on the type of tillage used. PHOTO: CARLO VAN HERK

Farming Smarter Research Technician Carlo Van Herk shares the main findings from the newly completed Canola Strip Till research project that had plots in Lethbridge, Bow Island, Stirling and Brooks.

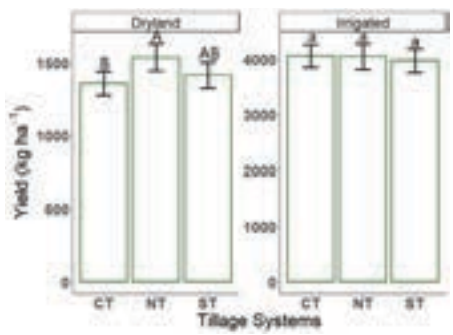
Project findings indicate that precision planters had the most consistent data year to year, through their ability to work well in all environments and field conditions.

In summarizing the results and what he learned, Van Herk says precision planting canola resulted in the highest plant density, quicker canopy closure, and higher seed quality.

"However, it did result in a lower average yield. We had a wider row spacing on the planter to simulate the industry standard for planter row spacing/air drill spacing. If all treatments were planted on the same row spacing, I am confident that the planter would out yield the air seeder treatments."

In irrigated fields, he noted no statistical difference between the types of tillage. In dryland settings, no-till had a 22% higher yield than full till and strip till had a 4% higher yield.

"There was no statistical difference in plant density or canopy closure measures on the type of tillage used," adds Van Herk. "The results of the planter were exactly what we expected, but the tillage results were a surprise. We expected to see differences in irrigated fields, but there was no difference in Canola growth patterns. The only differences were in the soil moisture and soil temperature, where strip tillage was in the middle ground as we expected."



OVERALL PROJECT PROCESS

Dr. Gurbir Dhillon—who wrote the final report—indicated that the project completed six trials under rainfed conditions and six trials under irrigated conditions.

The trials evaluated strip till, no till, and conventional till systems and precision planters, air drills with disc hoe, narrow knife, and spreader type openers seeding systems for canola production in southern Alberta.

Dr. Gurbir says the major findings from the trials indicate that precision planters significantly improved canola stand establishment measured at the 2 to 4 leaf stage and overall stand density measured through stubble counts following harvest.

"Precision planting improved canola stand establishment by 12% to 24% compared to other seeding methods under rainfed conditions. And under irrigation, precision planted stand establishment improved by 24% compared to disc hoe seeding."

Precision planted canola also showed better canopy closure particularly under irrigated conditions. Precision planters facilitate consistent seed placement at specific intervals along the seed row, superior depth control, and enhanced seed-to-soil contact compared to conventional seeding methods.

"Precision planting can also promote better use of sunlight, water, and nutrients thus leading to improved growth and yield."

Tillage methods did not have a notable impact on soil properties— including soil temperature and soil moisture. While the soil temperature was marginally higher at times for conventional tillage and strip tillage methods, compared to no-tillage, the cross correlation between temperature curves was very high (0.95-0.99, $p < 0.05$).

"This indicated little differences in soil temperature trends between different tillage methods within the growing season," he explains.

"Similarly, the soil moisture content was marginally higher for the no-tillage system compared to other tillage systems. However, the differences were not statistically sig-

nificant. Furthermore, tillage systems did not seem to impact canola growth and yield."

Canola yield under irrigation did not differ across tillage systems. However, there was an increase in canola yield under no tillage compared to conventional (13% increase) and strip tillage (9% increase) in rain fed systems.

"The increase in canola yield under rainfed conditions may link to better moisture retention under such systems that may have been critically important due to drought conditions that existed for majority of the project duration," Dr. Gurbir explained.

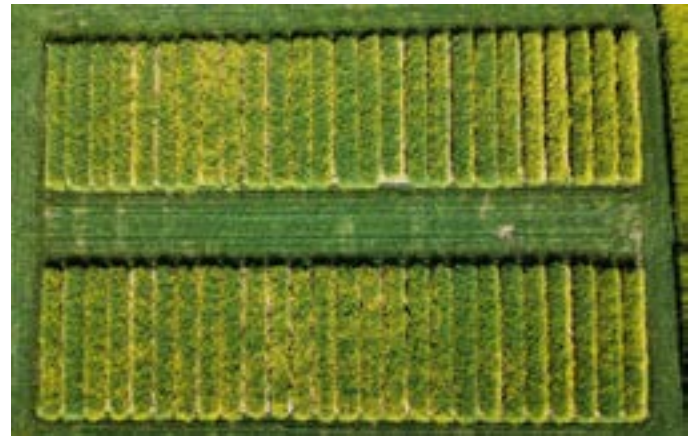
Under irrigated conditions, while the tillage systems did not show differences with respect to soil conditions and canola growth, he added that "conservative tillage systems such as no-tillage and strip tillage can provide ecological benefits such as reduced soil erosion, improved soil health, and carbon sequestration in the long term."

PROJECT OUTCOME AND IMPACT

"The project also indicated that while there is huge potential for precision planting to improve canola stand establishment and growth, precision planter equipment needs to be adapted for narrow row seeding to maximize yield," said Dhillon.

Recommendations are expected to improve canola yield and long-term sustainability, and thus directly benefit the canola industry in the Canadian prairies.

"Canola producers can use the guidelines from this study to improve agronomic practices for improved productivity and sustainability. Similarly, seeding equipment manufacturers may also use the findings of this project to improve equipment design to meet industry needs." FS



Precision planting canola resulted in the highest plant density, quicker canopy closure, and higher seed quality. PHOTO: CARLO VAN HERK

"The results of the planter were exactly what we expected, but the tillage results were a surprise."

– Carlo Van Herk

Support for agriculture often receives lip service

BY LEE HART

In the mid 1980s I worked for Alberta Agriculture in Edmonton as a writer, primarily responsible for production of a weekly newsletter called *Agri-News* that carried a wide range of agricultural information.

It had articles on activities within the department itself. One article I recall was a report I made after talking with one of the provincial District Agriculturists (DAs) who had recently made a trip to the United Kingdom. One of the outstanding features he noted about the U.K. ag industry was that there was little or no government-run extension service — such as there was at that time in Alberta and most of Canada. If U.K. farmers wanted advice on crop or livestock production they hired private consultants.

I wrote the article, which in part described that aspect of the U.K. system. However, the story was killed by the head of Alberta Agriculture's communication branch before it could be published. He said it was in part his job to protect the integrity of the Minister of Agriculture, and he didn't want any farmers to read that article produced by the department and then presume that was the direction that Alberta Agriculture was heading.

That was in about 1986 and boy how the worm has turned.

My assignment for this issue of Farming Smarter newsletter was to write some observations on how government support of the agriculture industry has changed over my nearly 40-year career as an agricultural writer.

As with most writing projects I'm not letting facts get in my way, however I did check with some colleagues in the industry, of similar vintage as myself, just to make sure my memory wasn't skewed by an extended senior's moment.

The provincial and federal government support for the Alberta and Canadian agriculture industry, has changed dramatically over the past 40 years and some might even call it a "catastrophic" change.

I don't believe all change has been bad — there are aspects of change that have actually benefited the industry. But certainly the departments of agriculture we see today are but a shadow of their former selves. Farmers in their early 50s or younger probably have no idea of what the government extension services use to be like.

Lee Hart, back in the 1980s, working an Alberta Agriculture event to announce completion of an irrigation works project. PHOTO: JOHN CALPAS

n a lot of ways as the prairie grain elevators disappeared from the landscape over the years, I've seen a systematic dismantling of government programs and services — both provincially and federally. It is almost a guarantee that the serving minister of agriculture, or even the premier or prime minister of the day will speak glowingly of the important value and vital contribution that farmers and the industry makes to the provincial or Canadian economy, and then in the next budget turn around and cut some long standing programs or services for the sake of "spending restraint during these tough economic times." Agriculture seems to have always been the poor cousin of government spending. Let's face it, agriculture is a major contributor to the economy but really not worth that many votes.

There's a lot of detail I could go into but in general the provincial government has abandoned over the years what once was a strong and trusted agricultural extension service. In the 1990s it began to transition away from the network of generalists known as District Agriculturists and District Home Economists to a network of specialists. The structure changed again in the early 2000s with the elimination of extension specialists positions, and then over the following years there was a further, ongoing downsizing and reduction of extension services.

The pool of extension specialists got smaller and smaller, like the water level in a dugout on 30 degree days. A few years ago I could still call the Ag Info Centre in Stettler and hopefully connect with an extension specialist on some topic but now even those people are gone.

That was the extension side, and the department's research capacity has experienced similar atrophy. Back in the 1980s and 1990s there was an extensive network of research scientists conducting a wide range of research across many crop and livestock disciplines. Research results with the latest

information on crop and livestock production were published and available to producers in the department's Agdex files.

During restructuring in the early 2000s about half of the department's research capacity was eliminated and the remainder went with budget cuts in 2018-19. Some of the research work was shifted to colleges and universities, but certainly not all. Applied research associations have picked up some of the slack, but those organizations are always in scramble to find research dollars as well. And most of their efforts are regionally focused.

The provincial government did in 2020 create a producer-directed research organization called RDAR (Results Driven Agriculture Research). While it allocates millions of dollars to a number of research organizations one criticism I heard is where are the published results? Four years down the road in funding research and there are no published research reports on the RDAR website.

I could tune into Alberta Agriculture's weekly radio show Call of the Land which has been on the air for 60 years and reaches 110,000 listeners to hear about what's new in agriculture, but oh, wait that's been cancelled too.

If I do search Alberta Agriculture website, I don't see any people working there, but there is a directory of Agdex research reports... it looks like some of the most recent updates are about five years old, with many of the Agdex reports being 10, 15 or 20 years old. I did read somewhere that agriculture industry technology and production practices have changed in the past 20 years, but that could just be a rumour.

The changes in the early 2000s which paved the way for private crop, livestock, and farm business consulting services, I believe has been a good thing. Why not? The industry has matured, it has become more specialized, there is no reason farmers can't pay for services that help them improve production and efficiencies on their farms.

One criticism I do hear about is a great need for a proper, co-ordinated, independent, agriculture research program for the province. There are bits and pieces of good research going on here and there but there is no structure to co-ordinate research efforts across the province and then publish reliable information that farmers and even independent crop and livestock consultants can access and use. And there are many areas of agronomy, crop protection and overall management that don't get addressed at all.

As I was thinking about this article, for some reason I was reminded of an old farm joke about a three-legged pig.

One day a man drove by a farm and saw a three-legged pig. The man went up to the farmer and said, "Excuse me, but why does that pig only have three legs?"

"You see that oil well on the south end of my lower 40?," said the farmer. "Leroy done dug that up when rooten' for truffles. And last year when the house caught fire in the middle of the night Leroy busted down the door and came in and woke us all up. And another time the pig saw a big storm coming and we didn't. The pig ran into the house and dragged us all out to the storm cellar. If it weren't for that pig we would all be dead. Yes Siree... that's a valuable pig and it's now a part of our kin."

The man said, "Well, Leroy is certainly a smart and valuable pig. But you haven't told us why it only has three legs."

"Well," said the farmer, "with a pig that special... you can't eat them all at once."

Lee Hart is a long-time agricultural writer based in Calgary. Contact him at 403-815- 3719 or by email at: leehart2537@gmail.com FS

Fertilize for your crops — not your dad's

BY JENNIFER BLAIR

PHOTO: FARMING SMARTER

Next spring, farmers across Alberta will plant recently released varieties mostly with modern seeders — and then using 30-year old recommendations when it comes time to fertilize those crops.

Farming Smarter wants to fix that. It has a proposal to modernized fertilizer recommendations to match new equipment and cultivars.

"Most of the official fertilizer recommendations occurred 20 to 30 years ago. Much has changed in that time," said agronomist Rigas Karamanos, leading the funding proposal with Farming Smarter. "There are now new cultivars with higher yields and different nutrient use efficiency, but we don't have a recent calibration of fertilizer recommendations. We need to do some work on that," he says.

The most recent calibration of fertilizer recommendations for wheat, barley, and canola in Alberta happened between 1991 and 1993, with another small project in the early 2000s. Since then, new enhanced efficiency cultivars and fertilizers have come onto the market, changing both the yields farmers can achieve and the rates at which they need to apply fertility.

"In the '80s, the average canola yield was 22 bushels an acre. Now if you look at the 2010s and 2020s, the average is 42 bushels an acre," said Karamanos, adding that nitrogen use efficiency has also improved during that time.

"The nitrogen use efficiency of canola was 3 lbs per bushel. When I did the work with the newer cultivars, it came up between 2.1 and 2.3 lbs per bushel, which means they're getting much higher yields but the nitrogen use efficiency is much better."

But the official fertility recommendations haven't kept pace with the new varieties or fertility products on the market, he said. As a result, farmers risk over- or under-fertilizing crops, and with the price of fertilizer today, they may be spending "a whole bunch of money without knowing if it's necessary."

"People are applying more nitrogen, but we are not quite sure whether we are over-applying or under-applying based on the new cultivars," said Karamanos.

"We don't have clear data to tell us what the updated recommendations should be. That's the whole point of this project — to make sure farmers have the right fertility recommendations for the new cultivars."

The project will look at developing nitrogen fertilizer recommendations for irrigated crops in southern Alberta like wheat, canola, corn, and even potatoes. The primary goal is to develop nitrogen response curves using new cultivars and enhanced efficiency fertilizers.

"There are a lot of enhanced efficiency fertilizers that have come into the market in the last few years, and we want to know if they improve the yields as well as the economics for the farmer," said Karamanos. "Normally those enhanced efficiency products are quite a bit more expensive than the usual products, so we want to make sure we're making recommendations to farmers that are based on solid scientific information."

If funded, the project will take three-to-four years, with four trials a year. But in the meantime, farmers who want some confidence that their fertility rate is the right one should get a simple soil test.

"The No. 1 thing is to do a soil test," said Karamanos. "If you don't have the right rate, you're not going to get the best return, and if you don't know what's in your soil, how are you going to decide on the right rate?

"I think it's extremely important to have a soil test and then base your decisions on that." FS

chinook treaters
mobile seed treating

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