FARMING SMARTER

SPRING 2025 EDITION

FARMING SMARTER SET TO BOOM

Summer research technician George Joseph Jr. checks crop vigour with a GreenSeeker in *Farming Smarter*'s plots.

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President's Message

Better Neighbours
After Travelling to Brazil

Ryan Mercer
Farming Smarter Board President

What an eye-opener! I'm so glad I joined *Farming Smarter* on its trip to explore Brazilian agriculture. Even a country that seems to have little in common with Alberta taught me unexpected things. Brazil seems very different with its main crops of corn, soybean and cotton grown in a climate that bathes them in rain. Ironically, they farm in a jungle and we farm in a desert, but we use the same tools.

Brazilian farmers began to adopt no till in the 1970s to combat water erosion and have more years using planters than most Alberta producers. The trip so invigorated my appetite for learning that now I visit farms and talk to foreign agronomists whenever I can.

About 23 of us went on this journey. We were a mish-mash of farm type, age, experiences and locations in Alberta. Once there, we became a family. We were a small knot of Canadians travelling around, learning, sharing and watching out for one another.

The group that travelled together formed deep relationships that will last for years and possibly generations. We got to know each other even better and found new friends. We had recent high school graduates and retired farmers on this trip and we all came home connected through breaking bread together and sharing both trials and joys in a foreign land.

Now we have a WhatsApp group and keep in touch. We ask questions about operations, crops, concerns and ideas. We solidified into a small network that shares stories and helps each other. No one has time to go to every conference, field day, or crop meeting, but when you belong to a network, you get the information you need. A couple of our group attended a crop commission meeting in Edmonton and took our southern Alberta concerns to that meeting from all of us. A solid network is many hands making light work.

Farming Smarter excels at executing events where the people have lots of time to form new relationships and join its network. Developing an agriculture innovation network is a key outcome for the organization. Its events always include interesting speaker sessions punctuated with time for tasty snacks, meals, and time to sink your teeth into conversations.

This group started as acquaintances and became family. Credit: Ryan Mercer

This is the function that builds a community of peers to support each other. A *Farming Smarter* event will put you in the same space with college students, agronomists, industry representatives, scientists and other producers. You will see which businesses support our industry here and listen to experts with ideas to improve your operation.

The agriculture industry needs strong networks to carry our voices out into the public domain where all Canadians can know that we grow safe food for families. With agriculture representing only 2% of the population, the other 98% need to have confidence our industry is modern, innovative and responsible. It can affect our right to farm, where we fit in provincial and federal budgets, and why they might prefer to buy Canadian.

I cannot stress enough that *Farming Smarter* is an existing community where you can find a home. Regardless of your interest or expertise, you will find a place to fit and contribute to the well-being of agriculture in southern Alberta. In return, the network will supply you with useful interactions, strong relationships and money making opportunities no matter what your role in our industry. Put the Field School, June 25-26 in your calendar and join our exhilarating network.

See you there. FS

Executive Director's Report

Farming Smarter Set to Boom

Ken Coles
Farming Smarter Executive Director

Ashley Wagenaar, Evrett Krippl and Lewis Baarda take a first run on the newly purchased potato harvester. Credit: *Farming Smarter*

Much like the growth of a farm, our business builds slowly and then takes big leaps such as taking on more land to justify an additional combine. We feel we're at that point. We built internal capacity, worked diligently on meaningful grant applications, grew relationships with new clients and funders and now need more land to take on new challenges.

I think the timing is right as farmers, value-added processors, agronomists see the diminished output from years of funding cuts to production-based research and extension. The shift to post-secondary institutions faces challenges with budget cuts while political attention turns away from agriculture. Even though the demand for innovation keeps growing, the ecosystem our industry needs for success becomes fragmented and dysfunctional.

Luckily, *Farming Smarter*'s innovation engine is out of the shop with new performance mods ready to launch. We can meet the needs of southern Alberta farmers and supporting industries. Armed with an ambitious road map, a.k.a., a new 5-year strategic plan, we have set a new course to supercharge on farm performance.

Fueling this plan includes over a million dollars in capital purchases, new focus on the value-added irrigation sector and efforts to truly implement digital agriculture in practical and achievable ways that go well beyond all the hype.

The team continues to develop expertise and we attract new employees and hoards of passionate students dedicated to excellence in all that we do. I encourage you to get involved in any way possible whether it's attending an event, subscribing, donating, collaborating on a project or simply putting a good word out for us. We appreciate every bit and the whole industry will be better for it.

Best of luck and we'll see you on the track! FS

Orville Yanke Award

Preserve and Build: Full-Circle Soil Conservation

by Natalie Noble

Kevin Auch, Carmangay, Alta. received the *Farming Smarter* Orville Yanke Award for 2025. It's a full-circle moment for this soil conservationist who frequently shares his perspective for the greater good of the farming community.

"I knew Orville personally and visited his farm when he farmed. I saw his equipment and what he did back when I started farming," said Auch. "Orville was one of these guys I looked up to and considered a mentor at our Southern Alberta Conservation Association (SACA) board meetings. Some of these innovators, including Doug Wright and Richard Fritzler, had great influence on my desire to improve our soil's productivity."

It's a priority Auch preserves. "It comes right back to the farm gate, what we're selling and how we market our products," said Auch. "I want to see farmers succeed while remaining sustainable. It's been an honour to be a part of that. As an industry, remaining profitable into the future without sacrificing soil quality is important to me. I've seen the soils on this farm improve dramatically in my lifetime."

Purchased by his father in 1963, Auch's operation grew to over 5,000 acres of owned and rented land southwest of Carmangay, Alta. The family's current annual crop rotation evolved as they discovered what keeps the soil from eroding. Today's five-year rotation is Yellow peas, canola, durum wheat, flax (or flax/chickpea intercrop), then spring wheat.

> **"The future of agriculture depends on preserving some of the things we've learned but also adapting to future challenges. — Kevin Auch"**

At times, Auch includes barley and/or winter wheat according to weather and market conditions.

"There are agronomic reasons to be in a longer rotation because you allow your herbicides and other pesticides to have greater efficacy when you change those groups," said Auch. "With some of the resistances we see to our tools on the farm to combat weeds and other pests, it's becoming increasingly important."

Auch loves sharing these findings. "I've always had a desire to help the farming community," he said. "My father understood well the negative effects [wind erosion] had on our soil quality and productivity. As I grew up, he instilled in me a desire and practiced farming methods available at the time to preserve and improve soil quality."

Kevin and Laurel Auch.

Rob Dunn presented Kevin Auch with the 2025 Orville Yanke Award. Credit: Farming Smarter

Conservation practices developed out of a necessity to stop wind erosion and negate the soil degradation plaguing southern Alberta farmers since the settler days, Auch said. That includes innovations such as the Noble blade allowing more crop residue to remain on top of the soil and growing high residue crops like fall rye, effective in stabilizing soil from further erosion.

"Leapfrogging ahead to no-till and longer crop rotations, we've seen marked improvement in soil quality and consequently, soil productivity," said Auch, adding he can literally see increased health in his soil conditions. "Today, there's so much life and activity in our soils that we don't need to till. In fact, on my dry land, I think I'm going to throw another cereal in there to get more residue on the surface."

Since starting out with SACA, Auch served on research committees and member organizations including the Western Grains Research Foundation, Alberta Pulse Growers, Cereals Canada, Alberta Wheat Commission and more, seeking improvement practices and technologies that support growers to remain productive and profitable.

"The practices that Orville pioneered, we've worked to build upon on our farm," said Auch. "The future of agriculture depends on preserving some of the things we've learned but also adapting to future challenges." FS

Mentorship, Opportunities, and Navigating the Challenges in Agricultural Research

by Tim Parent

Agriculture is the backbone of the Canadian economy, but for those interested in pursuing a career within the industry, particularly in agriculture research, it can be a challenging path to walk.

Ashley Wagenaar, Conservation Agronomist at *Farming Smarter*, began her career on the processing side of agriculture. Her interest in broadening her knowledge base is what led her to join *Farming Smarter* where she is focused on research.

"Within an industry and on farms, we all love the idea of conducting research and investigating new ideas and new products," says Wagenaar. "When I saw this role with *Farming Smarter*, I thought it would be a great way to broaden my horizons and do some research in areas of different crops and different strategies." She points out, however, that research often takes a backseat to operational priorities for farmers and industry professionals despite its importance for advancing agricultural practices.

Ken Coles, *Farming Smarter* Executive Director, agrees. He highlights a significant gap in ag research and its extension to farmers, stemming from government cuts and changes in focus. It has led to a lack of meaningful connections. "We've created this chasm where nobody is actually interacting with farmers or agronomists," he explains. "This disconnect hinders understanding of the real challenges faced by farmers and the ability to provide practical solutions."

To help address these issues, *Farming Smarter* implemented mentorship programs and hires young scientists to train in practical agronomy, but rebuilding human capacity remains a challenge. Fortunately, *Farming Smarter* hired a mentor to help develop Wagenaar's skills. However, such opportunities are rare. "There's no easy way to find a mentor or get training," she says. "Learning in this field is largely on the job and finding a mentor happens through luck or your own targeted research. It's really the only way of doing it."

Another challenge job seekers face in agriculture research is its reliance on niche expertise, which often leaves professionals with deep knowledge in one specific area but significant gaps in others.

"I spent 10 years in the processing industry working with specialty vegetables and potatoes," Wagenaar noted. "But ask me about a wheat crop, and I would have absolutely no idea. Yet, it's all-encompassed in agriculture. You have nutrients, chemical fertility, and the practical side of farming equipment. There's all these different avenues you must know to be relatively successful, and nobody's training that."

> **Learning in this field is largely on the job and finding a mentor happens through luck or your own targeted research. It's really the only way of doing it.**
> **— Ashley Wagenaar**

Wagenaar and Coles agree the industry and educational institutions need to do more to address these challenges. Wagenaar recalled attending an ag event meant for students, but it had been scheduled during exam week. Students were a no-show. She believes such efforts need better planning and execution to have a meaningful impact.

On the industry side, the Canadian agricultural sector has, historically, struggled to promote itself as a field for developing

Ashley Wagenaar and Carlo Van Herk plant different summer cover crops in a simulated hail damaged winter wheat crop. Credit: *Farming Smarter*

research skills. It is often overlooked in favour of traditional lab-based science. Coles notes farmers have discouraged children from pursuing a career in ag. "At one point, we were discouraging people, and even our kids, telling them to stay away from ag as it wasn't seen as a viable industry."

The situation has improved with greater recognition of the diverse career opportunities in agriculture. Grants and initiatives now aim to attract talent. These address challenges in research and on farms where complex tech and equipment demand skilled labour that remains difficult to find.

As the industry continues to evolve, addressing these recruitment and training gaps will be critical to its success. While the industry lacks all the formal pathways to connect job seekers with opportunities, most professionals are open to mentoring and offering advice and guidance. "Don't be afraid to reach out," Wagenaar advises. "People in agriculture are incredibly supportive and happy to share their knowledge," Coles adds understanding the realities of the industry, including its demands and rewards, is essential to achieving your own goals and success.

"Agriculture is more than a job, it's a commitment," he says. "If you're ready to embrace that, the opportunities are endless." FS

Research Puts Kochia in the Cross Hairs

by Lee Hart

"Farmers want to know what to do about kochia," says Lewis Baarda, *Farming Smarter*'s Field Tested Manager.

To get farmers the answers they need, *Farming Smarter* teamed up with several weed scientists for a comprehensive Western Canadian look at how best to control and manage kochia — a tenacious, increasingly herbicide-resistant weed that is among agriculture's top weed control challenges.

No one expects a "silver bullet solution" says Baarda. The hope is that by applying a combination of various chemical treatments and cultural practices over a wide range of growing conditions, researchers will create recommendations to curb and slow down the spread of the alarmingly adaptable weed.

"Particularly in the past 10 years it is amazing how kochia adapted itself to become resistant to a growing number of agricultural chemicals," says Baarda. "At one time it was considered a problematic weed mostly within southern Alberta, but now we receive reports from across Alberta as well as many parts of Western Canada."

He adds *Farming Smarter* engages in the comprehensive kochia research projects on a couple different levels. Realizing that much of the existing kochia research work took place on productive farmland, *Farming Smarter* will launch in 2025 a three-year, small plot and field scale research project in southern Alberta. It will specifically look at how to manage or control kochia on marginal cropland prone to saline soils. Estimates vary, but it's believed there are anywhere from 2.5 to five million acres of cropland in western Canada affected by some degree of salinity.

As well, *Farming Smarter* is also involved in a complimentary prairie-wide research project, led by weed researcher Steve Shirtliffe at the University of Saskatchewan. This project looks at kochia management and control options more specifically in pulse crops. Saskatchewan Pulse Growers (SPG) invested $3.67 million in total in five weed research projects.

One aspect of Shirtliffe's research project looks at the interaction of salinity and kochia, which ties in nicely with *Farming Smarter*'s research project. The research seeks ways to manage the weed in high salinity areas, which will lead to other management methods.

Kohia collects on fences when blown by the wind. Credit: *Farming Smarter*

Baarda says the adaptability of kochia makes it a complicated weed to attempt to control.

It can emerge from the ground as early as March or April, long before any other plant.

It has a long emergence window, with emergence occurring after post-emergence herbicide application.

It can tolerate heat, drought and saline soil.

The weed commonly produces 15,000 to 20,000 seeds annually and up to as many as 100,000 seeds in its life span.

Kochia's short-lived seed bank of one to two years means a population turns over and evolves quickly, allowing resistant plants to multiply rapidly.

As a tumble weed it is ideally suited to spread seed. The wind can break the plant which then tumbles and spreads seeds as much as one kilometre.

And on top of all that Kochia can self- and cross-pollinate, which allows for the spread of resistance traits between plants. The first case of kochia herbicide resistance was identified in 1988 with resistance to Group 2 products. In the past 15 years the weed developed resistance to Group 4, 9 and 14 herbicides.

Baarda says *Farming Smarter* has undertaken several kochia research projects over the years but hasn't looked specifically at control measures of the weed on saline soils. "Depending on the year and growing conditions those saline areas are often where the weed flourishes and then can spread seeds to the rest of the field and to neighboring farms," he says.

Over the next three years *Farming Smarter*, working with farmer co-operators across southern Alberta will establish both small scale and field scale research plots on cropland affected by medium or mid range soil salinity.

Treatments will include seeding plots in a three-year rotation with canola, wheat and lentils, all seeded at double the seeding rate. Technicians will monitor the plots to see how well they perform in saline soil and determine if the higher seeding rate helps to cost-effectively suppress kochia.

"We will also apply an herbicide program including chemfallow, and other cultural practices such as tillage, mowing, cutting hay

and seeding salt tolerant forages on these saline sites," says Baarda.

"The goal is to see if there is some combination of chemical treatments and cultural practices that helps to control kochia," he says. "I talked to one farmer in the area, for example, who has 600 to 700 acres of saline soils and they, like many others, are looking for answers."

Over the next six years, the prairie wide research projects, funded by SPG, will also look at using a combination of chemical and cultural practices to control kochia and other weeds in pulse crops.

The research will look at developing and applying effective weed control strategies, building information to support herbicide label expansions, and lead to recommendations on new herbicide options in pulses, including tank mixes and layering strategies.

Work will also investigate cultural methods to reduce the impact of weeds in pulses. Along with research into managing kochia in saline areas, other measures include cultural weed control under varying levels of pre-emergence weed control, and strategies to reduce the weed seed bank. The research includes looking at using mechanical devices attached to the combine to destroy weed seeds at harvest.

Along with kochia control, the research program will also work to identify weeds or even rotational cover crops that can serve as alternative hosts to common pulse crop diseases such as *Aphanomyces* and *Fusarium spp.*

Baarda says as we apply various treatments it is important to also consider cost effectiveness. The U of S research will also investigate the impact of not being able to use a cost-effective herbicide such as glyphosate in cropping systems.

While Steve Shirtliffe leads the main, prairie-wide research project to create kochia

Kochia growing in a saline patch at the side of a field. Credit: *Farming Smarter*

management recommendations, also working on related weed research projects are Shaun Sharpe, research scientist at AAFC Saskatoon Research and Development Centre, Breanne Tidemann at AAFC Lacombe Research and Development Centre, Charles Geddes with the AAFC Lethbridge Research and Development Centre, Dilshan Benaragama at the University of Manitoba and Jessica Enns at Western Applied Research Corporation in Scott, Sask. FS

Rethinking Soil Carbon: Scientist Advocates for 'Stewardship' Over 'Sequestration'

by Tim Parent

Sequestration, long used to describe the storage of carbon in soil, may no longer adequately capture the dynamic nature of soil organic carbon (SOC) argues H. Henry Janzen, Honorary Research Associate at Agriculture and Agri-Food Canada in Lethbridge, Alberta in an article published in the European Journal of Soil Science.

Instead, he proposes a shift in vocabulary to stewardship, a concept that captures the full range of SOC's roles and focuses on managing carbon flows in ecosystems with a long-term, holistic approach.

Sequestration has historically conjured up the image of carbon being locked away in the soil and removed from the atmosphere. The goal has been to fight climate change by cutting down CO_2 levels in the air. However, new research shows that SOC is naturally dynamic. Carbon in soil comes in many forms, all of which can break down and change over time. There's no single, stable form of carbon that can promise long-term storage, which makes relying solely on sequestration a less practical solution.

Janzen believes stewardship better reflects the reality of soil carbon dynamics. Unlike sequestration, stewardship doesn't rely on the idea of permanence but instead, recognizes SOC's constant turnover and its broader ecological functions. He notes this approach opens the conversation, encouraging scientists, farmers, and policymakers to think beyond just boosting soil carbon.

It emphasizes the importance of preserving what is already there and managing how carbon flows through ecosystems. It also encourages scientists to ask whether carbon really needs to be stored in stable forms to fight climate change or if the natural flow of carbon through ecosystems might be just as important, if not more.

Finally, it pushes the agricultural community to look at all the benefits of soil organic carbon, like boosting soil fertility, improving water retention, and supporting biodiversity, instead of focusing solely on climate mitigation.

Janzen notes using the word stewardship also raises a big question: who are we managing soil carbon for? He argues that the

A field prepared for potato planting of *Farming Smarter* research trials. Credit: *Farming Smarter*

question further expands the conversation, forcing researchers to consider the social and ecological reasons behind their work. It also invites a broader range of voices, from farmers to policymakers to creative thinkers, to help shape the future of sustainable land management.

While Janzen sees stewardship as a promising alternative to sequestration, it might not be the final answer. He suggests we need even more inspiring and precise terms that reflect humanity's responsibility to live in harmony with the carbon cycles that sustain life on Earth. FS

Surprise Water Engagement Process

by Kristi Cox

When Alberta Irrigation Districts Association (AIDA) first heard about the Alberta Environment and Protected Areas (AEPA) plan for a public Water Availability Engagement process, they were taken by surprise and concerned.

Were they reworking the Water Act? Would licenses be maintained? As they've moved through the process of meetings, open houses, webinars and town halls, there is finally some reassurance for the stability of irrigation water supply, but the irrigation districts have yet to hear a clear explanation of what precipitated this process, and the recommendations as a result of the engagement remain to be seen.

The first any irrigation districts heard of this was through an invite to the Alberta Irrigation Districts Association.

"The AIDA was invited to a meeting with (AEPA's) Minister Schulz, where she let us know that there would be a water availability engagement" said Margo Jarvis Redelback, AIDA's Executive Director. "That meeting happened right before the engagement went live to the public."

Chris Gallagher, General Manager of Lethbridge North Irrigation District, explained that he did not feel irrigation districts were adequately consulted in advance of this engagement process.

"We really don't know where this came from," said Gallagher. "We were blindsided by it. (At first,) it was only shared within the Water Advisory Committee, and they were under a non-disclosure agreement not to even share it with us."

When the AIDA requested to review public documents to ensure accuracy, they found several factual errors.

"We looked at it in terms of an opportunity to work with the government to help them avoid missteps, said Gallagher."

The AIDA recognizes the importance of reviewing water management strategies as there are areas of the province that are impacted by low water availability. The AIDA worked quickly together with all the irrigation districts to identify and outline 13 suggestions for improving water access within the province. Their fundamental concern is that even the perception that the government is going to open the Water Act could have implications for the irrigation sector.

AIDA presented 13 water access improvements focusing on legislation/policies, efficiency, and infrastructure. Key ideas include removing holdbacks on water transfers, easing irrigation restrictions, and involving environmental groups to protect rivers. Further, better reservoir management, upgrades to water conveyance and wastewater treatment infrastructure, and modern technology aim to balance growth and sustainability.

The engagement process included a webinar, four in person events, and an online survey. In southern Alberta, an open house in Fort McLeod and a town hall in Lethbridge were packed, with the irrigation sector well-represented.

George Lohues, Board Chair for the St. Mary River Irrigation District shared his concerns at the January 8 Lethbridge Town Hall,

Irrigation pivot on a canola crop in southern Alberta. Credit: *Farming Smarter*

with Grant Hunter, Rebecca Schulz, Jason Hale, John Conrad, Kate Rich, Jaclyn Schmidt and Michael Seneca on the panel. He outlined the points he made in a phone interview.

"Irrigation agriculture in southern Alberta is based on the certainty of water," Lohues said. "Any threat to that certainty is damaging, even if it's perceived. Without high value crops such as potatoes, seed canola, sugar beets, and edible beans, irrigation farmers cannot make the investments needed to be successful.

Food processors need certainty to supply product to customers. They come to southern Alberta because we can provide them with an almost guaranteed crop, and our water is a key. So you can understand that any threat, real or perceived is taken very seriously. I am happy to say that at the most recent public engagement event in Lethbridge, government officials assured us that there are no intentions to change irrigation allocations or negatively impact irrigation agriculture, and that was very welcome news. The Government of Alberta has been very supportive of irrigation agriculture and understands the impact of our industry on the economy."

In response to a letter of concern sent by Lethbridge Northern Irrigation District regarding this process, AEPA Minister Schulz sent a reply including the following statement:

"… I've been clear with Irrigation Districts that we're not looking at scaling back licenses. First in time, first in right water licenses will be respected by this government."

When contacted for an interview, Minister Schulz's Press Secretary, Ryan Fournier emailed the following statement:

"We know many have strong opinions about water and how it should be managed. At the same time, population growth, economic

growth, droughts, floods and other factors are challenging the water management system in Alberta. We need to look at ways to maximize our supply and make every drop count for generations to come.

Since last fall, we have been engaging with the public and experts to hear ideas about ways to optimize the water management system in Alberta, while continuing to protect the aquatic environment…

We are not proposing any specific changes, and no decisions have been made."

(At the time of publication, the opportunity to contribute to the first round of engagement is closed)

When asked what the next steps will be, as well as what precipitated this process, Fournier offered the following emailed response:

"We will be closely reviewing all the feedback received and assessing how to move forward to strengthen Alberta's water management system. Once those decisions are made, there will be future opportunities for Albertans to give input on specific potential policy changes that are considered.

We will keep working closely with all Albertans to address opportunities and challenges to enhance the water management system and increase water availability."

There was no response to a further request for comment on what precipitated this process.

"If we have neighbours who need water that is critical to the development and expansion of our communities and our society, we need to be aware of this. We can be part of a solution," said Gallagher. "If we're not even given that opportunity, that's a concern that Alberta Environment feels it's within its regulatory purview to step in and ignore the existing Irrigation Districts Act and Water Act."

Redelback found the mention of a second round of engagement encouraging.

"We are pleased that AEPA indicated that there will be a second phase of engagement, and that phase hopefully should allow further conversation on some of the suggestions or potential opportunities that they received in phase one," said Redelback.

> **"We looked at it in terms of an opportunity to work with the government to help them avoid missteps. — Chris Gallagher"**

"We want to be clear that we want to protect those with irrigation licenses and their right to use that water for irrigation purposes following good stewardship practices that we've developed over decades in this province," said Gallagher.

"We can handle the insecurities of our climate," Lohues stated. "But we need to have security from our government with our (water) regulations." FS

Farming Smarter Fills a Void
Where to Find the Extension You Need

by Natalie Noble

In a world flooded with bad news, good news often gets lost. While lots heard of massive government cutbacks to Alberta agriculture over the last two decades, they may not know that *Farming Smarter* quietly picked up the slack.

As *Farming Smarter* executive director Ken Coles says, "We're doing a lot more than people realize, but maybe we haven't shared that enough with folks."

Likely the largest, and certainly the most diverse agriculture research organization in Western Canada, *Farming Smarter* fills the void left after federal and provincial governments withdrew research and extension programming.

"We've recognized we're probably the leading experts in a lot of different areas, which is humbling and terrifying at the same time," said Coles. "There used to be much more public-focused expertise that doesn't exist anymore. I'd like people to recognize that we're starting to get nervous, and farmers probably should too."

Meanwhile, *Farming Smarter* forged on to ensure southern Alberta growers and industry stay connected and informed to remain world-class producers. Where many research organizations hold a tighter concentration, *Farming Smarter* is positioned as a team of agronomy and technology experts who execute vast projects including nutrient management, soil health, weed management, herbicide efficacy, climate change expertise and conservation cropping, greenhouse gas management and mitigation, and novel crops.

Testing new crop types and regional adaptability for southern Alberta, including dryland and irrigation, are also primary focuses. *Farming Smarter* seeks opportunities for southern Alberta growers, including value-added industries such as potatoes, sugar beets, dry beans, peas, sweet corn and seed canola, all with unique practices and challenges.

"We have a strong science lens, but we also understand farmers logistical constraints," said Coles. "We know how to apply and understand technologies, where they do and don't fit, and what's practical. It's incredibly complex, diverse, exciting and interesting."

Within those diverse priorities, the *Farming Smarter* team are generalists and connectors within all arms of the industry, leveraging specialist partners when needed. "We find out farmers' priorities and build solid agronomic studies that address, answer and solve those problems," said Coles.

To do so, *Farming Smarter* employs one full-time and two contracted scientists that support its research programs with a small plot approach. They also have an industry-focused commercial innovation program. There's field scale research along with irrigation cropping and technology. Then, the networking and communications team ensures the knowledge gets to those who need it.

In contrast to larger public research organizations where a scientist might conduct an average three projects per year, *Farming Smarter*'s scientist touches approximately 60. With one foot in the farmer's field and one on the industry side, they create links between researchers and farmers/agronomists while also holding the ability to execute their own events.

"When you tie it all together, we have a really unique package of expertise, as well as being connectors," said Coles. "We see ourselves as an innovation hub. We're looking at the entire system for opportunities, connecting the dots and applying whatever approach necessary to help the farmer."

As a Canadian charity and not-for-profit organization, innovation drives *Farming Smarter*, not dollar signs. That allows the team to work at the pace of a business while maintaining the public good. Avoiding typical public-related red tape, efficiency rules.

"We can punch out projects similar to those with a private company focus. That allows us to work with industry," said Coles, adding that *Farming Smarter* currently has over one million dollars' worth of industry-related research contracts.

"It gives us a neat perspective on industry trends, where they seek new information and how they're developing businesses to support farmers. At the same time, we're able to connect with farmers, to understand their businesses, real issues and what matters to them."

Farming Smarter initiated potato research projects in 2024
Credit: *Farming Smarter*

While it can take 10-15 years to feel the impact of government cutbacks, *Farming Smarter* projects take a shorter timeline. "It doesn't take much more than two or three bad years before a farmer is out of business. It's such a tight margin, risk management-based business. They continually have to figure out how to get the wins," said Coles.

To keep up, *Farming Smarter* gradually acquired over three-and-a-half million dollars' worth of research-based equipment to work with anything from small grains to potatoes, irrigation equipment, storage, trucks, trailers and five tractors. That inventory allows the team to take a localized approach that southern Alberta farmers value.

For example, they recently dove into potatoes. Where historically relying on data from other areas such as Idaho, it turns

out growing potatoes in dryland southern Alberta is different.

"Learning in the potato industry has been eye-opening," said Coles. "I had all these assumptions that were false. It's an industry that honestly benefits from local work."

At *Farming Smarter*, growth is more than acres and dollars. It's people. The team is now 10 full-time staff and grows to 27 in summer.

"We also hire a lot of students and that ends up being a tremendous part of our summer workforce," said Coles, adding that it allows them to conduct over 150 research trials across 10,000 research plots.

Last summer they mentored 17 summer students. To put that in perspective, larger ag-focused post-secondary institutions in Alberta typically take on less than 10 despite drastically larger research dollars invested. It's a win-win, attracting new talent.

"We work with students not even engaged in the agriculture industry," said Carlo Van Herk, field operations lead and former summer student turned six-year employee. "They work here for the summer, and we flip their world upside down. Suddenly, some change their majors because they love working here so much."

> **We can punch out projects similar to those with a private company focus. That allows us to work with industry**
> **— Ken Coles**

Van Herk said continuous learning and project diversity make *Farming Smarter* an ideal workplace. "You're working with farmers, agronomists, industry company owners. You work from the beginning to the end of the chain. It's all connected, and that's pretty cool."

Appreciating the value of legacy knowledge, *Farming Smarter* provides mentorship excellence with experienced minds like lifelong scientist and extension expert Dr. Rigas Karamanos.

"He has a wealth of knowledge and loves to contribute," said Coles. "Those people aren't going to be around much longer. We're taking advantage of that, building mentorship and training new staff to step up."

As they expand, *Farming Smarter* fills gaps, connects people and supports both the farmer and production sides of the industry in value-added businesses that turn primary products into more. "We continue to learn and offer that perspective, that powerhouse ability of developing more reliable knowledge and wisdom in production practices," said Coles.

"When we delve into an industry, we really learn it," said Coles. "We're able to look at it from an outside perspective. In addition to farmers, industries and grower groups, we're experts at learning and developing solid research and extension programs to support the entire industry." FS

FARMING SMARTER SCORES ON STRATEGIC GOALS

Thierry Fonville and Ashley Wagenaar give a run downof hail re-cropping and cover cropping options at 2024 *Farming Smarter* Field School.

Farming Smarter excels at setting, pursuing and meeting five-year targets. So, it can say with confidence that it met or exceeded the goals it set out in 2019 to achieve by 2024.

The Board of Directors and staff cooperate on setting the goals for the organization and plan the path to success. Over the life of the strategic plan, the Board of Directors see progress at regular meetings and the staff review the goals annually to adjust plans if necessary.

Farming Smarter is an agile organization out of necessity. As a non-profit, grant funded innovation hub, it must meet the needs of an ever-changing industry in our volatile political, social, market and climate.

Some large forces affected all of agriculture over the past five years. War, cutbacks, US and China politics, and a pandemic (for crying out loud). *Farming Smarter* managed to grow in staff, equipment, scope and land access to conduct research. Its Knowledge and Network team adjusted to everyone disappearing and to everyone coming back. The Agronomy Team adjusted to a carbon sequestration grant focus and our Field-Tested Program took off as much as our Commercial Innovation Program.

The only thing that didn't change over the past five years is the collaboration *Farming Smarter* enjoys from its community of farmers, agronomists, researchers and industry partners. The Board of Directors and staff really appreciate our friends in the industry!

OUR 2020 - 2025 GOALS:

1. Build a stable and growing resource base
2. Enhance the recognized value of *Farming Smarter*
3. Deliver high-quality, impactful, and innovative agricultural research to western Canadian farmers
4. Field tested advances agricultural practices through on-farm research
5. Become the leading contract research company in Alberta
6. Be Alberta's leading agronomy network for knowledge and training

OUR SUCCESSES:

Farming Smarter is a thriving, fiscally secure and impactful association although we still search for a permanent home. We have increased our capacity in equipment, buildings and staff. We have solid contingency and capital investments as buffers and negotiated an increased funding allocation from Alberta Agriculture and Irrigation through Results Driven Agriculture Research (RDAR).

We expanded our committed partners through the Smart Partner Program that offers a community approach to connecting our network of farmers, researchers, commercial enterprises and agronomists. This program continues to evolve through feedback from the people involved.

We published several peer-reviewed articles in the past five years through adding a Research Scientist position to our Agronomy Program. We also enjoy good coverage in agriculture and popular press averaging 75-100 articles per year.

Our Open Farm Day event offers an avenue for our ag partners to join us in a little agvocacy each year. We see about 20 -30 learning stations for urban visitors by us and our partners that draw over 300 visitors each year.

A field scale strip till project on a farmer cooperator's land. Credit: *Farming Smarter*

One major internal change we made over the past five years was the creation of our Teams – Agronomy, Field Tested, Commercial Innovation, and Knowledge and Network. These Teams allow us to focus on goals with the 10 – 15 students that join us each summer. *Farming Smarter* remains a close-knit group of people that provide an innovation hub for our industry network.

KNOWLEDGE AND NETWORK HIGHLIGHTS

- Survived the COVID-19 disruption to in-person events by mastering new skills in virtual delivery methods.
- Stayed on top of social media platform changes
- Launched a new website with complex and beneficial engagement features for subscribers
- Increased video productions
- Expanded media partnerships
- Instituted a one-on-one farm conservation agronomy program
- Took 23 people to Brazil for two weeks

RESEARCH HIGHLIGHTS

The overall Research budget grows each year along with the number of trials we conduct.

- In 2020, we had 122 research trials and revenue of $996,205.
- In 2024 we had 161 trials and revenue of $2,010,735 across the Agronomy, Field Tested and Commercial Innovation programs.
- We hired a new scientist Dr. Theirry Fonville to spearhead research grant applications and reports.
- We contract other scientists as required.

AGRONOMY HIGHLIGHTS

In consultation with our followers, we submitted 80 project proposals to address local challenges over the past 5 years.

- Various funders supported 28 projects including trials within Saving Soils program, funded by Westin Family Foundation and RBC Tech for Nature.
- Other projects we lead include Strip Till Canola, Rolling Cereals, Hemp Retting and Emergence trials, and planter projects.
- We published five research papers in top Agronomy journals.
- Collaborated on trials with Agriculture Agri-Food Canada, Lethbridge Polytechnic, Lakeland College, SaskFlax, University of Alberta, University of Manitoba, Sarda Ag Research, InnoTech Alberta,
- Executed numerous demonstrations for speakers at our field days.
- Worked with industry on various novel crops such as hemp, rice and quinoa.

FIELD TESTED HIGHLIGHTS

- Conducted 100 on-farm trials over the past 5 years
- Built strong relationships with growers to place projects
- Expanded specialty crop reearch that attracted partnerships with value-added processors
- Developed irrigation/soil moisture innovation projects
- Developed effective student hiring and mentorship practices

COMMERCIAL INNOVATION HIGHLIGHTS

The Commercial Innovation program continues to support businesses with custom research and development to ensure farmers have access to value-added markets and best products for pest control and strong/healthy crops.

- Doubled our expected annual program revenue
- Responded to the industry need to support new company's goals and product development
- Expanded our expertise in biologicals, nutrients, varieties, soil health, and greenhouse gases.
- Built diverse and dynamic partner relationships and conducted research for 67 companies over the past five years
- Implemented client centric approaches such as in-depth year-end interviews to ensure clients achieve goals
- Proved *Farming Smarter*'s capacity to execute large, long-term trials to support product development and agronomy practices through work with Replenish and BASF seed canola. FS

KNOWLEDGE AND NETWORK PROGRAM

by Jamie Puchinger, Sean Kjos, Ashley Wagenaar and Claudette Lacombe

Chances are that if you saw or read something recently and thought, "I might try that," it was information coming from this team. It was something about a novel crop, a different approach to seeding or one of those new technologies you hear about but never get any details. Maybe, it was an opportunity to learn among peers.

That is the role of this team. It spends its time pulling all those levers that spritz your inbox, post on social media, update our website and plan events with opportunities for you to learn what *Farming Smarter* researchers are learning in the fields and through data analysis.

Our events offer knowledge, fun, lots of time to chat and scrumptious vittles. These are events that will pleasantly surprise you on all levels – the people, the conversations, the wealth of knowledge in the room and appetite satiation. You leave feeling pampered and smart because you engaged with *Farming Smarter*.

In 2024, a new grant enabled our team to add Conservation Agronomist, Ashley Wagenaar to work one-on-one with 10 farms. She managed on-farm projects in enhanced efficiency fertilizers, incorporating peas in rotation, nurse crops, BMPs for potato production, soil health, and forage production. Rob Dunn, Farmwise Inc., mentored Ashley and took an active role in each project. This program will continue in 2025 under a grant extension from Farmers for Climate Solutions.

2024 KNOWLEDGE SHARING

- 942 participants at 16 events
- 10 on-farm projects
- 80 popular press articles
- 69 videos produced
- Two editions of the *Farming Smarter* Magazine mailed with Alberta Farmer Express
- Monthly e-newsletters
- 3,115,469 impressions on social media
- farmingsmarter.com saw 48,000 page views, 17, 000 users, 53 news posts, 5 project page updates
- Offered continuing education credits for CCAs (32.5) and Pesticide Applicators (8)

HIGHLIGHTS

- Brazil technical tour October 15-30, 2024
- Open Farm Days August 17, 2024
- Field School June 26 & 27, 2024

Economic Impact – Total of $259.8 Million

FARMING SMARTER EXTENSION $10.7 MILLION

**Obtained from digital analytics with the assumption of 2,000-acre farm size and $0.01/acre impact*

PUBLIC MEDIA $44.3 MILLION

**Calculated based on reach of publications with the assumption of 2,000-acre farm size and $0.01/acre impact*

RESEARCH PROGRAM $80 MILLION

**Calculated by using average return on investment from the following studies (40:1)*

1. Review study of 292 studies. Most common return was 30:1 Mean was 82:1 Source: Alston, J.M., C. Chan-Kang, M.C. Marra, P.G. Pardey, and T. J. Wyatt. A Meta-Analysis of the Rate of Return to Agricultural R&D: Ex Pede Herculem. IFPRI Research Report No. 113, 2000.
2. Book Persistence Pays: U.S. Agricultural Productivity Growth and the Benefits from Public R&D Spending. J.M. Alston, M.A. Andersen, J.S. James and P.G. Pardey, Spinger January 2010. 32:1 return.
3. The returns to WGRF cereal research 1994-2030 – Gray Nagy, Guzel (2012) 36:1 return
4. Zero till research 52:1 Gray and Nagy (2011)
5. Regional Variety Trials 1971-2010, 63:1 benefit cost returns
6. Saskatchewan pulse growers 24.6 to 1

EVENT PARTICIPANTS $124.8 MILLION

**Calculated with information directly obtained from participants (acres, $/ac impact)* FS

Ryan Mercer and Lewis Baarda receiving the royal treatment in Brazil. Credit: *Farming Smarter*

Twenty-three Albertans land in Brazil for 14 days of adventure. Credit: *Farming Smarter*

It took all hands on deck to expand our event facilities with a new, larger Quonset on site. Credit: *Farming Smarter*

Alberta Open Farm Day attracts around 25 partners and 300 visitors every year. Credit: *Farming Smarter*

COMMERCIAL INNOVATION PROGRAM

by Trevor Deering

As we kick off 2025, we're wrapping up three impactful trials that drove innovation over the past three years. Replenish nutrient testing, BASF Seed Canola agronomics, and Rolling Cereals were exciting projects and delivered valuable insights.

While it's bittersweet to wrap them up, we're energized by the fresh opportunities ahead! This year, we're carving out space for fresh research opportunities, expanding into new areas while continuing to strengthen Alberta's Commercial Innovation sector. We're actively exploring funding opportunities, including Prairies Economic Development Canada (PrairiesCan) to strengthen research that fuels Commercial Innovation in Alberta.

Farming smarter focuses on supplying third party research that is high quality and unbiased to help companies develop products for use in many crops such as wheat, barley, potatoes, lentils, hemp, peas, and many more. The future looks bright, and we're excited for what's next—bigger ideas, stronger partnerships, and more groundbreaking research to drive agriculture forward!

In 2024, the Commercial Innovation team managed 120 individual trials with 31 companies across 10 agriculture sectors. Pesticide trials accounted for 54% of the trials, followed by 19% nutrient trials, and 7.5% variety trials. Pesticide research continues to be a major focus of industry research due to strict regulatory requirements the companies must meet to get products to market. *Farming Smarter* has expertise, equipment, and locations to meet pesticide efficacy trial needs. We will continue to lead in pesticide research to make help companies get the right products to farmers.

The number of nutrient trials remained the same from 2023 and continues to be important to companies like Nutrien, Koch, Alpine and others, which we are excited to work with again in 2025. We are amazed at how many sectors we partner with and work hard to provide research solutions across industry sectors. One way we ensure high-quality data and support our clients is by touring each trial with them, providing firsthand insights into the research process. This collaborative approach gives clients confidence in the trial's integrity, knowing that we have a deep understanding of the products and conduct scientifically rigorous research to generate precise, relevant data tailored to their needs.

"I chose *Farming Smarter* as one of our contract research partners due to their knowledge of the local pest problems and ability to find sites with the specific weed spectrum I desired. I would highly recommend *Farming Smarter* to other companies for their expertise in small plot trial work." Mitch Long, formerly with FMC Agricultural Solutions research team. FS

Trevor Deering and Tristen Jacula inspecting canola during a client tour of trials. Credit: *Farming Smarter*

Ken Coles and crew inspecting/touring hemp agronomy plots, discussing connection between farmers and industry with MLA Heather Sweet. L – R: Lewis Baarda, Ken Coles, Mike Gretzinger, Heather Sweet. Credit: *Farming Smarter*

Credit: *Farming Smarter*

Credit: *Farming Smarter*

AGRONOMY RESEARCH PROGRAM

by Mike Gretzinger and Thierry Fonville

Allison Baptista, Peyton Smith and Brady Vucurevich, installing Chambers to measure GHG emissions. Credit: *Farming Smarter*

Brady Vucurevich, Allison Baptista, Peyton Smith, Armond Sohier, Louis Marcou, and Grant Nelson doing a quick plant count for seed canola in Stirling AB. Credit: *Farming Smarter*

Carlo Van Herk and Evrett Krippl, collecting straw samples from the hemp retting trial. Credit: *Farming Smarter*

- Dr. Thierry Fonville (Research Scientist)
- Mike Gretzinger (Research Manager)
- Carlo Van Herk (Field Coordinator)
- Dr. Rigas Karamanos (Contract Scientist)

2024 TRIALS

Agronomy/Fertility

- Fertilizer management strategies for irrigated canola production in southern Alberta (FS; 2024-2028)
- Impact of land rolling on grain and silage production in cereal crops under irrigated conditions in southern Alberta (FS; 2022-2025)
- Ultra Early Planting (2021-2024, AAFC; Dr. Brian Beres)
- Maximizing Barley Yields by Minimizing Lodging (Lakeland College; 2022-2025)
- Nitrification Inhibition on GHG Emissions, soil health and Barley Performance (UofA, Dr. Linda Gorim; 2024-2028)

Sustainability and Soil Health

- Saving Soils: Sustainable Management practices for irrigated high value cropping systems (RBC Tech for Nature; 2020-2026)
- Saving Soils II: Improving soils through fall-seeded cash and cover cropping (Weston Soil Health Foundation; 2023-2027)

Novel Crop Adoption

- Agronomic and chemical measures to improve industrial hemp germination and seedling survivability (FS, Sarda, InnoTech, AAFC; 2024-2027)
- Agronomic and post-harvest straw management for improving hemp fiber productivity and quality in hemp (FS, Sarda, InnoTech; 2024-2027)

Specialty Partnerships

- ASLE
- Verve Seed Solutions
- FMC
- SaskFlax
- SeedNet

Agronomy Demos

- Alberta Cereals demos (EEF demo, Ultra early demo, herbicide stacking demo)
- Field School Demos (Water quality demo, recropping demo, Spray tank contamination demo, Potato fertilizer demo, irrigation demo)

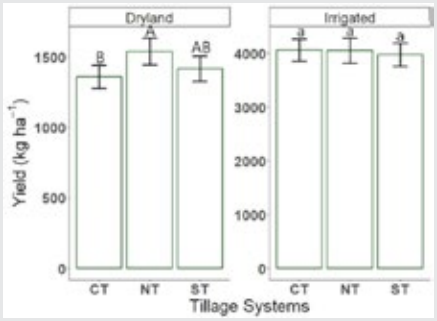
AGRONOMY RESEARCH PROGRAM

New Projects And Upcoming Opportunities For Engagement

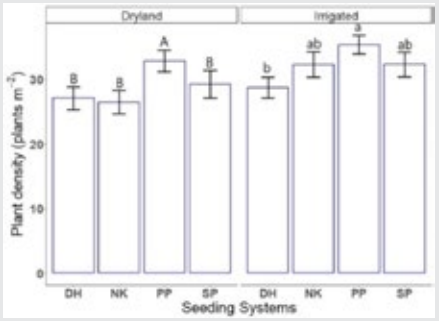
Farming Smarter expanded its research capacity in 2024 when we hired Dr. Thierry Fonville as our Research Scientist. Under contract, Dr. Rigas Karamanos reviews fertilizer trials and sent a substantial grant application to design a project around refin-

RESEARCH HIGHLIGHTS 2024

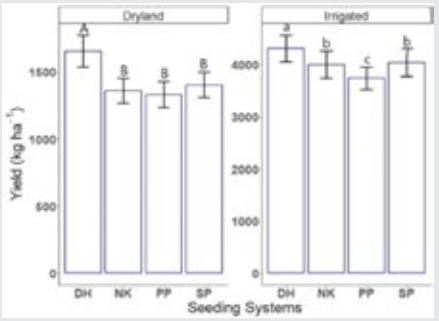
Effect of strip tillage and precision planting on Canola emergence, seed yield and quality. (2020 - 2024)



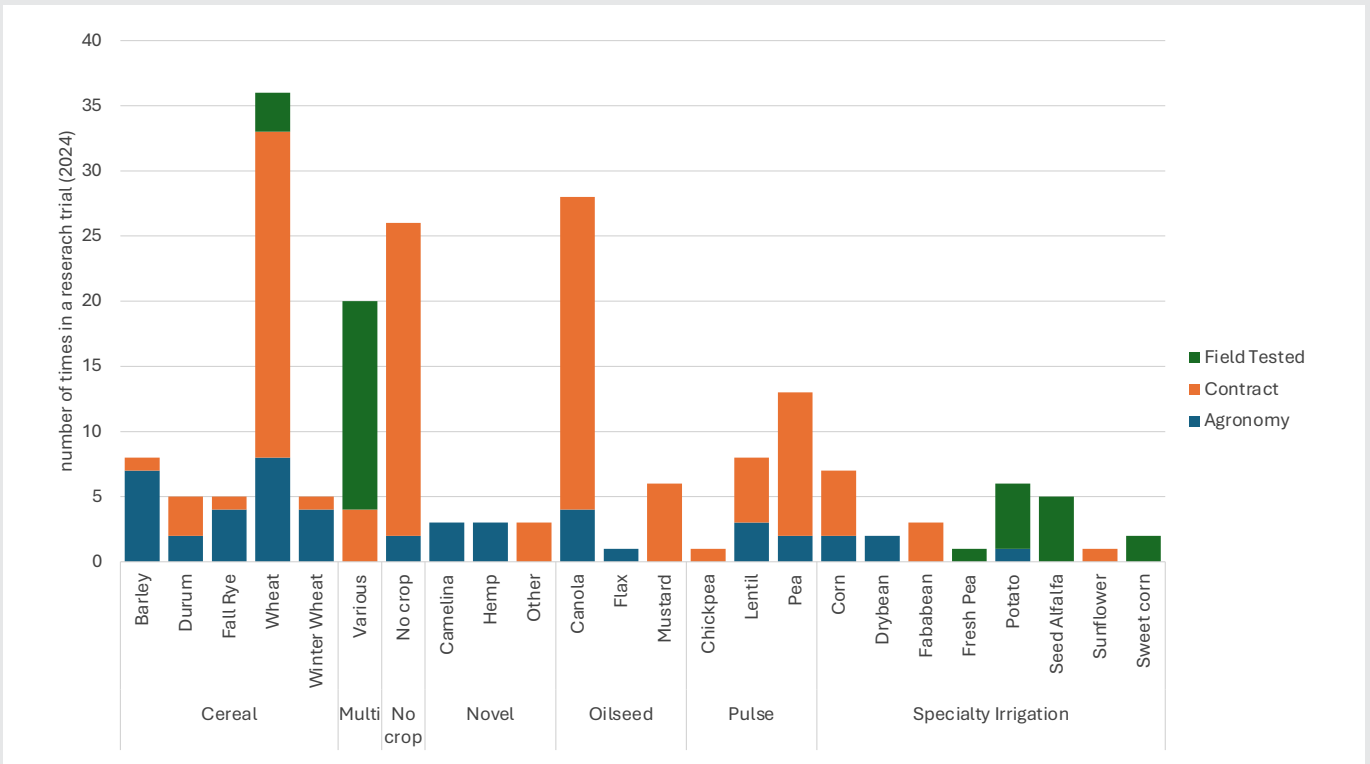
In southern Alberta, irrigation drastically increased canola yields and negated the effect of tillage. In the dryland systems where moisture was a limiting factor, no-till (NT) had significantly higher yields than conventional tillage (CT) and strip-tillage (ST) in the middle.



With the precision planter (PP) we got significantly higher emergence than with the air drill: disc-hoe (DH), narrow-knife (NK) or spreader tips (SP).



We got the highest yields from the disc-hoe (DH) openers in both dryland and irrigated systems. The narrow knife (NK) and spreader tip (SP) were both solid shank higher disturbance openers. We suspect the PP yielded lower because of the wider row spacing (15") compared to the air drill (9.5").



"The majority of Contract Research was canola, wheat and no crop. Agronomy has the most consistent range of crops, including the novel crops program. Field Tested has many on farm trials, and in 2024 expanded more into specialty irrigation crops.

ing fertilizer rates for crops.

Over the summer the research team submitted a total of nine full proposals that saw four accepted with five still under review. We also successfully extended and expanded our funding from the RBC Tech for Nature Grant for the Saving Soils project for another two years.

The first of the new RDAR projects that have been accepted will be looking at strip tillage and fertilizer placement in canola, which is a continuation of the strip till and canola project that Carlo has been working on over the last few years. This time round we'll be aiming to place a band of fertilizer in the experiment, and we are working together with the University of Alberta to measure greenhouse gases. We will evaluate different timing of fertilizer applications (spring vs fall), different placements (broadcast vs banding) and the effect of using inhibitors on emissions. We placed some of the fertilizer in the field already last fall and we are currently developing our equipment to be able to band fertilizer in combination with strip tillage in the spring, which would be a first for canola. FS

FIELD TESTED

Plots stakes identify research treatments in an on-farm seed alfalfa trial focussed on evaluating PGR use.

"Love what you do, and you'll never work a day in your life." I have never been able to reconcile this old adage to my own experience. I certainly love what I do, but I don't often fully appreciate the rewards of hard work until it is over. Clawing sand from my eyes during a chinook, fervently trying to meet a report deadline, or hauling equipment back to the shop for yet another repair are not exactly things I love. Fortunately, the bite of these challenges is tempered by what they were borne to achieve. In 2024, the Field Tested program had its share of both hard work and achievement. Here is a snapshot of what we worked on last year.

POTATO RESEARCH

2024 marked Field Tested's first foray into small plot potato research. Researching a new crop involved a steep learning curve and a great deal of extra attention and effort to get it right. The research equipment we purchased mostly came from Europe and travelled across the Atlantic before we could use it. This equipment seemed to always arrive with just enough time to read the user's manual before it was needed in the field or lab. This year our crew learned to properly operate no less than half a dozen new pieces of equipment, manage a new crop, scout for new pests, and evaluate potato tubers.

All told, we harvested nearly 7,500 kilograms of potatoes using our pull-type mechanical digger. Harvested tubers went to our new potato lab where they were washed, weighed, graded, and measured to provide high-quality reliable data for our clients.

Now that we have a successful season

The crew harvests sweet corn and measures the length width and mass of a subsample of the ears collected to support Nortera's local research investment.

of potato research under our belts, we aim to expand in 2025. This will include some on-site potato storage, improved irrigation, and upgrades to research equipment. This also means increasing the volume of private industry research as well as some practical, publicly available potato agronomy research. Stay tuned for more!

RESEARCH PLANNING

Another major focus this past year was developing a programmatic research plan for Field Tested. One aspect of this included developing research capacity for specialty crops such as potatoes, processing vegetables, dry beans, and seed alfalfa.

Another component was securing funding for valuable agronomy research to support growers in southern Alberta. Growers and industry partners keep us apprised of what is urgent and relevant for crop production. Our research team spends countless hours forming and designing research concepts that we believe will be impactful for growers in our region and beyond.

This year we put together a collection of strong proposals that will benefit growers if they gain support from funders. These include research into irrigation and water management, potato agronomy, and dry bean production.

ON-FARM RESEARCH

Practical on-farm research remains a core aspect of the Field Tested program. This year we worked in over a dozen commercial fields. Ongoing field experiments in collaboration with the alfalfa seed growers continued to generate new data on PGR use and insect management

Phase II of our smart irrigation research also launched in 2024. We work with our partners on this project to turn data from soil moisture sensors into information that irrigators can use to make better water management decisions using real-time information.

Moving forward, we are excited to launch two new on-farm research projects focussed on herbicide resistant kochia which is one of the most critical issues for crop producers today. You can read about those projects in this magazine. Look for the headline Research puts kochia in the cross hairs.

Field Tested crew standing in front of our brand new potato planter. Left to right: Thomas, Christian, Tatum, Lewis, George

Another busy year is in the books, with plenty on the horizon for the coming season. I can't wait to get back at it. 2024 was a lot of work and next year portends much of the same… and I am going to love it! FS

Cumulative Strip Till Research Provides Insights

by Sean Kjos

Farming Smarter created a foundation of knowledge for the best practices for multiple crops in strip-tilled systems. Innovative farmers interested in this burgeoning practice can follow this project through our research hub.

Regardless of developments and improved accessibility to the practice, farmers need to know if the investment is worthwhile. The years of research *Farming Smarter* completed aim to provide an answer to these interested producers. Farmers can confidently decide if the benefits and opportunities of adopting strip till are right for them and their farm.

In 2019, the agronomy research organization evolved its research of conventional full-till and no-till systems to include strip-till systems.

Its initial endeavour manifested as a part of the grain corn agronomy trial in the Perfectly Placed study. It was shortly followed by a canola project focused on tillage and seeding treatments. These projects would pave the way for future research to expand the opportunities available to producers in southern Alberta.

The two most common headers for strip-till machines are shanks and discs; the former uses knife-like, narrow wedges to penetrate the soil and upturn it, the former slicing through residue and topsoil as it turns it over. While these concepts are not novel to strip-till, they differ from typical full-tillage machines as the design allows for a more targeted approach to tillage.

This approach allows for residue to remain covering the bulk of the field, while preparing strips of soil for the seed to safely germinate.

Benefits and cost are primary considerations for anyone before making big changes, especially on the farm. Answering these questions remained top of mind for the team at *Farming Smarter* throughout the various studies undertaken.

"Any benefits you'll see from switching to strip till will be largely related to the soil conservation in your field," states Carlo Van Herk, *Farming Smarter* Field Operations Lead. Van Herk joined *Farming Smarter* in 2019 working on the Perfectly Placed trial and began leading the Natural Sciences and Engineering Research Council (NSERC) funded tillage and seeding canola project.

Producers who make the change from full tillage to split tillage will see a reduction in wind and soil erosion, as well as an improvement in soil water retention across fields. However, this water retention carries the potential to delay seeding times as the field will take longer to dry.

Meanwhile, those who bring tillage to the operation and go from no till to strip till will provide seeds warmer soil and a better seed bed. This comes at the cost of extra labor as it requires an additional pass on your field.

Regardless of the system you switch from, you will need to review weed management in your field. Tilling disturbs your seed bed, which is as beneficial for crops as it is for weeds. Because of this, Van Herk observed weed timings altered throughout the various *Farming Smarter* studies.

In addition to these operational costs, producers interested in adopting a strip-tillage system will want to consider irrigation if they don't already have it.

"In over nine site years of data, there was never a benefit from strip tilling canola on a dryland field during our NSERC-funded strip tillage project," Van Herk states.

Irrigation replaces the soil moisture lost from turning over the soil, cutting back on potential hurdles like drought. However, Van Herk also implores strip-till farmers to adopt irrigation for the auxiliary benefits it can bring.

"Lots of high value crops like canola, dry beans, and corn, will benefit from a strip till system," he adds.

"You are strip-tilling the same lines that your planters will take when you come back to seed. Because the planters are better suited to a worked field anyway, strip-till allows you to get the benefits of proper depth and placement, maximizing your chances of emergence," Van Herk says.

While the idea of strip-tillage is still quite young, it stands to shape the industry through its benefits to conservation and soil and crop quality. *Farming Smarter* is excited to help showcase the opportunities and challenges of this practice as research continues.

If you want to learn more about it the completed research, the Tillage and Seeding Systems for Canola and Perfectly Placed projects on *Farming Smarter*'s website are a fantastic place to start. Canola and corn are both reviewed under strip-tilled and irrigated operations, with insight into performance and considerations for both crops carefully reported.

Carlo Van Herk looks behind him while strip tilling before planting canola as part of the Tillage and Seeding Systems for Canola project. *Farming Smarter*, 2021
Credit: *Farming Smarter*

Strips of field tilled as part of the Field Tested section of the Perfectly Placed trial at *Farming Smarter*.
Credit: *Farming Smarter*

On the horizon, *Farming Smarter* embarked on a new project to explore the possibilities of combining the knowledge of past trials for strip till operations. The "FertCanStrip" project blends precision planters and strip-tilling for canola with the idea of fertilizer applications to reduce the number passes an operator needs.

In the next two years, the Agronomy Research team will advance strip-till knowledge when used in cover crop systems through the Saving Soils – Living Mulch project. Both endeavours support the organization's final drive to advance regional information to improve farms in southern Alberta.

To learn more about this practice or where you can begin your strip-till journey, give *Farming Smarter* a call! FS

Buzzwords Sometimes Derail Progress

Good Agronomy is Key as it Manages Risk

by Lisa Kopochinski

Farming Smarter harvests potatoes for the first time in fall 2024.. Credit: *Farming Smarter*

"It is important to define what value-added agriculture means," says Ken Coles *Farming Smarter* Executive Director and farmer of mixed grains under irrigation near Coaldale, Alberta.

Often, government and industry tout value-added agriculture as the solution to problems and challenges farmers face. However, it is important that farmers know what this entails.

"As a large country with a low population, we tend to export a lot of raw commodities then sometimes buy the processed products back. Many economists believe that we should find ways to 'add-value' to primary ag products before shipping them off. There's good logic to this in the right situation," says Coles.

For example, he says setting up crushing plants to process canola to sell oil creates jobs and brings more money to the area and can even allow better prices for farmers who are close enough for direct transportation.

"Potato processing is highly lucrative in southern Alberta and takes advantage of our irrigation. Unfortunately, we get locked into this definition of value added and government grants focus on processing which is not the only way to add value to the industry.

Research and extension are tremendous ways to add value and there are many economic studies that clearly demonstrate anywhere from 10-1 to 120-1 returns on investment. Agronomy is a tried, tested, and proven approach to add value. Logistics, marketing, HR practices, accounting can all add tremendous value but are often under supported."

> **"Agronomy is a tried, tested, and proven approach to add value. — Ken Coles"**

Coles suggests that often the main driver for successful farming is for farmers reduce costs as margins seem to be very tight.

"With a commodity focus—which is often the case in our primary industries—cost reduction is often the main driver. Our usual approach for this means taking advantage of economies of scale or to get bigger. There's usually a sweet spot for farm size that optimizes machinery purchase, labour, and land. Good agronomy is key as it manages risk.

Making Soils Healthier

Coles also recommends thinking long-term in soil care.

"However, this isn't always easy with real and current economic pressures. First— and foremost—don't make it worse by allowing it to erode, by mining its nutrients, or causing compaction. After that, find ways to minimize tillage, include crop rotations, and leave as much residue or ground cover as possible."

He also advocates that farmers champion, pay attention to, and adopt on-going agronomic and crop research. He assures readers that, "good agronomy equals good management."

Coles says crop production faces a critical shortage of people in ag research.

"Governments deprioritized agriculture research and left it to industry. We need new ag innovation systems that place farmers back in the mix. Agriculture should be seen as a public good." FS

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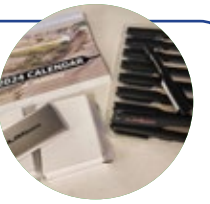

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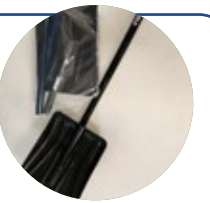

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Farmers See Climate Change and Want Solutions

by Kristi Cox

A group of farmers gather in a field by Grassy Lake to talk about on-farm research taking place. Credit: *Farming Smarter*

A new national poll shows that 83% of Canadian growers recognize climate change as a pressing issue and are eager to adopt low-emission practices like rotational grazing and cover crops. What they need most is access to trusted resources, farmer networks, and government support to make the transition.

Farmers for Climate Solutions (FCS), a coalition of 29 member organizations, calls for stronger policies to empower producers and drive meaningful change for the future of Canadian agriculture.

"What we're trying to do is help farmers adopt practices that are going to make them more resilient and more profitable in the face of climate change," said Brent Preston, President, FCS. "(We also) work with governments to improve climate policies so we get farmers the support they need to thrive in the changing climate."

Preston explained that over the past few years, interest increased in the role agriculture plays in climate change and in the focus of farm organizations and government on climate issues in agriculture.

"But until now, we haven't had good scientific information on how producers themselves view the problem," said Preston.

When FCS commissioned *The 2024 National Poll of Farmers and Ranchers, on Producer Perceptions of Environmental Sustainability and Climate Change*, the goals were to assess climate change perceptions, identify environmental priorities, understand support needs and inform policy and program design. Almost 900 farmers and ranchers from across Canada completed the poll conducted by Leger Marketing.

The survey asked what farmers see as the greatest challenge facing Canadian agriculture over the next decade. Climate change was the top answer overall, and the top response for producers in the east. Rising input costs were second overall and the top response from western farmers. Government policy, market uncertainty, farm viability and severe weather events rounded out the top six concerns identified by participants.

"What this points to is that the core challenges farmers face are environmental, in terms of increasing severe weather and climate change, and economic, with the biggest driver being rising input costs," said Preston.

Another key outcome is that farmers want new practices that can reduce greenhouse gas emissions, increase profitability, and improve efficiency.

"They are willing to try new things, but they are looking for information, knowledge, and expertise to help them with that transition," said Preston. "I think we're going to be saying to governments that they need to help fund and provide that knowledge and information to allow farmers to make those changes."

The survey showed that farmers want to get that information from print material and from other farmers.

"We have to take advantage of those farmer-to-farmer networks," said Preston. "That's an area where steady, long-term government funding could have a big impact. Instead of trying to reinvent the wheel, let's support farmer networks that already exist, that we know are effective, that we know farmers trust, and amplify them."

Respondents indicated they were concerned about future climate change leading to more restrictive policies and regulations (88%), reduced income (79%), reduced yields (76%), and negative effects on mental health (69%).

What are some solutions? The top two concerns of climate change and input costs are closely related.

"Low-emission agriculture is low-input agriculture," said Preston. "Emissions come from inputs like diesel fuel and nitrogen fertilizer. If we can find ways to help farmers use less of those, they're going to save money and automatically have a positive climate impact."

In general, producers are strong stewards of the land and want future generations to inherit healthy, productive farmlands, but there are challenges.

"When we talked about different environmental practices on farms, like intensive rotational grazing, or improved nitrogen management, or growing cover crops, a large majority of the farmers we talked to either said we're already doing that, or we want to try that,

Main findings

1. **Climate change is a top challenge for the next decade**
   When farmers and ranchers were asked an open-ended question—at the very beginning of the poll—about the top challenge for the agricultural sector for the next decade, climate change was the number one answer.
2. **Farmers and ranchers are already feeling the impacts of severe weather events**
   76% of farmers and ranchers report being impacted by severe weather in the past five years.
3. **Farmers and ranchers fear future climate change impacts**
   Producers are worried that climate change will bring more restrictive policies and regulations, reduce income and yields, and negatively affect their mental health.
4. **Farmers and ranchers view themselves as good environmental stewards**
   87% of farmers and ranchers consider themselves good stewards of the land, and 47% feel they can do more to improve environmental outcomes on their operations.
5. **Soil health and on-farm resilience are top environmental priorities**
   Almost 94% of farmers and ranchers see improving soil health as a top priority, while 87% prioritize improving on-farm resilience.
6. **There is strong interest in high resilience, low emissions practices**
   Interest is high for practices such as improved nitrogen management, no-till/reduced tillage, cover cropping, wildlife habitat conservation, and rotational grazing.
7. **Profitability drives the adoption of new practices**
   Farmers and ranchers cited economic factors, such as increased profitability and improved productivity, as the top motivations for adopting new practices.
8. **A range of supports is needed**
   Producers want a range of supports to adopt high resilience, low emissions practices, including technical support and training, financial incentives, risk management tools, and price premiums for sustainable products.
9. **Technical support and training are key**
   Farmers and ranchers say they learn best from other producers with 86% citing peers as a source of technical support.

or we're interested in doing it. There was no lack of enthusiasm or interest in the kind of practices that we know we need, which was really encouraging."

A surprising result Preston identified was that, despite climate change being a controversial issue, 83% of respondents agreed climate change is happening and it's an issue.

"There's some disagreement on why it's occurring, but to me, that's less important. Most farmers acknowledge that climate change is happening and see it as an important issue that needs to be addressed. I'm hoping that the policymakers, farm organization leaders, and others can see that statistic and (realize) maybe this issue isn't as charged or as divisive as we thought it was. Maybe we can stop arguing so much about whether or not it's happening and focus more on solutions."

With these survey results, FCS is well positioned to drive meaningful change to empower growers to thrive. FCS is already using the survey results in its advocacy work in Ottawa, aiming to get some of these priorities included in federal party platforms for the next election. They will also talk to provincial governments in the coming months. FS

An Overview of Cover Crop Work

Cover Crop Strategies Require In-depth Future Planning

by Lisa Kopochinski

Ashley Wagenaar talked about her cover crop work at a field day in 2024. Credit: *Farming Smarter*

Many will agree that the farming industry has made great progress in recognizing when and where cover crops can help in Alberta's climate.

"Cover cropping strategies can immensely depend on the climate of a specific area," says Ashley Wagenaar, *Farming Smarter*'s conservation agronomist and a certified crop advisor.

"Here in Alberta—for the most part—we have a single crop season with little wiggle room on either side, as well as limited moisture. With these constraints, cover crops can only be successful in specific situations and require in-depth future planning."

Wagenaar says the main benefit to farms in this area are protection from wind erosion—both in and out of season— and late fall, winter, and early spring moisture availability.

"Though there is limited time in the fall after harvest, trying to get a low-moisture and fast emerging cover can make all the difference in the spring. After a field undergoes a few freeze thaw cycles and has lost its heavy soil clumps that leaves it at risk of soil loss during those spring winds."

She adds that usually a cereal variant of some sort can work. Broadleaf covers—such as clovers and vetches—have excellent benefits. However, they can be difficult to establish and have high moisture requirements.

"We've learned that not everything works here with our dry climate, but with a few modifications, we can still incorporate covers to help with specific challenges," Wagenaar says.

The interest in cover cropping mainly comes from southern Alberta as this area has high winds, low moisture, and lower than average organic matter. This creates an area lower in disease and insect pest pressures, and an area that can grow high value crops.

"There is a focus in southern Alberta to increase the organic residue on a field to maintain that organic matter, as well as keep a field covered to protect that valuable topsoil layer," explains Wagenaar.

Exploratory trial evaluating inter-row cover crops seeded between sugar beet rows in June 2024 to aid in erosion control following harvest. Credit: *Farming Smarter*

"With our irrigation capabilities, we're also able to grow some specialty crops that include higher levels of cultivation, such as sugar beets and potatoes that leave a field with minimal residue after harvest. These areas have gained a lot of attention, but I wouldn't say that only southern Alberta is interested."

"It depends on a farm's strategies and what they want to do with a cover crop, or what problem they are trying to solve. Other areas in Alberta could also be looking at cover crops to help with weed management, moisture control, and marginal land improvement."

Cover Crop Experimentation

Wagenaar works with some innovative potato farms researching how to successfully establish reliable ground cover after the potato harvest to avoid bare fields prone to heavy wind erosion.

"We're investigating different cereals—such as winter wheat, winter triticale, and winter barley—at different populations to evaluate different ground covers that survive and produce spring populations," she explains.

"We have another trial looking at different planting dates of winter wheat. We planted way later than normal to watch for any plant emergence. Both projects try to expand the cover crop options or the 'tools in the toolbox' for farms following a late fall harvest."

Wagenaar also worked with other farms that have an interest in using a cover crop to protect the main crop as a "nurse crop." Some seed canola farms will plant barley before planting canola, so the emerging canola seedlings have barley protection from wind erosion and sand blasting—when the wind gusts moving sand particles cut the seedlings as they emerge from the soil.

"Overall, we're progressing but we still struggle with environmental constraints," she says. "Sometimes there is no cover that can emerge fast enough to cover a field throughout the winter. And sometimes it is just too dry in the fall for anything to establish. We're doing well trying to use these cover crops to the max, but they cannot be the only tools a farm relies on, as there are many situations that will not work."

She says some innovative companies are trying to incorporate multispecies crops into regular farm rotations as cash crops, such as hay productions, grazing, and silage to increase plant diversity.

Main Challenges

She says the main challenges with cover crops is Alberta's limited season and moisture. Much of the cover crop research comes from the U.S. where many areas have a much longer season with higher heat units and without a frost risk.

"Also, dryland farms have limited precipitation and irrigated farms are limited based on when the irrigation canals drain in the fall. In general, a cover crop is not harvested but is used in a way to build up the soil."

In southern Alberta, the most common cover crops are cereals as they are relatively fast to establish with minimal moisture requirements and can survive the winter.

"If planted in the spring as a crop that is replacing a commercial crop, we also see a variety of multispecies blends that farms will grow that helps with the diversity in the soil, and then either graze it or cut it for hay," she adds.

Wagenaar reiterates, "There is never one way to use alternative strategies to increase crop diversity and soil cover. If anyone is interested, I encourage them to contact me." FS

Donate Research Land to Reap Huge Benefit

Donor Land Essential to Driving Alberta's Ag Innovation Systems and Support Mechanisms

by Natalie Noble

Dryland plots on donated private land. Credit: *Farming Smarter*

This is a call to action for any landowner who wants to drive progress and innovation in Alberta's agriculture industry. As *Farming Smarter* grows rapidly, its research needs more space to do the work farmers and industry need to achieve economic and environmental sustainability.

"We're looking for help, whether it's government or whether it's farmers." said Ken Coles, *Farming Smarter* executive director. "We see folks donating land to colleges and universities, but we are a good investment for a legacy donation too. Having long-term access to the right amount of land is critical for our work. For all farmers' benefit and impact, it'd be great to get the entire industry together and help secure some land for us to continue to grow as an organization that supports the entire industry."

That land piece happens to be the biggest challenge to this Lethbridge-based, farmer-led Canadian charity that drives innovation at the farm level through agronomic testing, scientific knowledge and its knack for connecting industry players. It's safe to say, *Farming Smarter* is the biggest and most diverse ag research conductor in Western Canada.

So, what's the hold up? Well, many farmers and landowners balk at the inconvenience of having research plots on their land. But rest assured the *Farming Smarter* team works closely with landowners to ensure they respect their needs and they know a thing or two about valuing landowner relationships.

"We have to be very purposeful. In maintaining those relationships, we try to make it as easy on them as possible and we're focused on that relationship," said Coles. "We always want to build that community where like-minded folks can get together, learn and challenge each other."

Carlo Van Herk, *Farming Smarter* field operations lead, said communication is paramount to landowners and researchers attaining shared benefits, but it depends on the situation. "Each farmer is a little different on how much they want communication. One might say, 'anytime you need anything or if you're coming by, shoot me a text or give me a call.' Another might say, 'do what you need to do, see you at the end of the year,'" said Van Herk. "It's very dependent on the landowner."

Beyond that, it's essential landowners not only know what the *Farming Smarter* team is working on with their land, but more importantly, the why. So, each summer, they

conduct tours for their landowner partners. "We go out and it's literally one-on-one with the landowner," said Van Herk. "They want to know: what are we doing there? Why are we doing it? Then we hear about the issues they're having as well. We take that and apply it when we're looking for further research that needs to be done."

That brings new perspective to *Farming Smarter*'s landowner partners. "There's always a great opportunity for them to see what we're doing, and then they can learn more about it," said Van Herk. "They want to know what's going on and we work with them to make life as easy as possible because they're doing us a huge favour."

The *Farming Smarter* team always works to return that favour. "Lots of times we don't even end up talking about a specific trial," said Van Herk. "We're just talking research in general and what they want to see. It's a deep level of one-on-one and an insider view into what we're doing."

Sometimes, there are surprising perks for the landowner. For instance, when the *Farming Smarter* team grew a research grain corn plot north of Lethbridge, the landlord hadn't thought it was possible. Seeing the success, it's now a potential addition to his rotation. And those ideas can spread.

"A lot of times farmers and landowners watch how their neighbors do things," said Van Herk. "If we work with them and they adopt something we show them right on their land, the neighbors might also be interested. That's a mutual benefit we see. Then, there is that chance for the industry to notice as well."

It's all for the greater good of Alberta's ag industry. "We have expansive amounts of land here," said Coles. "We've got innovative, progressive farmers. We've got a relatively unencumbered policy environment where we're allowed to do what we want. It's important we continue to invest in developing that."

The *Farming Smarter* team tips their hats to the land donor relationships that make it all possible. "We have the privilege that our current landowners donate the land to us," said Van Herk. "We're always indebted to them and we love working with them, because they're the ones who see what we do. Those partnerships are wonderful for everyone. They help us do what we need to do, and hopefully we help them in return." FS

Irrigated plots under a land donor's pivot.
Credit: *Farming Smarter*

Farming Smarter Gets its Smarts From You!

by Claudette Lacombe

The term innovation hub entered Farming Smarter's phrasing sometime in the past five years. The staff didn't immediately fall in love with it as a label for our organization, but we kept coming back to it.

Farming Smarter is a group of passionate people that now have years of working together. One thing we've always loved is to sit around the table and share ideas.

We do it informally over lunch where there's a lot of laughter and more formally in research grant meetings, strategic planning sessions, annual goal setting exercises and some group professional development sessions. It means we have a common vision and direction.

What began as a small, applied research association run by a board of active farmers has become a community where all the people involved find common cause. It's fair to say that Farming Smarter attracts and collects passionate people that push boundaries. This applies to our Board of Directors, staff, partners, subscribers and followers.

The more we rolled the term innovation hub around in our collective brains, the more we made it a reality. It's like the airy-fairy folks say, "Believe it and it becomes real." That's a world class simplification of how it works, however, it does work. Primarily it works because when you walk around telling people you're an innovation hub people interested in innovation join you, stick around and make things happen.

Ken Coles, our executive director, travelled to far flung places – Zimbabwe, Ireland, New Zealand, France and more looking for the institutions and people around the world focused on making the changes agriculture needs to remain viable and sustainable.

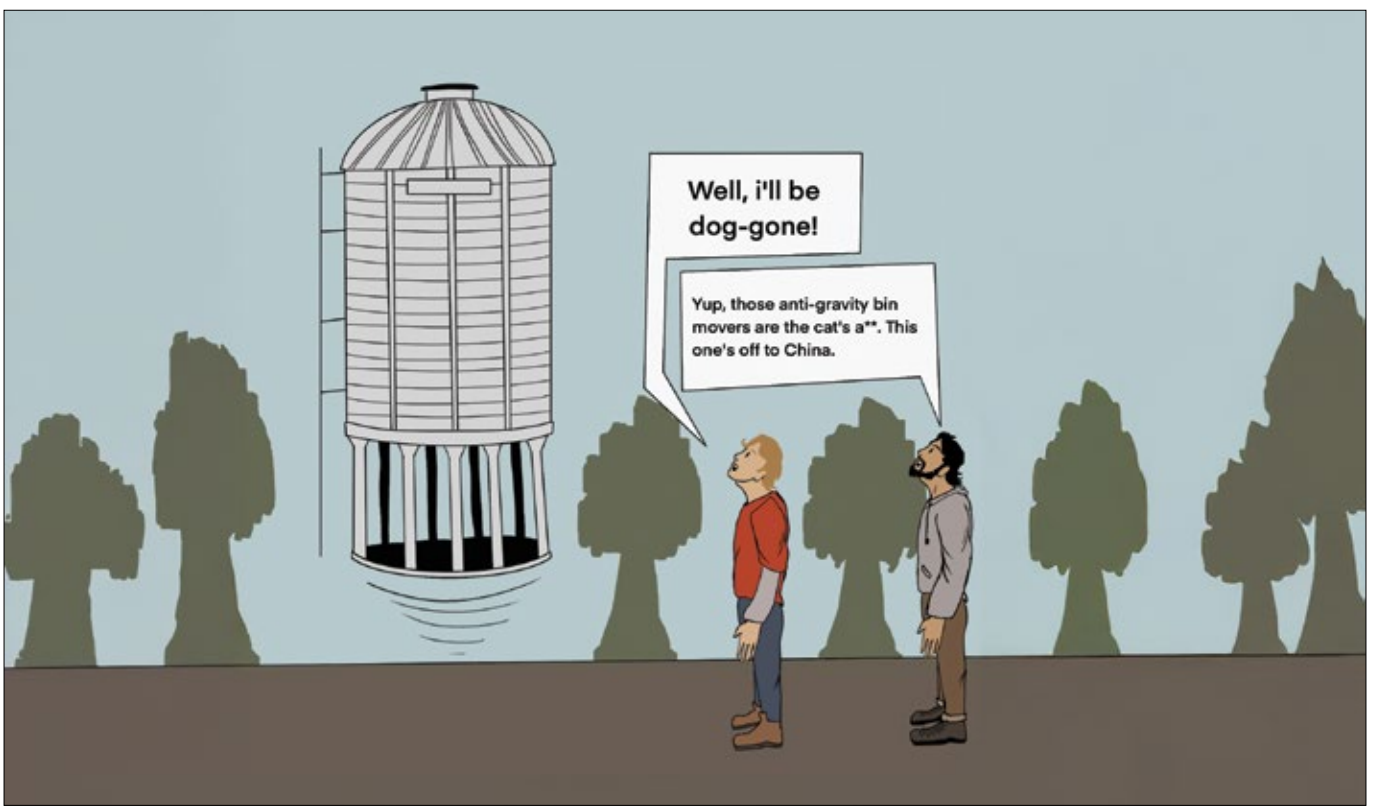
He published a report about his findings and it rings, "It's the people. It's the people. It's the people." That is the mantra and the goal for Farming Smarter. Gather the people that want innovation, have ideas, are willing to try things and willing to share the journey. Give those people the means to execute trials, projects, experiments and ideas in a safe way and watch for the sparks of brilliance that result.

Farming Smarter spent the past 15 years building its infrastructure of people, skills, ideas, experience, resources, and connections to land. In 2025, it is a powerhouse innovation hub. It's now a collective run by highly skilled staff, overseen by a determined Board and unified with people from the farm to the plate.

Our Knowledge & Network team maintains the fabric of our community through its communication and event efforts. Our research teams – Agronomy, Field Tested & Commercial Innovation – attract post-secondary researchers, farmers, and commercial interests searching for a group like ours.

We've seen some farmers adopt new practices before we have definitive research results because their curiosity matches ours and businesses succeed through getting the data they need when they need it.

As 2025 dawns on southern Alberta and the new challenges facing agriculture (there's always something) Farming Smarter stands ready to advance our industry with all the force we can muster. You should join us! FS



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