

**Accelerating Saskatchewan's
AG-FOOD CLUSTER**

Ag-West Bio Annual Report 2017-18



President's MESSAGE

Without question, these are interesting times for those of us engaged in ag-food innovation! Over the last year, the ag-food sector has received well-deserved attention from the federal government as an area that can make significant contributions to Canada's economic growth agenda.



Interest was sparked by a series of reports published by the Advisory Council on Economic Growth chaired by Dominic Barton, commonly referred to as the 'Barton Reports'. One of these reports, "Unleashing the

Growth Potential of Key Sectors" defines the opportunities for the ag-food sector, including key Western Canadian crops such as oilseeds (canola) and pulses. The reports were related to the launch of a federal innovation supercluster initiative, and ultimately, the selection of the pan-prairie Protein Industries Canada (PIC) supercluster. PIC will be challenged to develop an innovation ecosystem allowing for growth of small, medium and large companies, interacting closely with academia, producer associations and government institutions. Ag-West Bio has had the privilege of serving as a founding member of PIC, coordinating and building pan-prairie

interests, and leading to a successful proposal. We look forward to working with PIC management, Board of Directors and members to develop a true, value-add and crop ingredient strategy to make the Canadian prairies a global centre of excellence for high-value crop products.

Recently, we submitted a project to Agriculture and Agri-Food Canada (AAFC) under the AgriScience program (Clusters), to establish a Diverse Field Crop Cluster. The cluster would be in partnership with AAFC and seven specialty crop organizations. We expect an announcement in the coming months.

We continue to monitor and invest in start-up companies, develop long-term investment strategies and organize events and workshops to increase the community's networking capacity. High priority is also placed on outreach and communication strategies, including the 2018 version of 'Saskatchewan's BioScience Resource Guide.'

Ag-West Bio's staff and Board of Directors are thankful to the Government of Saskatchewan, and its partnership with AAFC, for renewing our funding agreement for five more years, from April 1, 2018 to March 31, 2023. Ag-West's new strategic plan "Igniting Innovation: Accelerating Saskatchewan's Ag-Food Cluster," focuses on value-added agriculture technologies, the role of digital technologies, artificial intelligence and automation in Saskatchewan's agricultural industry.

It is my pleasure to acknowledge the exceptional efforts of Ag-West Bio's staff in achieving the ambitious goals of our organization. Many thanks also go to the volunteer board of Ag-West Bio for their strategic oversight and advice, which they continue to give so freely. ■

A handwritten signature in green ink, appearing to read 'Wilf Keller'.

Wilf Keller

Ag-West Bio's new strategic plan
focuses on value-added
AGRICULTURE TECHNOLOGIES

Letter from THE CHAIR



As I travel and connect around the world, the word I hear most commonly – regardless of the jurisdiction – is *innovation*.

Whether I'm meeting with private industry, educational institutions or government, *everyone* is focused on innovation, a seemingly straight forward concept that is, in fact, complex and often misunderstood.

Currently in the agriculture and food industry, innovation is not just about new scientific discoveries and technologies developed by scientists and academics; **it's clear that a great deal of innovation within the agriculture and food sectors is now being driven by consumers.**

Historically in our industry, the research focus was on the producer: developing plants and livestock that would perform more efficiently for their farming operations. The question today is: how can we best understand the consumer's changing preferences and develop new and exciting products for them from our commodities?

Saying this in no way downplays the importance of traditional agricultural science. Consider what's happening in areas such as crop and animal genomics and nutrition. We are seeing an

explosion of technologies that we could only have dreamed of as recently as 10 years ago.

Think of artificial intelligence, new developments in human nutrition and health, and plant-based protein – of course there are many more.

It's clear that much of what we are experiencing in our industry today – both good and bad – can be traced back to consumers demanding more in terms of sustainability, the environment, animal welfare and other issues.

Social media now provides a forum for many people to weigh in on issues that affect agriculture and food. With innovation so central to agriculture and food, I believe it is essential to have an unbiased, science-based organization like Ag-West Bio to carry valid messages from our industry. This organization is a key thought leader in this arena today and, more importantly, what it might look like in the future.

It has been my great pleasure to work with the amazing team at Ag-West Bio and I would like to thank the staff for their dedication and hard work over the last year. I would also like to thank my fellow board members who have given so generously of their time and knowledge to provide very valuable input into the workings of Ag-West Bio.

Finally, my sincere appreciation goes to the Saskatchewan Ministry of Agriculture for its continued participation and recognition of the role that Ag-West Bio can play. ■

Art Froehlich

Vision: Saskatchewan's catalyst for leading Canada's foremost bioeconomy.

Mission: Accelerating innovation and enabling companies to commercialize research.

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

Ag-West Bio Board of Directors

Art Froehlich (Chair) – Agriview Inc.
Bob Tyler (Vice Chair) – University of Saskatchewan
Karen Churchill – Cereals Canada
Maurice Delage – Delage Farms
Laurie Dmytryshyn – PIC Investment Group Inc.
Bill Greuel – Saskatchewan Ministry of Agriculture
Tim Herrod – Nutrien Ltd.
Kendra Mueller – Farm Credit Canada
Agribusiness and Agri-Food
Leah Olson - Agricultural Manufacturers of Canada
Kate Sanford Mitchell – Arysta LifeScience
Steve Webb – Corteva Agriscience

Ag-West Bio Staff

Wilf Keller – President and CEO
Brad Bly – Director of Commercialization
Mike Cey – Director of Corporate Initiatives
Boni Dorish – Director, Finance, Administration and Human Resources
Lana Mollard – Corporate Secretary and Executive Assistant to the President & CEO
Patrick Pitka – Chief Financial Officer
Jackie Robin – Director of Communications
Allison Sigstad-Kirzinger – Events Coordinator
Bev Stangeland – Manager of Industry Development
Betty Timmons - Administrative Assistant
Pamela Warren - Administrative Assistant

The Western Canadian agricultural industry scored a major coup with the Government of Canada's award of the Protein Industries Canada (PIC) supercluster earlier this year.

While organizational structure, policies and program development is still underway, and funding agreements are still being settled, all the major players – from growers to processors to distributors – see great potential in this new development.

INDUSTRY OVERVIEW

Tapping the potential of PROTEIN INDUSTRIES CANADA



“The goal of PIC is to take crops and break them into their component parts to create better value in food and feed,” says Ag-West Bio President and CEO Wilf Keller. “We are creating an innovation ecosystem that is a mix of large, medium and small institutions, working with universities, supported by government, and connected to producer associations to create networking opportunities and a rich environment for expanding existing companies, growing new companies, and attracting outside companies to our region.”

The supercluster builds on existing infrastructure, production and research capacity in the Prairie Provinces, and addresses the federal government's interest in increasing the scope of Canadian agriculture. “With this program, we can respond to the Barton Report's challenge to expand the economic value of the agriculture industry by 50 per cent,” says Keller, referring to a report entitled “Unleashing the Growth Potential of Key Sectors,” written by Dominic Barton for the Ministry of Finance's Advisory Council on Economic Growth.

To become a world leader in the
plant protein industry, sustainability is a
KEY CONSIDERATION

While PIC funding covers only the next five years, Ron Styles, PIC acting president, says the creation of that ecosystem will have a lasting benefit: “It's the network – companies doing research, farmers and producers, processors and manufacturers, sales and marketing, all working together – that will be valuable in the long-term.”

The PIC proposal covered four pillars: create, produce, process and sell. “We will have a line of funding for germplasm and improvement to actual seeds, production improvements such as data analytics and artificial intelligence, improving agricultural processing of crop proteins, beginning with pulses and canola but eventually moving to other crops, as well as a marketing and sales component,” says Styles.

“A large part of the marketing will be working with the perception of the Canadian brand overseas. We have a reputation for high quality products, a solid intellectual property (IP) system, traceability, social justice, and political stability. We have a regional perspective in Canada, but other countries don't think of us as provinces or regions.”

Peter Phillips, professor at the Johnson Shoyama Graduate School of Public Policy at the University of Saskatchewan, adds, “We need to be sophisticated. We need to look like a credible venture beyond our catchment area. It will be a challenge to truly become the hub. We will really need to become the international leaders, the place people come to learn more. There are real opportunities. And the biggest challenge will be to make strategic decisions that have a real impact.”

continued on next page

The goal of PIC is to take crops and
break them into their component parts to
CREATE BETTER VALUE





“If we don’t capitalize on this opportunity, other countries will. No one can grow the quality and quantity of these crops but they’ll import our crops and do the processing themselves. It’s time for us to strengthen that value chain and get all the links working together,” says Styles.

To become a world leader in the plant protein industry, sustainability is a key consideration. Dan Prefontaine, president of the Saskatchewan Food Industry Development Centre (Food Centre), identifies the importance of using all parts of protein crops, including co-products such as hulls or starches.

“We need to change the value of the product through more value-added processing. The solution may be food-related, but it may also be found in other applications. We work in the food industry, but we will also be working with a wider group of industries to make sure this is sustainable over the long term,” says Prefontaine.

Part of the sustainability of the project includes developing the human resources this expansion will require. Styles believes it will also entail changing attitudes about what it means to be in the agricultural industry, from a skills perspective. “We’re moving into the realm of digital processing systems and artificial intelligence. You need a different set of skills than conventional farming,” he says.

University programs across the Prairies will be the source of many of those future workers, as well as research projects related to PIC. Bob Tyler, Associate Dean of Research and Graduate Studies, College of Agriculture and Bioresources at the University of Saskatchewan, sees great potential in PIC’s merging of industry needs and public-sector research.



We will be able to create
higher-value specialty proteins with
UNIQUE APPLICATIONS

“Public sector research often suffers from a disconnect from industry, but in this case, we will be directly connected to industry needs and connect incoming grad students with industry-relevant research projects. We’re building on a strong existing research program and strong support systems with the combination of the Global Institute for Food Security, Global Institute for Water Security, POS Bio-Sciences, the Food Centre, and analytic capabilities at the Canadian Light Source. This is a good place to have a nucleus of activity.”

PIC has also worked with several venture capitalists to provide \$150 million in funding for small- to medium-sized businesses interested in building a higher value protein and co-products industry. “Prior to PIC funding, we could prepare pea protein as large volume, lower-value, base ingredient, but now we will be able to create higher-value specialty proteins with

There is so much potential to
expand our ingredient
PROCESSING INDUSTRY

unique applications. A small entrepreneur or SME will have an opportunity to develop high-value protein fractions that are economically viable at lower production volumes, and have access to the market,” says Rick Green, VP Technology at POS Bio-Sciences.

PIC is a pan-prairie initiative, and there is great potential to tap into all the knowledge at institutes, food centres and universities across the Prairies, and beyond. “We’ve always known about the existence of partnership potential in Minnesota, and research happening at [the Universities of] Guelph, Laval, McGill and UBC. We didn’t have the funds to act on them, but we do now,” says Tyler.

PIC’s current board represents its commitment to a pan-prairie approach, as well as acting as a hub whose spokes connect even further. Directors come from Manitoba, Saskatchewan and Alberta, with three more spots to fill. While the board is being appointed now, the plan is to have a membership structure that will elect future board members once PIC is up and running.

Frank Hart, interim PIC Chair acknowledges the tight timing: “We need to be functioning by fall of this year, because we expect the funding to begin to come by the end of summer. The development of a contribution agreement is underway with the federal government right now.”

Next steps involve organizing a series of programs to engage industry on the focus of the supercluster. “We’re going to work with industry over the summer to figure out the problems we need to solve. In the fall we will host a symposium where we’ll roll out what the organization will



The Saskatchewan Food Industry Development Centre can develop meat analogues with the texture and taste of real meat. Its “chicken” stir fry, made from a combination of pulse proteins, is hard to distinguish from the real thing.

be doing. We already have an inventory of projects that need to be adjudicated,” says Hart.

This is only the beginning of a program that needs to be both nimble and strategic in demonstrating value over a short time period. But the enthusiasm is unwavering. “There is so much potential to expand our ingredient processing industry, which will increase our ability for food production. This funding is going to kickstart it,” says Green.

“PIC will transform how we think about agriculture innovation across the Prairies,” says Keller. ■



COMMERCIALIZATION REPORT

On the verge of UNPARALLELED CHANGE



By Brad Bly
Director of
Commercialization

The world has now firmly entered the fourth industrial revolution, characterized by a fusion of technologies blurring the lines between physical, biological, and digital spheres.

Rapidly changing systems are becoming increasingly intelligent and interconnected. This revolution promises to radically transform the productivity and efficiency of all global production systems. This opportunity is most apparent in the world's agricultural industries, where solutions are being developed to sustainably feed a growing population. Growth in food consumption is marked by higher demand for quality protein and diversity in food choice, as the global middle class continues to expand.

Across the agricultural value chain, from production of raw commodities through to marketing of new products and services, the industry is on the verge of unparalleled change. The key accelerators are: new consumer preferences for personalized, on-demand products and increasing awareness for health and sustainability; development of emerging technologies (new biologicals, advanced manufacturing technologies, and connected devices); and new configurations in marketing. Driven by these accelerators, a review of global agriculture industry trends indicates the five most prominent fields of innovation:

1. **Rerouting value chains:** bridging or skipping value chain steps by going direct-to-consumers to increase supply chain efficiencies.



2. **Crop efficiency technology:** merging innovations in multiple areas and across industries (such as drones, robots and big data) with irrigation, soil and crop technologies to increase yields.
3. **Bio-agents:** reducing the ecological footprint through biologically-produced agrochemicals and bio-materials.
4. **Food technology and protein alternatives:** plant-based 'meat and eggs' as well as other foods being developed to harness the demand for 'sustainable' protein.
5. **Controlled environment and vertical production:** smart greenhouses and other types of controlled environment farming are accelerating quickly.



Made in Saskatchewan: DOT Power Platform is an autonomous system for powering implements.



Like the industries we serve, Ag-West Bio is constantly evolving. The company is adjusting and expanding its focus to include assistance to companies working in all the areas above, with our sites on those developing and commercializing digital technology solutions.

Often referred to as Ag 2.0, the growing application of digital technologies and the “Internet of Things” (IoT) to agriculture holds incredible promise for increasing productivity, efficiency and sustainability. The advent of IoT, big data and blockchain solutions will take production and distribution to new levels of sophistication never seen before. Agriculture is quickly moving from the least digitized industry to that of a global leader.

In the past year Ag-West assisted more than 150 companies with commercialization support. This varied widely, from provision of timely information and valuable networking connections, to complex business review and input, accelerator services, and financial capital. The activities of the companies we assisted were as diverse as Saskatchewan’s agriculture industry itself, ranging from digital solutions to production and distribution, development of biological crop protection, new crops, innovative processing, waste water recovery and irrigation, and almost everything in between.

To foster growth in the entire bioeconomy, we try to keep abreast of all life-science opportunities in Saskatchewan. We continue to offer support to companies developing human and animal health, and pharma solutions.

We are delighted to assist new, innovative companies that are competing in a fast-paced growth environment. At the same time, we continue to support Saskatchewan research endeavours that form the foundation of our industry: crop and animal productivity, and food processing. For details about our commercialization services and initiatives, please browse our website. And feel free to contact me; I am eager to hear your ideas and plans for commercialization—Ag-West Bio is always happy to help! ■

Corporate Initiatives

A community of diversity AND CONNECTIONS



By Mike Cey,
Director of Corporate
Initiatives

As the Director of Corporate Initiatives, my role includes seeing a broad view of the cluster and recognizing the opportunities that will advance Saskatchewan’s bioeconomy.

The following are examples of the wide range of the initiatives we have been involved in over the past year.

Northern connections:

An area of the province that holds great opportunity is northern Saskatchewan, where companies are forming and growing based on unique products, processes and technologies. At the annual “Walk in the Woods” conference in La Ronge last August I began to forge relationships with key leaders and entrepreneurs. In December, Ag-West Bio and the Keewatin Community Development Corporation of La Ronge co-hosted a workshop in Saskatoon that focused on wild rice, fireweed, sarsaparilla and birch fungi. Commercial and research and development (R&D) collaborations will help advance growth in this space.

The Diverse Field Crop Cluster:

The Diverse Field Crop Cluster (DFCC) proposal would co-fund scientific research and development in several

key areas and crops on a five-year renewable basis, under the Canadian Agricultural Partnership’s (CAP) AgriScience program (Clusters). Ag-West Bio led the formation and project development of the DFCC proposal, which includes flax, mustard, canary seed, quinoa, camelina, hemp and sunflowers.

These crops are grown on about 2.5 million acres across Canada, with a farm gate value of approximately \$685 million (2016 figures). Because of their smaller acreage, they have been under-represented in R&D efforts. Working together, these crops can grow their value proposition from the farm gate through to the end user. Given the potential for success of the DFCC proposal, acreage will be projected to reach four million acres by 2023, with a farm gate value of \$1.5 billion. A more diversified cropping mix would help to extend rotations, break disease and pest cycles, and insulate producers from the volatility of commodity price cycles. We expect an announcement in the coming months and activities to begin soon. Ag-West Bio would continue to act as the lead applicant and lead administrator for this cluster.

New medicine:

In the coming year, Ag-West Bio will work with the University of Saskatchewan, National Research Council Canada and the private sector to develop a medicinal marijuana cluster in Saskatchewan, encompassing agronomic production, clinical research, and policy development.

Working together is a strength:

A hallmark of our efforts to grow the bioeconomy in Saskatchewan is the ease with which various players find ways to work collegially and collaborate as new opportunities emerge. This is one of our greatest strengths and a true advantage for the province. ■

COMPANY PROFILE ENVIROWAY

Delivering clean biological WATER SOLUTIONS



When you turn on your dishwasher or washing machine, you may not think about where the water goes afterwards, or what kinds of pollutants it is carrying with it. The research and development teams at EnviroWay think about it daily, and they are working to solve wastewater problems both upstream and downstream.

“We make products with the end in mind,” says CEO Bob Behari, “because we are involved in the end process and we understand it. If you understand the biological process from start to finish, you can work with it, rather than against it.”

After 20 years in the wastewater business, EnviroWay has solid research in biological products that have a constructive environmental impact. They offer Ecologik™, a line of super concentrated bio-based cleaning products for homeowners, while also providing biological wastewater management solutions for municipalities.

Above left: Bob Behari shows off some of EnviroWay's many bio-based cleaning products in the Saskatoon showroom.





Lab technician Dr. Rao and CEO Bob Behari.
EnviroWay products and processes use microbes and enzymes to do the work.

“There are many problems with the current wastewater infrastructure in Saskatchewan and across the country,” says Behari, noting that some jurisdictions are approaching a crisis level.

“Currently the wastewater treatment market is dominated by engineering. Municipalities are looking at new infrastructure as the solution. But it’s actually bacteria that are doing the work. The biological aspect of treatment is very poorly understood.”

EnviroWay’s team of scientists, which range in specialty from analytical chemistry, hydrocarbons, fermentation, limnology, toxicology, microbiology and environmental science, are working on several aspects of the wastewater problem. They are developing microbial strains that digest waste sludges and break down what was once toxic waste into water and CO₂.

“We’re helping municipal wastewater systems optimize by activating the microbes that exist in the sludge and adding a few that don’t,” explains Behari.

In the Canadian climate, as well as other temperate regions on the planet, it is a challenge to convert sludge, since microbial activity slows down in cold weather and snowmelt causes a glut of wastewater before the microbes have been able to re-activate in the spring. “We add seed product to speed up microbial activity during the five to six months we have to get rid of sludge in the Canadian climate,” says Behari.

Other research teams at EnviroWay are looking at replacing common industrial chemicals with non-toxic alternatives. Degreasers, for example, used in the oil and gas industry, are usually toxic, flammable, and an aspiration hazard. A new soy-based product developed at EnviroWay is biodegradable, biorenewable, and has no aspiration risks.

The EnviroWay team has also managed to replace phosphates in their industrial cleaning products. “The replacement chemicals are working as well or better than the original ingredients,” says Behari. “Phosphates have been banned at the residential level for quite some time, since they cause

eutrophication and anoxia in water bodies, which promotes excessive algae growth that is toxic to aquatic life. But at the industrial level, they are still in use. Our industrial solutions are phosphate and nitrate free, and fully competitive with conventional products.”

In EnviroWay’s earlier days, Ag-West Bio provided funding support to test water chemistry and help develop some original strains of microbes to work on various environmental issues, from household waste to pulp and paper, to hydrocarbons. Since then, EnviroWay has been able to grow its R&D department so they can now do much of that work in-house.

Products are currently on the market for household cleaning, municipal wastewater management, and managing ponds and lagoons. New products are underway for the oil and gas industry, and EnviroWay is turning its R&D attention to wastewater issues in other regions, such as the Ganges in India.

There is great potential for expansion of the technology to other industries. “Biotechnology-based products are not just for wastewater,” says Behari. They can be used for bio-composting, bioremediation, animal feed, biofertilizer, and more!”

Being based in Saskatchewan presents both challenges and opportunities. “It’s a small population, and the green market is stronger on the east and west coast. It’s a good testing ground, because if products are profitable in Saskatchewan, they’re scalable anywhere.

“We have good support systems here. We have research and development capacity, NRC-IRAP program support, and from that base of support we can take it global. We can use those resources to great benefit.”

“If you look at the history of our company—we started as a one-man operation—things are so promising. We are now exporting globally and providing jobs locally and abroad. If a company like ours can get support to commercialize, there is so much opportunity for others.” ■

Designing machinery to process **PLANT-BASED PROTEINS**

Mera Food has taken a unique position in the plant-protein processing industry: the company has developed a product that serves both emergency nutrition needs in developing countries, and as an ingredient to suppliers of premium foods.

What started as a family-owned engineering firm in 1987 has become Mera Group of Companies, including Mera Food. Mera Food began as a project in Cuba in 2002 when the sugar cane export industry collapsed during that country's transition from dependence on the Soviet Union.

"They needed to use those lands to grow a supply of protein instead of sugar. We did a pilot at Aguacate to test soybeans as a source of protein, and were soon growing 40,000 hectares of soybeans in rotation with corn," says Wayne Goranson, president and CEO of Mera Group of Companies and Mera Food. "But feeding corn and soy as animal feed is an inefficient use of plant protein. In 2005 they asked us to work on a solution to convert soybeans into a product that could be converted to protein for humans instead of livestock feed."

Mera Group of Companies had established its engineering expertise in a wide range of industries other than agriculture, such as oil and gas. "We already had a stable of engineers in our company to provide expertise and explore this process. And

we learned from our experience in those other industries as well," says Goranson.

Goranson challenged his team of engineers to come up with a solution that was portable and completely self-contained, producing its own electricity and zero waste. They tackled the challenge using hydrodynamic cavitation, a military technology that came into the public domain that stretches water, collapses air bubbles and creates a sonic wave and heat.

"What Mera does very well is begin with a technology and build on either end of it to make it useful," says Goranson. "Technology is an event, and we've turned it into an industrial process."

The final outcome is a soybean processing machine that fits in a 20-foot sea container, can be shipped anywhere, makes its own electricity, takes soybeans and water as inputs, and produces high quality, tasteless, odourless soymilk as outputs. Unlike other bean and nutmilk processes, which leave 40 to 50 per cent of the original seed meal as a byproduct, Mera's machine incorporates the entire seed, and is waste-free.

"In our experience with the oil and gas industry, we learned about the value of creating a product close to where it would be consumed. Oil wells in extreme locations need to be entirely self-reliant," says Goranson. "We have developed a machine that is small and self-contained. It can go where it is needed."

The team chose to work with soybeans because the fibrous components of the soybean are one of the most durable plant substances. "If we could process soybeans, then we could process anything. You could use any pulse in our process."

Mera Food's business plan is based on three revenue streams. The processing facility can easily be moved to an area that is in need of food aid, and produce low cost, high quality, digestible protein. Last year, for example, Mera delivered a soymilk processor to Haiti after Hurricane Matthew. "We distributed the product in the countryside



President and CEO Wayne Goranson pours out a sample of soy milk while Senior Engineer Alex Rood looks on at the Mera Food facility in Regina, SK.



right from our truck. We were serving kids right outside their schools,” says Goranson.

They can also sell their product to companies with an existing brand who want a quality ingredient as the basis for their own brand. “We have a premium product: healthy, no flavour, no odor. Our name is not on any products on the shelf. Our customers are people who have their own trademarks and want a quality product,” says Goranson.

Occasionally, Mera Food will build a processing machine for an organization and sell it to them, with firm agreements about intellectual property, maintenance and guidelines for use. “We would sell to the right customer that follows production protocol and protects our intellectual property. We’re protective of our intellectual property.”

Mera Food works closely with the Saskatchewan Food Industry Development Centre, (Food Centre) and finds it advantageous to base their business in Regina. “We have a good-minded, agriculturally-based region, with nearby organizations like the Food Centre to help us with product and process. It’s easy to attract people to Regina because the quality of life is so good.” ■



Above: Wayne Goranson helps to distribute Mera Food’s soy milk to children in Haiti after Hurricane Matthew.

COMPANY PROFILE THE KEEWATIN COMMUNITY DEVELOPMENT ASSOCIATION

Northern Saskatchewan Products SUPPORTING INDIGENOUS COMMUNITIES



Northern Canada is an area rich in both resources and culture. The Keewatin Community Development Association (KCDA) is working in Northern Saskatchewan to create jobs, give its residents hope, and show the value of the North to the rest of Canada.

At 37 per cent, Northern Saskatchewan has one of the lowest employment rates in Canada. Randy Johns, Executive Director of KCDA, says, “There are people who are so discouraged they don’t even try to look for a job. Young people can’t see a way of having a productive life. Poverty is far too common.”

KCDA is a non-profit organization that has been working in careers and economic development for the northern region since 1996. They began by working with mining and timber companies that operate in the north, but they have since begun to focus on more traditional resources of the boreal forest.

“While there is a lot of research on boreal products from Europe and Asia, North America hasn’t tapped into the value of these products. This is a whole new area that we can explore,” says Johns.

Boreal Heartland is a division of KCDA that works with existing Indigenous connections with the land to harvest non-timber forest products sustainably. They hire 90 per cent Indigenous community members and pay an additional five per cent to Indigenous people.

“This is not a new field, but it’s new for people to be taking it seriously,” says Johns. “It’s hard to assign value to areas where there isn’t commercial timber or mining opportunities. A lot of northern people have been convinced that there’s no value to their land. We really need to rethink the value of what we have.”

Boreal Heartland has established an Indigenous advisory committee to ensure that the harvest is done respectfully and sustainably. Care is taken to consult Elders and knowledge keepers who maintain their traditional gathering of plant medicines.

KCDA’s focus is to keep the value available in local knowledge and traditional resources in northern communities, to give people purpose and hope. “There’s potential that if we don’t get involved with these forest products, someone else will. The people who live there are pushed out if people from the outside take the resources. It’s better to benefit the people who live on the land.”

Many of the harvesters are gathering plants along their traditional winter trap lines, which offers further economic benefit for those involved in a traditionally seasonal industry.

There are plans to develop a line of herbal teas from products like Labrador tea, wild mint and sweet gale among others, as well as spice blends. Wild mushrooms such as chanterelles,



Boreal Heartland harvesters gather fireweed in 2017.
Fireweed is used as an extract in skin care products.

morels and boletes have several gourmet cooking applications, while chaga mushrooms are lauded for their health benefits. Wild berries from the north are often praised as super foods.

Beyond food opportunities, there are also hints that some plant extracts could be used for their antioxidant properties. With more research some of these plant products could replace manufactured additives in anything from cleaners to animal feeds.

The venture seems promising. To date, Boreal Heartland has begun to provide fireweed as a skincare extract, processed and marketed by Lucas Meyer Cosmetics as Canadian Willowherb™.

Johns has high hopes for the connections he can make as a member of Ag-West Bio. “We’d love to work with companies interested in developing nutraceutical ingredients and food products sourced in the North. There’s good synergy there, as well as a demand for plants with nutritional and nutraceutical qualities to be added to health foods.”

“Proximity to the University of Saskatchewan is really helpful too. We’d love to connect with researchers who want to work with plant compounds. Some initial research has suggested some plants, like sarsaparilla, could be effective against certain cancer cells.”

With hundreds of boreal plants that have traditionally been used as food and medicine, and traditional knowledge available to point to those with desirable properties, there is great potential to develop further ingredients and opportunities.

And with these new products come new hope for northern communities. “When we suffer, Saskatchewan suffers. Helping the North helps society in general,” says Johns. “It behoves Saskatchewan to pay attention.” ■

A woman in a dark blazer is pointing with a pen at a glowing node in a complex digital network diagram. The background is a blurred office setting with other people. The entire image has a blue color overlay.

EVENTS AND COMMUNICATIONS

Creating the right connections, **GETTING REAL RESULTS**

This is an exciting time – and a great place – to be involved in agriculture. This research cluster is the heart of Canadian ag-biotechnology, and developments in digital technologies are advancing agriculture at all levels – from the lab to the farm gate.

Two important activities consumed a great deal of our communications and events time and energy this past year: The Protein Industries Canada (PIC) supercluster proposal; and our own strategic planning for 2018-2023.

Winning the federal supercluster competition was a great achievement for the Prairie Provinces. As a founding member of the supercluster, Ag-West Bio played a facilitating role, bringing key people together to develop the concept, which included numerous strategy sessions and expertise from across the country and around the globe. The efforts ultimately resulted in a successful proposal.

Developing our 2018-2023 strategic plan entailed an exhaustive environmental scan, many consultations with industry, academia, students, and other stakeholders, and led to the production of a document that will serve as our roadmap for the next five years.



To bring value to more members, we have made a conscious decision to provide more small, targeted networking events, seminars and workshops, rather than one or two large events. We hosted or co-hosted more than 30 events in the past year.

Partnerships

Early in 2018, Ag-West Bio partnered with Bioscience Association Manitoba and BioAlberta in a new venture called Prairie Biosciences Canada (PBC). This is a pan-western trade initiative to accelerate the growth of the clean technology sectors in the life sciences industries of Saskatchewan,

Manitoba and Alberta. With funding from Western Economic Diversification Canada, PBC will profile the clean technology cluster in Western Canada, provide training and mentorship opportunities related to trade show readiness and market acquisition, and coordinate the planning and participation in national and international trade missions.

Partnering with BioTalent Canada has allowed us to enhance our member benefits, which will be implemented in the coming year. We also participated in BioTalent's Labour Market Report "Mapping Potential: Profiles of Canada's biotech frontiers" to share some key Saskatchewan statistics with the rest of the country. The report is available online.

Science advocacy

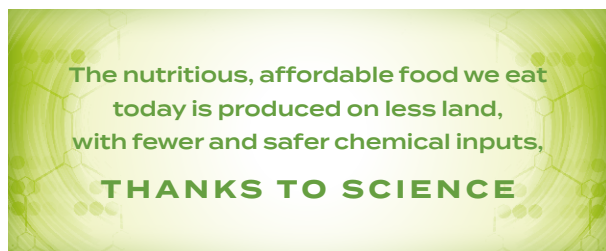
One of our roles at Ag-West Bio is to promote science. We partner with and promote the organizations mandated with agriculture outreach: Agriculture in the Classroom, Agriculture More Than Ever, and Farm and Food Care. Nationally, CropLife Canada and the Centre for Food Integrity conduct consumer research and produce great resources. We are lucky to have these groups working full time to tell the positive stories about modern agriculture.

We take the lead on Global Biotechnology Week. A volunteer committee drawn from Saskatchewan's bioscience cluster organizations helps to develop industry and public outreach events each September. This BIOTECCanada initiative has grown since 2003 to include every Canadian province as well as Europe, the United States, and Australia. Saskatchewan has been leading the pack in creative Biotech Week events, with names like Biotech and Beer, Biotech Trivia Night, the Amazing Biotech Race and the Walking Dead Dance.

Ag-West Bio also helps to organize Ag in the City each spring and coordinates a "Science Zone" where kids can take part in hands-on activities: pipetting, DNA extraction, 'pulling' a lamb, crossing canola flowers, holding wiggling larvae, and so many other interesting things. Scientist volunteers make this annual event a huge success!

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Today more than ever, agriculture is driven by science and technology. To those of us actively involved in the sector, this statement is blatantly obvious. However, the average consumer may not realize that the food they eat is the product of technology. Humans have been improving crops since the beginning of agriculture, and science has literally prevented mass starvation (thank you, Dr. Borlaug!). The nutritious, affordable food we eat today is produced on less land, with fewer and safer chemical inputs, thanks to science.

A contentious issue we deal with in the industry is the demonization of genetically modified organisms or GMOs – where the genes from one species is inserted into another, to produce crop varieties with desired traits (e.g. cold tolerance, disease resistance, micronutrients). The scientific consensus is that GMO products are as safe as those from any other production system. Unfortunately, there is a huge gap between the scientific consensus and what the public believes. New gene editing techniques are becoming available, but the public doesn't easily discriminate between different breeding methods, and public trust is crucial for any of these tools to be accepted.



Above: Ag in the City Saskatoon is an annual event where urbanites can explore agriculture. Ag-West Bio coordinates the Science Zone, where scientist volunteers offer hands-on, table-top science activities to the visitors.

Right: The Amazing Biotech Race has been an annual Global Biotech Week event at Innovation Place in Saskatoon since 2011.

We understand the conundrum faced by companies who need to compete for customers, but we are concerned that opportunistic marketing (the “Non-GMO Project” is an example) helps to further stigmatize biotechnology. As we strive for improved sustainability in food production, we need to remember that science is the only way to achieve this common goal. The agri-food community needs to stand together. ■



Strength of many voices:

Helping advance the aspirations of Ag-West Bio's members and bringing them tangible value is one of our goals. Membership ranges from startups, to public research institutions, to multinational corporations. We are happy to report that we have increased our ranks by nearly 10 per cent in the past year. We are your advocate, and many voices are stronger than one.

Become an Ag-West Bio member!

Anyone active in Saskatchewan's bioeconomy should consider membership in Ag-West Bio. It is very affordable, and our numerous networking events offer tremendous relationship building opportunities.

Thank you for working together for growth

We would like to thank all of our members for supporting our activities. By working together to grow the provincial bioscience sector, we strengthen Saskatchewan's economy in general.

Visit our website to view member profiles: www.agwest.sk.ca

Financial statements are available upon request.

Growing Forward 2

A federal-provincial-territorial initiative

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