



to market stalls, we have facilitated connections that spark innovation. From Proxima R&D's breakthroughs in bioprospecting, to IntelliYeast's pioneering work in the brewing industry, our members' success stories are a testament to our collective efforts.

The challenges before us are formidable: climate change, food security, and agricultural sustainability. As well, past (and present!) Ag-West Bio leaders agree that for Canada to be competitive in moving agricultural research to market, some strategic changes are needed. We have a lot of work to do. But with the expertise, resilience and resourcefulness of this community, I see a future full of promise.

We know that innovation is the key to solving challenges. Ag-West Bio is committed to nurturing innovation by investing in emerging technologies, supporting start-ups, and fostering cross-sector collaborations. In partnership with GAAP, we've been engaged in NAVIGATE – an exciting program that brings international innovators to explore Saskatchewan and understand the benefits of joining this community.

Thank you to the Ministry of Agriculture for your ongoing commitment to research and business. And to the staff of Aq-West Bio, our Board of Directors, and our members: your passion fuels our purpose. Thank you for being part of this remarkable journey.

Dr. Karen Churchill

Letter from THE CHAIR Business with tenacity & heartfelt COMMITMENT

> THIRTY-FIVE YEARS IS A LONG TIME. AND A LOT HAS CHANGED SINCE THIS ORGANIZATION OPENED ITS DOORS IN 1989. WHAT REMAINS THE SAME IS THE NEED FOR AN ORGANIZATION TO SERVE AS AN ADVOCATE FOR AG AND FOOD SCIENCE AND A CHAMPION FOR SASKATCHEWAN'S BIOSCIENCE

Karen Churchill continues to lead the company with a steady hand. In October 2023, Karen was selected as one of six top CEOs by SeedWorld Canada. She was recognized for steering Ag-West Bio through a pandemic, keeping – and increasing – its relevance, and reinvigorating its brand. Karen and her staff embody the company's slogan: Pure Heart, Prairie Science. They conduct business with a quiet tenacity, revealing a heartfelt commitment to the company's goals.

Science is the key to solving many of the challenges the world is currently facing due to climate change. However, in this country, some policy adjustments could help move research to market more efficiently. Ag-West Bio has an important role in keeping the government informed about industry needs.

On behalf of the board of directors I would like to thank the provincial Ministry of Agriculture for supporting Ag-West Bio with core funding since its inception. This has provided stability, allowing the company to focus on growing the bioeconomy.

Thank you to our board members for generously sharing their time and energy. Drawing on their expertise allows the best strategic decisions to be made for the organization. A special thanks to board members Nevine Booth and Lee Whitington, who have completed their terms this year.

To the many organizations that partner with Ag-West Bio in delivering programs that benefit the agricultural sector: thank you for your community spirit – it's what makes Saskatchewan a special province.

It has been a wonderful experience serving as Chair for Ag-West Bio for the past two years and working with all the board members, Karen and her staff. I look forward to seeing what this company can do for the province in the years ahead.

Dr. Erin Armstrong

VISION: Saskatchewan is a world leader in bringing agricultural bioscience innovation to

MISSION: Accelerating innovation and enabling companies to commercialize research in agricultural and food biosciences.

MANDATE: To provide leadership, as a catalyst. to link existing capabilities and resources in order to strengthen the bioeconomy industry in

Ag-West Bio Board of Directors

Erin Armstrong (Chair) - Independent Jeff Bertholet (Vice Chair) -Crop Development Centre and Greenlight Bioscience Nevine Booth - Federated Co-operatives Limited

Terry Fonstad - University of Saskatchewan Heather Forbes - Rite Way Mfg. Co. Ltd.

Shawn Gibson - Saskatchewan Ministry of Agriculture

Gayle MacDonald - Independent

Tyler Lynch – Saskatchewan Ministry of Trade and Export Development

Jennifer Milo - SynergyAG Jason Skotheim - Horizon Pet Nutrition Lee Whittington - Four Oaks Investments, and Coaching Excellence Organization

Ag-West Bio Staff

Mike Wonnick - Independent

Karen Churchill - President and CEO Kyle Adams - Director of Investment and Commercialization

Amy Carruthers - Program Development Manager

Joanne Baczuk - Director of Ecosystem Development

Lana Mollard - Corporate Secretary and Executive Assistant to the President & CEO Amanda Mpabanga – Office Assistant

Oliwatobi Oyedele – Business Development Intern

Jackie Robin - Director of Communications Jay Robinson - Chief Operating Officer

Shae Zwozdesky – Communications Assistant

START-UP COMPANIES.

35 YEARS OF AG-WEST BIO Learning from the past, looking to the future



THE WORLD HAS CHANGED DRAMATICALLY
SINCE AG-WEST BIO WAS FOUNDED IN
1989. CURRENT AND FORMER LEADERS
AGREE THAT THE REGULATORY AND
POLICY LANDSCAPE HAS ALSO CHANGED,
AND NOT ALWAYS FOR THE BETTER. THEY
ARE UNITED IN A CALL FOR MORE AGILE
REGULATIONS AND FOR POLICY DRIVEN
FROM THE GROUND UP.

They also agree that Ag-West Bio's role as a connector and supporter of innovation is one of Saskatchewan's strengths and will be integral to the province's success.

Ag-West Bio President and CEO Karen Churchill says, "We're facing huge issues right now: inflation, labour shortages, global geo-political instability. I ask the question: What can we influence? Saskatchewan has incredible capacity in biosciences, and Ag-West Bio has a unique role in facilitating that capacity to be transformative in business."

Looking back: the right conditions

Originally called Ag-West Biotech (the name changed in 2004), the non-profit was formed when the provincial government decided an entity was needed that could bring industry and research together to solve problems.

Grant Devine, Saskatchewan's premier at the time, says, "The concept was novel enough that no one was doing it in Canada. The company has grown in stature and reputation

When Ag-West Bio was founded, organizations like the National Research Council and Agriculture and Agri-Food Canada - the bedrock for scientific excellence in ag biotechnology - HAD POWER TO MAKE DECISIONS AT THE LOCAL LEVEL ... THAT IS NOT THE CASE TODAY.

since then – which makes one feel good about being part of getting it started."

Royal Hinther worked in the Saskatchewan government and wrote the cabinet documents and business plan for the creation of Ag-West Biotech. He says, "We were lucky. We had federal and provincial supports in place, and the support of multinational companies. We also had world-leading research infrastructure. The National Research Council, Ag Canada, Innovation Place and the Saskatoon Regional Economic Development Authority all worked well together."

The company's first president, Murray McLaughlin, says "Agriculture and the bioeconomy have made amazing progress over the past 35 years. All people talked about back then was genetically modified crops. Now we've progressed in several sectors, from managing crops using biological pesticides and more efficient practices, to value-added ingredient development. There is a lot of global activity. Canada might be on the slow side, but hopefully we'll catch up."

What the world needs

Saskatchewan is home to one-third of Canada's ag-biotech industry, and the Saskatchewan Government's Growth Plan has already surpassed some of its targets. The value of provincial agri-food exports hit \$20.2 billion in 2023, years ahead of the goal for 2030.

David Marit, Saskatchewan's Minister of Agriculture, says, "Our province is a place where good ideas can thrive, thanks to the unique combination of our world-class agriculture resources and an investment-friendly policy environment. Organizations like Ag-West Bio are a catalyst for this by providing a framework where those ideas become commercial opportunities."

Wilf Keller, the company's longest serving president and CEO, says Ag-West Bio is even more important now than it was in 1989. "You have all these tools that need to be integrated; we need to bring people together, and we need to do that work in person. Ag-West Bio is perfectly positioned

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Since 2021, Ag-West Bio has been an active supporter of Prairie Food Link, Saskatchewan's industry-led food and ingredient processing cluster, and continues to provide a home base for its Director of Ecosystem Development and steering committee co-chair.

Prairie Food Link's membership currently sits at 225 members representing 160+ organizations*. Although initially developed for the Saskatoon region, the Food Link has quickly spread to other areas of the province, including northern Indigenous communities and southern rural processors and start-ups. Its footprint has also expanded by adding out-of-province support to membership.

Prairie Food Link's Monthly Mixers continue to create opportunities for members to build networks and learn from industry experts.

The events also help promote other industry supporters, such as Female Entrepreneurs in Agri-Food Development (FEAD) and Federated Co-operatives Limited (FCL).

We also offer training programs through partnerships, such as LearnSphere and Skills for Success. By providing practical industry skills (such as how to sell to retail, how to be a co-packer and how to hire a co-packer), we are building capacity in the region.

If you are looking for information about Saskatchewan's agri-food / biobusiness sector, the SaskAgriSource website is the place to start. We recently added a 'co-packer' category and are currently discussing future enhancements, such as listings of 'commercial kitchens' and 'warehousing & distribution services'. Visit saskagrisource.ca to learn more!



* June 2024



for this: it has the capacity to create a network, a consortium of organizations to lobby for more local decision making by scientists and organization leaders. We need a global reach to connect our members to international opportunities."

These leaders worry that Canada is falling behind other countries; but they also believe Saskatchewan has yet to reach its full capacity in the ag biotech realm.

Regional autonomy creates regional relevance

When Ag-West Bio was founded, organizations like the National Research Council (NRC) and Agriculture and Agri-Food Canada (AAFC) – the bedrock for scientific excellence in ag biotechnology - had power to make decisions at the local level in support of regional efforts. That is not the case today.

If I have a dream. it is that policy and regulatory agencies will recognize they need to react more quickly to modernize our systems to avoid losing ground. THERE IS NOTHING MORE PAINFUL TO ME THAN TO SEE SASKATCHEWAN RESEARCH BEING COMMERCIALIZED SOMEWHERE ELSE. Dr. Karen Churchill Aa-West Bio

Hinther says when the NRC reorganized, they centralized decision making in Ottawa. "They created an iterative process so overbearing that it made it almost impossible to get new and regionally relevant science and initiatives underway. Scientific excellence has been usurped by bureaucratic control, politics and processes."

McLaughlin notes that other countries are nimbler than Canada. "The Environmental Protection Agency moves much more quickly than we do. Commercialization happens in Europe much faster as well. We've already lost technology companies, like Hoechst, which were brought to Canada but then went back to Europe."

In addition to reduced decision-making responsibilities in national organizations at the local level. Keller also bemoans the increase in political influence on Canada's innovation strategy. "Federal ministers often tend to make announcements and discuss outcomes prematurely, before they can be firmly supported by quality research. Politicization of the science agenda can translate into bias in program funding. We need to stay focused on science, technology, and innovation."

Churchill says, "If I have a dream, it is that policy and regulatory agencies will recognize they need to react more quickly to modernize our systems to avoid losing ground. There is nothing more painful to me than to see Saskatchewan research being commercialized somewhere else."

Moving at the speed of change

The bioscience industry, like the world in general, is facing exponential rates of change. Every new technology creates opportunities for business start-ups, but we must move fast to keep up.

Devine says, "Change leads to a different approach to leading the organization because people are coming at you with brand new challenges. You have to be

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Putting Saskatchewan ON THE MAP



By Grayson Berting, Marketing Manager, GAAP

IN 2023, GLOBAL AGRI-FOOD **ADVANCEMENT PARTNERSHIP (GAAP)** PARTNERED WITH AG-WEST BIO TO **DELIVER NAVIGATE, A PROGRAM** THAT FINDS COMPANIES WORKING ON **SOLUTIONS TO CHALLENGES FACING THE** CANADIAN AGRI-FOOD ECOSYSTEM.

Through the program, 10 global start-ups with successful technology solutions travelled to Saskatoon to learn about our vibrant and robust ecosystem. NAVIGATE helped these companies determine if Saskatchewan would be a good place to call home for North American business expansions.

The NAVIGATE participants told us they "would never have imagined" the vast

resources we have here, along with the research, processing, and manufacturing expertise that Saskatchewan has to offer. They also commented on how unique and valuable the tailored NAVIGATE program is within the global agri-food ecosystem.

Argentina-based fermentation company Food4you participated in the October 2023 program. This spring, company reps Francisco Garbagnoli and Antoneita Rodriguez de Olmos returned to Saskatchewan to continue exploring a potential business expansion here. They were excited to discuss the business opportunities and scalability options that Saskatchewan can offer. Fran and Anto visited the Saskatchewan Food Industry Development Centre and Global Institute for Food Security and met with many other ecosystem partners and collaborators.

NAVIGATE has been a big success and many of our participants are in talks with partners to continue learning and discuss potential expansions into Saskatchewan.

From NAVIGATE participants:

GAAP and Ag-West Bio gave me the opportunity, through a very immersive experience, to meet people who are in the breeding industry and really understand more about how it works in Canada and explore how our technology can be useful to them.

(a livestock semen analysis company based in the UK)

Thank you for opening the doors of this ecosystem to us and providing the opportunity to explore all opportunities that Saskatchewan and the rest of Canada have to offer!

(a fermentation company based in Argentina)

The entire program was excellent. I could highlight the most positive aspect as the opportunity to have not only general meetings with various stakeholders in the technological ecosystem but, most importantly, personal meetings. This was crucial in starting to consider potential individual strategies for activities or developments in Saskatoon. Also, spending almost the entire day with fellow entrepreneurs in similar situations was very enriching, just like strengthening personal connections with the GAAP team.

> Ergo Bioscience Inc. (a plant protein company based in Argentina)

From ecosystem partners:

with the NAVIGATE participants have nelped us to connect with international partners and explore funding opportunities. We helped the participants by connecting them with potential partners and research projects.

> Blaine Chartrand Saskatchewan Polytechnic

The NAVIGATE program really helped us to achieve our mission statement. which is to discover. develop and deliver innovative solutions for the production of fully sustainable food.

Megha Bajaj Global Institute for Food Security

Bioscience companies take longer to come to fruition, which means more support and patient capital are critical to success. The length of time and money involved is often why private capital is unwilling to invest, and it's vital that governments be creative in developing programs.

"

Dr. Karen Churchill

Aq-West Bio

more aware, educated and trained in the technology that is coming in order to support your members."

Thanks to innovation, the opportunity for advancement at all levels of agriculture is unprecedented. Churchill says, "The development of crops with increased disease resistance and abiotic stress tolerance to drought, salinity, floods or shorter growing seasons is one important area to address climate change. There is also potential to use artificial intelligence to maximize efficiencies in supply chain management



and logistics to save time and fuel."

McLaughlin adds that we need to pick up our pace on biofuels, "not to displace the petroleum industry, but to complement it."

Keller says an exciting aspect of this is the integration of platforms to address complex issues. "If we take the best advancements possible and integrate them effectively as more become available, we can then address bigger systemic issues: environmental stress, carbon management and increasing yields. But it will take effort. These are not two-year projects."

From the ground up

For Saskatchewan - and Canada - to be competitive on the world stage, it's important to return to the levels of co-operation and political will into which Aq-West Bio was born. Keller says, "We need to solve problems, like protecting plants from disease and drought, and building healthier soils. We need federal government leadership to support this, but we need to build projects from the ground up, not the top down."

The answer for how to do that is simple: start talking to people. Hinther says, "Talk about what needs to be done, through informal

committees. And then put those things in your strategic plan: look at what needs to be done and start doing it."

Ag-West Bio's strategic influence could reach beyond provincial borders to Canada's bioeconomy. McLaughlin says, "Other countries are implementing bioeconomy strategies and goals, but Canada hasn't done that yet. It's important for organizations like Ag-West Bio to make governments aware of this, look at what is being done elsewhere, adopt a strategy so we can catch up and move ahead. It's important for us to work with all levels of government and for all levels of government to work toward common goals."

News this spring that the Canadian Food Inspection Agency has updated its policy guidance related to plant breeding is positive for the agriculture industry. According to a CropLife Canada statement. "This coordinated guidance helps to create a clear, predictable and science-based regulatory system that stands to make Canada a world leader in attracting investment and innovation in plant breeding."

Churchill says as Ag-West Bio passes its 35th anniversary, she will be focusing on advocating for the same level of investment into the biosciences that the country has poured into other areas, like clean energy. "Bioscience companies take longer to come to fruition, which means more support and patient capital are critical to success. The length of time and money involved is often why private capital is unwilling to invest, and it's vital that governments be creative in developing programs."

A WORLD VIEW

ACCORDING TO AGFUNDER: "INVESTMENT IN AGRIFOODTECH START-UPS IS AT ITS LOWEST POINT IN SIX YEARS, DOWN 50 PER CENT SINCE 2022, A RESULT OF FEWER AND SMALLER DEALS."

"2024 is going to be a painful year for many, especially for more mature agrifoodtech companies. But it will also be an incredible year to invest in new companies that have been forced to rethink their business models and take a leaner approach; that's healthy for the market and for valuations."

Key statistics:

- In 2023, Canada ranked ninth in the world for agri-investment at \$416 million (down 60 per cent from 2022) and sixth in dollars funded at \$1 billion.
- Funding to all categories declined, except two: Farm Robotics, Mechanization & Equipment, and Bioenergy & Biomaterials (which raked in \$3 billion in 2023, up 20 per cent from 2022).
- Funding to upstream start-ups (on the farm or in food production) accounted for 62 per cent of overall investment in 2023, compared with 51 per cent in 2022 and 30 per cent in 2021.
- Investment in ag biotechnology fell 34 per cent to \$1.9 billion in 2023 against a backdrop of a 49.2 per cent drop in agrifoodtech funding overall.

Take-aways:

- Total investment dollars in agriculture decreased significantly, but the bio sectors continue to have relatively positive outlooks and are trending well – a promising sign for Saskatchewan.
- Founders must be aware of the challenges of raising capital in this environment. A focused, collaborative, and professional approach to commercialization and raising capital is needed. The reality is, you need to stand out and make a strong impression.



KYLE ADAMS

Director of Investment and Commercialization

IN MY SECOND YEAR WITH AG-WEST BIO I HAVE **CONTINUED BUILDING RELA-**TIONSHIPS, INCREASING MY **UNDERSTANDING OF THE LOCAL ECOSYSTEM, AND IMPROVING** THE OVERALL PERFORMANCE/ **OPERATIONS OF THE FUND.** SEVERAL HIGHLIGHTS FROM THE YEAR:

- We continue to assess the vision and philosophy of the **Technology Commercialization** Fund to ensure it evolves with the needs of the sector.
- I provided input, guidance, and connections to 25 early-stage companies to accelerate their investment readiness and commercialization plans.
- We made two new investments this year: A \$50 thousand investment in IntelliYeast Laboratories.

Industries Inc. Several more reached advanced stages of the due diligence process, with other opportunities under review. We also continue to refine the adjudication process.

- Overall, our 'investment pipeline' is healthy and 2024 is looking to be a breakout year for the Tech Comm Fund.
- Our inaugural Investment Readiness Bootcamp in November was a resounding success, with 11 companies at various stages of maturity participating. We plan to host the event again in December 2024, expanding to two days. The ABIC Foundation provided financial support for this event.
- Many Ag-West Bio investees are making significant progress in their commercialization journeys. This reinforces my view that patience is critical when supporting early-stage agri-food companies. The road is often long and tumultuous, but the payoff can be substantial for the founders, the agriculture industry, and society in general. We look forward to sharing news about our investees as they become Saskatchewan success stories!

and \$10 thousand in Bander

THANK YOU TO **BRENT ZETTL** FOR HIS CONTINUED SUPPORT OF THE ABIC **FOUNDATION**

Bootcamp was a

total eye-opener for

me. Before this, I had

no experience with

high-stakes financial

negotiations. The

hands-on exercises...

gave me a clear

understanding of the

process. I walked

away with a ton of

valuable knowledge and

practical experience

that I get to apply at

PathoScan, 11

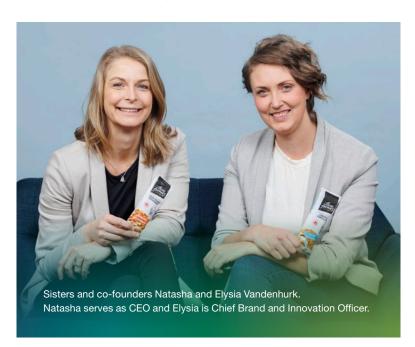
Tavab Soomro

Pathoscan Technologies

Member Profile | THREE FARMERS

Bridging the gap between PRODUCERS AND CONSUMERS

THE THREE FARMERS BRAND GREW OUT OF A DESIRE TO BRIDGE THE GAP BETWEEN PRODUCER AND CONSUMER, ADD VALUE TO THE CROPS WE GROW HERE IN SASKATCHEWAN, AND TAKE THAT TO THE REST OF THE WORLD.



"With increasing urbanization, there's a lack of understanding about how food is made and where it comes from," explains Natasha Vandenhurk, CEO of Three Farmers. "We are in a unique position to bridge that gap and tell those stories."

The company was started by Vandenhurk's father and two neighbouring farmers (three farmers) near Midale, SK. She says they were looking for opportunities to add value through processing, but notes that "it was more about getting closer to the end consumer, about working our way up the value chain, and really understanding all of the points between farm and fork."

Their first product was camelina oil. Camelina sativa, or false flax, comes from Northern Europe and Central Asia. "We landed on camelina because it was touted as really great for Saskatchewan climate drought resistant, cold tolerant, with a short growing season," says Vandenhurk.

They were also impressed with camelina's

nutritional profile. It's high in Omega-3 and Omega-6 and low in saturated fats. It also contains high amounts of Vitamin E. The oil is cold pressed (extracted without heat or chemicals), which makes it even healthier.

"Camelina oil was unique to the market, and it had a bunch of characteristics that make it highly nutritious and really functional in the kitchen. So that's what we took to market in 2012," says Vandenhurk.

Three Farmers didn't launch its snack line until late 2014. Once again, they selected a crop that was well suited to Saskatchewan's growing conditions and could be turned into a healthy food product. "We always wanted to do something with chickpeas," Vandenhurk explains. "It checks all the boxes—it's high in protein and fibre, delicious, sustainable, and amazing for the environment."

They started with a hummus product that Vandenhurk says "went terribly wrong. . . We realized that making refrigerated products with a short shelf life in the middle of the prairies and getting them to market was not our expertise. So, we ended that project guite early on and moved into ready-to-eat chickpeas as a snack item."

They now sell a range of chickpea, lentil, and fava bean snacks and salad toppers across Canada and into the US through a range of channels, from small one-off stores to big conventional retail locations.

Vandenhurk says the consumer packaged goods market is tough, especially for small,

Shelf space is finite and we're all vying for the same space. WE'RE COMPETING WITH BILLION-DOLLAR ORGANIZATIONS, SO WE REALLY NEED TO BE STRATEGIC ABOUT HOW WE'RE **POSITIONING OURSELVES IN** THE MARKET.

emerging companies. "Shelf space is finite and we're all vying for the same space. We're competing with billion-dollar organizations, so we really need to be strategic about how we're positioning ourselves in the market."

Three Farmers is a brand that really resonates with people. The company is committed to sustainable growing practices, using minimal processing to produce wholesome food, and helping consumers understand where their food comes from and how it's made. "Our brand is distinctive in the marketplace and people love our story," Vandenhurk says.

They've been welcomed into US markets with open arms. "I just returned from a trip to the Pacific Northwest, and consumers in that area are very interested in where their food comes from and what they're putting in their bodies," she says.

hree Farmers products include snacks made from lentils, chickpeas and fava be

An expanding market has also let them expand their manufacturing capabilities, which has made them more attractive to investors. "It's a volume game," she explains. "So, you need to grow, and you need to grow

building her team has been a struggle. Saskatchewan doesn't have a big talent

pool when it comes to sales and marketing specific to consumer packaged goods, so they work with remote team members in Vancouver and Toronto.

However, "we are seeing an influx of production labour from the West Coast, because the cost of living there is atrocious," she concedes. "I think Saskatchewan is going to become a destination location for the labour market in coming years."

Despite the challenges, Vandenhurk has no regrets about building here. "We always have a number of projects going on, and the resources to help us do that are here in the Prairies," she says.

"When I was starting the company, I knew

As they expand, Vandenhurk admits that

nothing. I have an economics degree, so I don't have a science background, I don't have an ag background," she says. "I often found myself calling on individuals within the Ag-West Bio community to pick their brains on different subjects and figure out how to move the company forward, whether it be R&D-related or business planning. In recent years, as we've scaled, I have continued to lean on the Aa-West Bio community, Tapping into the resources they provide to young companies has been really beneficial."

Member Profile HUMATERRA REGEN AG:

Building healthy soil to support healthy plants THAT FEED HEALTHY PEOPLE



Since 2016, HumaTerra has been on a mission to improve soil health by increasing the diversity, density, and resilience of soil microbes in agricultural and reclaimed land. More recently, they've also expanded into the horticulture market.

"Our founder, Koenraad Duhem, understood that soil health is driven by biology, and if you can grow healthy plants, you have healthier humans and animals that are eating those plants," says Leon Pratchler, CEO of HumaTerra.

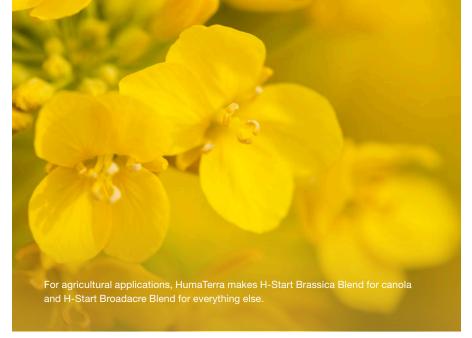
He explains that, while the success of most agricultural efforts ultimately depends on the health of the soil, the role of soil biology is becoming part of that conversation at a commercial level. "When we talk to farmers or horticulturalists, the first thing they are concerned about is fertility, because that's what everybody knows. How do we add fertilizer? How do we control the weeds? How do we put in the best seed genetics? When you start talking about the potential

of biology and soil amendments to increase the productive capacity, it's a new concept and conversation."

Farmers are good stewards of the land, he says, and they don't want to use more inputs than they need. "People would like to reduce costs, reduce the volume of product they're putting on, and continue to grow more crop. When we show producers that we can provide better crop health, better soil health, and the potential to reduce the use of inputs, there's definitely interest in that."

HumaTerra produces a compost pellet called H-Start that's customized for different applications in agriculture, land reclamation, and horticulture.

For agricultural applications, they make H-Start Brassica Blend for canola and H-Start Broadacre Blend for everything else. "They are similar, but with a slightly different ratio of ingredients," explains Pratchler. "We sell them through independent retailers,





number of companies in the biologicals space. WHAT SETS HUMATERRA APART IS ITS FOCUS ON

EASE OF USE, FLEXIBLE APPLICATION OPTIONS. LONGER SHELF LIFE. AND EASE OF STORAGE.

some selected Co-ops, and directly to farms if they don't have access to a retailer who sells it in their area."

They also have H-Start Reclaim for highly disturbed areas, such as pipelines, abandoned mine sites, or commercial construction sites. "Reclamation is similar to agriculture, but typically the soil conditions are far worse. We're just entering that market, but initial testing has been very positive."

They expanded into the horticultural space last year with H-Start Yard & Garden. Pratchler explains that typical potting mediums are sterile substrates and H-Start adds life into them.

"A few local greenhouses have done trials with our product and have had absolutely incredible results," he says. "I think people are starting to realize that what they've

always done can be enhanced when they start to think of it through the lens of biology and soil health."

HumaTerra creates the core of its H-Start products from materials such as organics and compostable materials that would otherwise be considered waste. Most inputs come from Saskatchewan. The compost is processed at its facility in Birch Hills, SK, to develop a natural microbial profile prior to producing the H-Start products.

With the growing awareness around soil biology, there is an increasing number of companies in the biologicals space. What sets HumaTerra apart, savs Pratchler, is its focus on ease of use, flexible application options, longer shelf life, and ease of storage

"We have a dry granulated pellet that has a long shelf life. It has a high fungus-to-bacteria ratio, which is important for soil health,

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and it can be blended with fertilizer or put down beside the seed on its own."

Although HumaTerra is enjoying the results its products have been achieving, he says the company is still in its infancy and they're excited about all the things they still have to learn. "The understanding of the biological process below ground has been studied for decades, but we still don't know that much about it. There's way more to learn and we're part of this educational journey."

It helps to have some of the best agronomists and scientists in the world right here. Pratchler says many of those connections were made through Ag-West Bio. "Without Ag-West Bio, we wouldn't have met guite a few of the companies and individuals we are working with today. There are a lot of smart people in Saskatchewan, and I think we've found a lot of them."

Member Profile QUANTUM GENETIX

DNA testing to improve efficiency and **INCREASE PROFIT FOR FARMERS**

TRADITIONALLY, CATTLE FEEDLOTS MAKE DECISIONS ABOUT FEEDING AND



"They're typically very confident in what they're currently doing," says Leigh Marquess, president of Quantum Genetix. "So, we ask them to try our system and let the technology demonstrate for itself." Using Quantum's system, feedlots can realize anywhere from \$20 to \$50 more per animal.

Quantum Genetix is a Saskatoon-based biotechnology company that uses genetics to improve efficiency and increase profit in the agricultural sector. The company is perhaps best known for its livestock testing system used in feedlots.

Quantum's Q-Sort is a genomics-based system designed to improve feeding efficiency and help feedlots maximize their market potential. "We identify and commercialize genetic factors that affect how animals eat and grow, and we combine that knowledge with a proprietary system that allows feedlots to sort animals into groups and better predict when animals should be harvested to make the most profit," explains Marguess.

Feedlots use Quantum's tissue collection test when the animals arrive. The DNA results are used to sort and track the animals' development. "The animals grow together in pens for three or four months. At that time, we take the genetic information we've collected and add it to other data and use that to sort the animals into groups based on how we think they'll grow," says Marquess.

The next step is a product called Q-Reveal, a software tool that uses genetic information to help feedlots optimize their selling decisions. "Information about all of the pens goes into the system, along with genetic information," Marquess explains. The system then connects that with other information, like how much the animals eat and how much they weigh. The results help feedlots determine the right time to harvest to get all the potential profit out of the animals.

Quantum Genetix was launched in 2003. but only began commercializing its products three years ago. "In the field of animal genomics, researchers believed that if they could identify differences in the animals, customers would understand how to use that knowledge to create value. That's not the case," Marquess says. "You need to give them a fully developed product that they can plug in and see the value. It's been a long, hard-learned lesson."

In 2009, Quantum diversified into crop testing. While most of their feedlot clients are in the US, the company is ideally located to reach crop producers closer to home.

There's a lot of pressure to reduce antibiotic use in cattle so Quantum Genetix came up with the notion of getting plants to make edible vaccines. "CATTLE WOULD GET THE **VACCINE SIMPLY BY EATING** THEIR DAILY RATIONS, AND IT COULD POTENTIALLY

ELIMINATE THE ANTIBIOTICS."

Quantum's Q-Protect kits are an easy. scientific way for a farmer to know what's going on in their field before they make an expensive investment in disease mitigation. The kits come with packages of test tubes for collecting samples. Farmers send the samples to Quantum and get DNA diagnostics back within 24 hours.

"First, we answer the question of 'do you have disease?' Next, we say how much disease there is. And then we have a calculator that allows them to put in their estimated yield and the price of the fungicide so that they can determine whether they should spray," explains Marquess.

More recently, Marquess started a new company called Relica to explore the use of plants to make oral vaccines for cattle. He explains that about 70 per cent of cattle are given daily antibiotics to prevent liver abscesses, which are common in cattle that are fed grain for an extended period. "There's a lot of pressure to reduce antibiotic use," he says. "So, if we could eliminate them and still address the liver issues, that would be helpful."

He came up with the notion of getting plants to make edible vaccines. "Cattle would get the vaccine simply by eating their daily rations, and it could potentially eliminate the antibiotics." Five years later, they have plants growing that are making the vaccines and the company is about to start animal trials to evaluate the immune response.

Innovations like these are only possible when you can hire the right people. "One of the positive things about being located in Saskatchewan is the access to trained labour here." savs Marquess. "We've hired everything from lab technicians to PhDs, trained here in the province."

Local connections have been vital to Quantum's success, and Marquess says Ag-West Bio is a good way to network and connect with other organizations. "We've been a member since the inception of our company, and they've continued to be a good resource as we grow," he says. "If they don't have an answer to a question, they can certainly point us in the direction we need to go. They're a very positive resource for the biotech community."

Quantum's Q-Sort is a genomics-based system designed to improve feeding efficiency and help feedlots maximize their market potential by using genetic factors that affect how animals eat and grow.

Communications REVIEW

Novel ways to share information: AN EXCITING CHALLENGE

WE BELIEVE THAT LEARNING AND NETWORKING CAN ALSO BE ENTERTAINING. FOR EXAMPLE, IN JUNE 2023, OUR ANNUAL MEETING FEATURED A GAMESHOW CALLED SHOW ME THE SCIENCE AND SHOWCASED FOUR MEMBER COMPANIES: PRAIRIE TIDE DIVERSIFIED, HUMATERRA, PROXIMA R&D, AND VERIGRAIN.



Leon Pratchler and Kent Gulash of HumaTerra make their pitch at Show me the Science.



Aq-West Bio continues to coordinate Global Biotech Week in Saskatchewan. A big thank you to our volunteer committee and the numerous partner organizations that host or co-host events during the week. These include Ag in the Classroom, Farm & Food Care Saskatchewan, College of Agriculture and Bioresources (USask), Innovation Genome Prairie, Café Scientifique, the Saskatchewan Food Centre, Nuit Blanche, Canadian Light Source, Saskatoon Public Schools Foundation, and Saskatchewan Science Centre. These partners are back for Global Biotech Week 2024.

In 2023 events hit or exceeded attendance targets. A few examples:

- An estimated 1200 people attended Beautiful Science at Nuit Blanche, where extraordinary science images were displayed on large screens and scientists engaged with the audience.
- Nearly 180 elementary students from 12 schools across 11 communities

participated in the Upcycled Art poster competition.

 A Biotech Week Science Zone attracted around 150 students at All in for Literacy in Saskatoon.

Putting names to faces

Our social media platforms saw healthy Saskatchewan, Saskatchewan Polytechnic, growth over this past year, thanks to several campaigns. Ag-West Bio staff introduced themselves to the community through short videos; our 'signature' Pure Heart Prairie Science video was published; and we released videos featuring several member companies. Watch for information about our activities on LinkedIn, Facebook, X and coming soon, Instagram!

Keep in touch

As always, the best way to keep up with what's happening in Saskatchewan's agri-food / bioscience sector is through our Weekly Update newsletter and Bio Bulletin e-magazine. Members are encouraged to submit events, news and articles to share in these publications.

Programs and partnerships:

TOGETHER WE'RE BETTER





Above: Dr. Chris Eskiw, CEO of IntelliYeast Laboratories, gives high school students a tour and science lesson.

AT AG-WEST BIO. WE EMBODY THE SPIRIT OF PURE HEART PRAIRIE SCIENCE IN **EVERYTHING WE DO. OUR PROGRAMS** ARE NO EXCEPTION.

Events REVIEW

Pure Heart

Bringing entrepreneurs, researchers, companies, and government agencies together is an essential part of our business.

In the spring of 2023, Ag-West Bio partnered with the Ministry of Agriculture to host Meet your Match, a workshop designed to foster research to industry collaborations. The aim was to ensure that Saskatchewan researchers are developing solutions that can be commercialized and adopted by the industry. This seminar created connections that led to cross-institutional proposals between researchers.

From April to June 2024, Aq-West Bio partnered with Female Entrepreneurs in Agri-Food Development (FEAD) to host the six-part Essentials for Business Excellence webinar series. The series featured subject matter experts who discussed topics

like grant opportunities, investment and financing tools, and governance and HR strategies. More than 150 people attended the live webinars, and the recordings are available online to FEAD and Aq-West Bio

The Sprouting Success Speaker Series, hosted in partnership between Affinity Credit Union and Ag-West Bio, and supported by the Global Agri-Food Advancement Partnership (GAAP), brought producers together to discuss real farm challenges. The final event of 2023, held at Agribition in Regina, SK, showcased virtual fencing in the beef industry. This innovative technology could significantly enhance livestock producers' ability to manage grazing effectively, supporting the health of Saskatchewan's diverse grasslands.

Prairie Science

We hosted six Knowledge Farm events in partnership with Innovation Saskatchewan. The Knowledge Farm is a forum designed to cultivate innovative ideas through connections and collaboration. One event Biologicals: What's the Buzz? brought together Novozymes, a major success story in Saskatchewan's inoculant industry and Greenlight Bioscience, an emerging American company looking to expand into Canada. The conversation left the audience buzzing about the biologicals market, including the regulatory challenges faced by start-ups, and the perceptions farmers hold towards this emerging sector.



Brigitte Weston, Director of Product Development with Gates Ag One was our guest speaker for the ABIC Speaker Series in May 2024. This lunch attracted over 100 researchers. Weston spent time visiting our research institutions, including the Crop Development Centre and the Global Institute for Food Security at the University of Saskatchewan.

If you have ideas, please reach out. We are always open to partnerships to co-develop programming that strengthens Saskatchewan's agriculture industry.

Diverse Field Crops CLUSTER

CLIMATE RESILIENT AGRICULTURE reduced environmental footprint





FARMERS ARE ALREADY FEELING THE EFFECTS OF CLIMATE CHANGE AS PESTS AND DISEASES ADAPT QUICKLY TO VARIABLE TEMPERATURES AND MOISTURE LEVELS.

The Diverse Field Crops Cluster (DFCC) is addressing climate change challenges by developing special crops that are more tolerant to water and heat stress, reduce greenhouse gases and increase carbon sequestration. These crops will give farmers viable rotation options and generate value-added products that contribute to economic growth.

In May, the federal government announced \$8.12 million in funding for DFCC through

Agriculture and Agri-Food Canada's
AgriScience Program - Clusters Component,
an initiative under the Sustainable Canadian
Agricultural Partnership. Combined with
industry contributions of \$7 million, the total
value of the five-year project is more than
\$15 million.

Managed by Ag-West Bio, DFCC is a coordinated group of organizations representing four crops: camelina, flax, mustard and sunflower. The goal is to increase the hectarage seeded to diverse crops, resulting in an agricultural ecosystem that is resilient to climate change – while also being profitable.

DFCC research activities are aligned with outcomes in three areas:

- Benchmarking GHG emissions:
 Comparing emissions of diverse crops to that of wheat and developing best practices for nitrogen use efficiency.
- 2. Development of camelina's agronomic qualities and resilience: Beneficial management practices (BMPs) and additional data for carbon accumulation will lead to greater use of camelina as a new oilseed crop and a viable alternative for production on poorer quality land.
- 3. Improving genetic resiliency, yields and disease resistance in rotation crops:
 Increasing yields and disease resistance in mustard, flax and sunflower will result in these crops being more competitive with other crops.

Project titles and Principal Investigators:

Greenhouse Gas (GHG) program for diverse crops

Dr. Kate Congreves (USask)

Integrated approaches for genetic improvement of flax

Dr. Bunyamin Tar'an (USask) and Dr. Frank You (AAFC-Ottawa)

Camelina crop and germplasm development-harnessing for climate resiliency

Dr. Christina Eynck (AAFC-Saskatoon) and Deb Puttick (Smart Earth Camelina)

Climate smart condiment mustards for crop productivity and resilience Dr. Bifang Cheng (AAFC-Saskatoon) and Dr. Howard Love (Mustard 21)

Breeding and experimental hybrid screening of confection sunflowers Katherine Stanley (Manitoba Crop Alliance)

Impact assessment study
Dr. Richard Gray, (USask)

For project details, visit dfcc.ca





35 years! How time flies when you're having fun.

Ag-West Bio has seen many trends come and go in the bioscience and agri-food sector, but one constant over the years is the strength of our community. Thank you to our members for supporting this organization. We look forward to working with you for many years to come as the sector continues to evolve.

Visit our website to learn more about our activities and member benefits.

www.agwest.sk.ca
PURE HEART. PRAIRE SCIENCE.

Financial statements are available for members upon request.





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PHOTO SOURCES:

Ag-West Bio Three Farmers Quantum Genetix HumaTerra Regen Ag iStock photos Dave Stobbe

