

Growing Opportunity

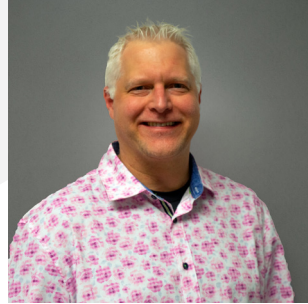
Canada's plant-protein potential

The potential of
Canada's crops (pg.4)

Increasing the use of
artificial intelligence (pg.3)

Seeing the benefits of
collaboration (pg.8)

Message from CEO Bill Greuel



Pay close attention, and you'll see a common theme in this issue of our magazine: Canada's ingredient manufacturing, food processing and bioproducts sector holds plenty of potential. In particular, it holds

25 billion dollars' worth of potential, which can create a stronger, more competitive and more productive Canada.

The co-investments we've committed to over the past several years are helping move the sector down the path toward this \$25 billion, but just as important are our efforts to connect the ecosystem. This connection provides a valuable feedback loop when creating new products, technologies and services, while also helping create new markets for Canadian products and new international partnership opportunities for Canadian companies.

At the time this magazine is released, we'll be about a month post-Plant Forward. A bi-annual event to showcase Canada's strengths in ingredients and food,

Plant Forward attracts international companies and investors interested in partnering with or investing in Canadian companies. It showcases the best Canada has to offer in the plant-based ingredient and food space, while offering our companies the chance to learn from and engage with international expertise. This year was no different, attracting more than 200 delegates from Canada and around the world.

The beginnings of important partnerships were formed at Plant Forward, and I'm excited to see where they lead.

At the same time, Plant Forward gave us an opportunity to bring more awareness to Canada's potential on the global stage. Having released *The Road to \$25 Billion* in November 2023, we still have plenty of work to do in helping our companies and other organizations find their role in moving our sector toward its \$25 billion potential. But we're getting there. Through focused conversations, a drive toward increased capital investment, improving public and private sector alignment and an understanding that we need to act now, together, we can reach that potential.

I hope you'll join us in our efforts.

*Cover photo: A member of Liven Proteins' R&D team
Photo provided by Liven Proteins*

Canada's Agri-food Opportunity:



THE ROAD TO \$25 BILLION

Presented by Protein Industries Canada



Canada is on the brink of a \$25 billion opportunity. In our new podcast, we introduce listeners to the potential that can be unleashed by investing in Canada's ingredient processing and food manufacturing sector, particularly in the area of plant protein. Discussing Protein Industries Canada's *Road to \$25 Billion* (Roadmap), the podcast features expertise commentary from industry and Protein Industries Canada staff, taking a deep dive into Canada's potential in the global market, and how the Canadian agrifood sector can come together to achieve it.

Tune in on Apple Podcasts and Spotify



Amii helping agrifood companies become more sustainable, more productive with artificial intelligence

The use of artificial intelligence across all sectors is growing. Canada's ingredient processing and food manufacturing sector is no exception, with companies across the country looking at how they may be able to incorporate the technology into their own work. Many, however, have found they need outside expertise to help them better understand the technology's fit—which is where organizations like Amii (Alberta Machine Intelligence Institute) can help.

"With our access to a vast network of world-leading AI researchers, and thinkers, Amii builds bridges that translate scientific breakthroughs into trailblazing industry applications—working with more than 300 clients in the past three years across sectors, including agriculture," Amii Vice-

President of Investments and Partnerships Russ Erickson said. "Amii is also committed to nurturing the future of AI talent by providing work-integrated opportunities, residencies, and training programs tailored to cultivate the essential AI skills required by organizations and industries."

As AI's potential in the agrifood sector has developed, Amii, too, has expanded its focus in the area. Erickson believes AI can be used to enhance the sector's efficiency, productivity, sustainability and decision-

making processes, but reaching that point requires robust databases and skillsets.

The organization has taken several steps to help the sector build capacity in both

areas. In 2023, it worked with Protein Industries Canada to launch the Data Readiness Improvement Program (DRIP), which is designed to support companies in increasing their AI literacy, identify opportunities to apply machine learning in their specific business problems and prepare them to invest in AI and ML technology.

Additionally, the organization works directly with companies across Canada to build capacity to launch AI and ML across their operations. This includes a recent research partnership with New Harvest and Schmidt Futures, exploring the potential of AI and ML in advancing cellular agriculture. They intend to make the research open-sourced once complete so that others can leverage it.

Without a doubt, AI is making a big impact across industries, and there is a growing need to understand what the technology is and how to use it so we can all make informed decisions on how we apply the tools.

"Without a doubt, AI is making a big impact across industries, and there is a growing need to understand what the technology is and how to use it so we can all make informed decisions on how we apply the tools," Erickson said. "The incredible thing about applying AI/ML is being able to address complex global challenges such as over-farming and supply-chain constraints. By focusing on advancing AI science and helping our clients successfully integrate AI into their operations, we have the potential to have a massive impact on global sustainable development areas including climate action, zero hunger, clean water and sanitation—that would in turn benefit everyone around the world."

As Amii's work to help companies understand how they can utilize AI and ML continues, so will the roll-out of AI and ML across the agrifood sector. With that will come a rippling out of benefits, leading to a stronger, more sustainable Canada.





On the left, hempseeds and Burcon's 95% hempseed protein isolate; on the right, sunflower seeds and Burcon's sunflower protein isolate. Photo provided by Burcon NutraScience

Bringing the potential of Canadian crops back to Canada

Canada has a global reputation for high-quality crops. That reputation is why our agriculture industry is so export-heavy, with the vast majority of our crops leaving Canada to be processed in markets around the world.

But that's changing. As innovative Canadian minds invest time and money into a variety of research and development work, they're able to turn new crop varieties into improved, healthier and more sustainable ingredients—right here at home. Doing so not only provides a steady supply of new ingredients for food manufacturers to work with, but also provides Canadians with new job opportunities, a stronger economy and a more

efficient, stronger food supply chain.

"Within the food supply chain, protein processing has been identified as one of the key areas of need for growth in Canada," Director of Business Development at

Burcon NutraScience Benoit Keppenne said. "Currently, a number of Canadian crops are exported for further processing because Canada does not have the infrastructure. Strengthening the plant protein sector will require us to bridge the gap between farmers and consumers. By keeping the crops in Canada for

value-add processing, we can bolster the efficiency of Canada's food supply chain and, simultaneously, boost the entire food value chain."

By keeping the crops in Canada for value-add processing, we can bolster the efficiency of Canada's food supply chain and, simultaneously, boost the entire food value chain.



Burcon is one of many companies across Canada working to improve Canadian plant proteins, either at the crop level or ingredient level. This includes traits such as functionality, taste, texture, nutritional profile, yield potential and disease resistance, while also working to bring the price of finished products to a level on par or lower than traditional protein products.

Plenty of progress has been made in each area, with several companies already releasing products that meet consumer and manufacturer demand.

"Minimal processing, which focuses on optimizing the functional protein and starch in pulses and oats, virtually transforms them without creating by-products. These whole ingredients may be used to replace eggs, starches and gums in a variety of foods and beverages," VP of Sales and Marketing at Avena Foods Margaret Hughes said. "Avena is focused on the specialty milling of ready-to-eat functional ingredients that are naturally high in protein, fiber and micronutrients. Our innovation approach is whole ingredient based—how we can solve formulation challenges with protein-based whole ingredients."

The concept of adding value to our crops here in Canada is being applied to both those seen as traditionally Canadian as well as those growing in acreage and use. Avena is focused on pulses and oat ingredients, while Burcon has widened their varieties from pea, canola, soy and hemp to add sunflower into their protein offerings. Growing SME Prairie Fava,



Fava beans. Photo provided by Prairie Fava

meanwhile, is focused on a single crop growing in popularity among industry and consumers alike: fava bean.

"Farmers need a crop that they can sell, which is why fava production is really exciting," Co-founder of Prairie Fava Hailey Jefferies said. "Fava offers unique benefits compared to its [competitors] in the food sector, while the crop offers benefits agronomically by solving a rotational problem for growers."

With companies across the country focused on bringing the potential of Canadian crops back to Canada, consumers can look forward to a variety of benefits—everything from better-tasting, healthier foods to a stronger economy and more jobs.

Chef Gordon Baily demonstrating a vegan pancake using Avena Best Pulse Visco Enhancer NB to the Avena team at an R&D and Sales & Marketing training event. Photo provided by Avena Foods Ltd.



Making progress on The Road to \$25 Billion

When Protein Industries Canada released its updated The Road to \$25 Billion in November 2023, it wasn't aiming to benefit one sector. By outlining a path to growth and increased profitability for Canada's ingredient, food and bioproducts sector, the Roadmap creates a ripple effect of benefits that, given the opportunity, can benefit all Canadians.

Achieving those benefits, however, requires a concentrated effort from the full value chain—a journey that has begun and that we need to continue.

Exactly what this work looks like varies according to where an organization lands on the value chain, but one of the most important steps is ensuring sufficient capital is in place to support the sector.

"Funding for capital infrastructure in the ingredient

manufacturing space is very tight, and we don't have all the mechanisms in Canada, necessarily, to support that," Protein Industries Canada CEO Bill Greuel said.

"So working with Canada's federal lending institutions and Canada's federal programs, like the Canada Infrastructure Bank and the Canada Growth Fund, are really critical elements to incentivize more private sector capital."

This work goes hand-in-hand with ensuring there's a wider understanding of Canada's \$25 billion opportunity across not only

the sector, but the organizations that can help support it. Greuel cited the capital community as a particularly important audience, to help boost investment into the sector. One of Protein Industries Canada's top priorities, however, is ensuring industry understands how best to access and utilize federal programing.

"What we need is to ensure that the federal programs that already exist are working for the plant-based food and ingredients sector," Greuel said. "There is work that industry can do to make sure that they're investment-ready for things like Farm Credit Canada or the Strategic Innovation Fund or the Canada Growth Fund. So thinking about how they're positioning their investments relative to the clean-tech sector in Canada is important, because that's where the investment is flowing."

The continued innovation and investment across industry will be complemented by Protein Industries Canada's own work, including that completed under the Centre for Regulatory Research and Innovation. Built on rigorous scientific information, the Centre has been helping to address knowledge

gaps related to regulatory modernization, including through research and development projects that provide thorough data to regulators. This move toward regulatory modernization, alongside Protein Industries Canada's other work, is expected to help the sector grow to meet its full potential.

In its short lifetime, The Road to \$25 Billion has had a significant impact on Canada's plant-based ingredient, food and bioproducts sector. And that impact is only expected to grow as

Canada continues to move toward meeting its \$25 billion potential, bringing benefit to families across the country.

There is work that industry can do to make sure that they're investment-ready for things like Farm Credit Canada or the Strategic Innovation Fund or the Canada Growth Fund.

Working with Canada's federal lending institutions and Canada's federal programs, like the Canada Infrastructure Bank and the Canada Growth Fund, are really critical elements to incentivize more private sector capital.

CREATE NEW ECONOMIC WEALTH FOR CANADA



BRING NEW DEVELOPMENT TO LOCAL COMMUNITIES



CREATE INNOVATION-BASED JOBS ACROSS CANADA



INSULATE CANADA FROM FURTHER GEO-POLITICAL TENSIONS



PROVIDE MORE OPPORTUNITIES FOR FARMERS TO SELL THEIR CROPS CLOSER TO HOME

LESSEN THE IMPACT OF EMISSIONS ON GLOBAL FOOD SYSTEMS

HELP SECURE CANADA'S FOOD SUPPLY CHAIN

POSITION CANADA AS A LEADER IN THE GLOBAL FOOD SYSTEM SHIFT

Agrifood companies see collaboration as essential to advancing sector

Collaboration is at the heart of any thriving sector. When expertise is combined, innovation is accelerated—leading to more benefits for a wider portion of society.

For Canada’s agrifood sector, this collaboration has come, in recent years, through projects aimed at the development of improved crop varieties, more sustainable processing technology, more functional ingredients, and healthier foods and beverages. The combined result has meant a growing economy, a wider selection of products on grocery store shelves, new jobs and an overall stronger Canada.

“As a global community, we are facing big challenges when it comes to feeding and fueling a growing world while increasing sustainable production. Collaboration is one way we can help solve those challenges,”

Corteva Agriscience Canada Commercial Leader Lorelee Orr said. “Collaboration also allows us to secure our company’s future. The world needs sustainable solutions to food security, climate change and to feed the energy transition. We want to lead the way today and tomorrow.

Collaboration is a path to get us there.”

Liven Proteins’ R&D team at work in their lab. Photo provided by Liven Proteins

“A lot of innovation is needed, and all of these collaborations with research institutes and CMOs is really helping us achieve it without us needing to hire a lot of experts, as well

Over the past several years, Corteva hasn’t hesitated to utilize collaboration as a tool to advance its work. Not only has it taken part in three Protein Industries Canada projects, it also takes on industry partnerships outside of the cluster.

In early 2024, for example, it announced a partnership with John Deere, focused on combining John Deere’s digital and onboard capabilities with Corteva’s agronomic expertise to help farmers implement data-driven recommendations. The partnership is another step toward improving productivity in the North American agrifood sector.

“When we collaborate, we come up with solutions that can revolutionize operations for our customers. That is good for us, and it is good for the farmer,” Orr said.

This rings true for other areas of the ecosystem, as well. Fei Luo, Co-Founder and CEO of Liven Proteins, considers partnering with other companies to be critical to the development of Liven’s animal-free collagen. Thanks to the addition of this external expertise, her company has been able to test samples, utilize new equipment, validate their work and scale their development.

And while Luo is hoping to grow her team in the future, collaboration has, for now, meant she can utilize expertise without costs her company can’t currently take on.

“A lot of innovation is needed, and all of these collaborations with research institutes and CMOs is really helping us achieve it without us needing to hire a lot of experts, as well,” Luo said.

She recognizes, however, that this collaborative approach can come with its challenges. Standard to most partnerships, she’s found they most often include each company needing to balance their own priorities as well as companies potentially being



Lorelee Orr, Corteva Agriscience Canada Commercial Leader. Photo provided by Corteva Agriscience

located in varied geographic locations.

“I think those are challenges that are quite standard in collaboration. But I think to overcome them, it definitely requires a lot of communication and travelling to be in person,” Luo said. “But there’s definitely more benefits than challenges.”

Orr had similar advice for companies, particularly stressing the importance of communication and listening to feedback.

“Be open, be curious and listen to your customers. Any partnership you enter needs to deliver value to the customers you serve – in our case, farmers,” she said. “Commercializing innovations in agriculture and agrifood is a long game. It can take 10-15 years to get a new biotech trait for seed to the market, for example. Evaluate the long-term market fundamentals, customer needs and consumer trends, and then resist the urge to react to the inevitable bumps in the road or market.”

With these challenges overcome and its potential to help bring products to market faster, collaboration is an important tool in any company’s arsenal. This importance will only grow as the Canadian agrifood sector grows, becoming essential as the sector works to reach its full potential.

“The world needs sustainable solutions to food security, climate change and to feed the energy transition... Collaboration is a path to get us there.”



How a small, family-owned company is becoming one of the top snack-food providers in North America

For more than 10 years, Three Farmers has been supplying families with a steady supply of healthy, protein-packed snacks. Since 2011, the family-owned business has grown from a line of roasted lentil snack-packs, to a selection of snacks on the go that feature Canadian-grown ingredients such as chickpeas, fava beans and the ever-popular lentils.

“We started with this whole concept of adding value to agricultural goods that we grow here in Saskatchewan, and taking them to consumers in a more transparent and direct way,” Three Farmers Founder and CEO

Three Farmers’ Lentil Salad Toppers. Photo provided by Three Farmers

“We wanted to prioritize nutrient-dense crops that were great for the environment, that grew well in our climate and that would add value to consumers in their everyday diet, and so legumes and pulses are that exact item that made sense.”

Natasha Vandenhurk said. “We wanted to prioritize nutrient-dense crops that were great for the environment, that grew well in our climate and that would add value to consumers in their everyday diet, and so legumes and pulses are that exact item that made sense.”

Alongside growing their snack line, Three Farmers has been able to significantly scale their distribution and processing operations. In

February 2024, the company opened a new, expanded manufacturing facility in Saskatoon, Sask., helping support its distribution to retailers across North America.

Vandenhurk said that achieving such a level of success has come, in part, thanks to feedback from customers and stakeholders, partnerships with the right suppliers, and a willingness to “hit the street.” This provided them not only with an opportunity to build on their plans, but also to address any skill gaps and do any additional necessary research.

“Surround yourself with good people. You need good advisors who’ve been there, done that, you need good team members that can fill in the skills gaps that you don’t necessarily have yourself, and you just need to always be listening. Make sure you’re listening to your consumer and continually iterating that product to make it better,” Vandenhurk said.

Most important to their success, however, was having a product that was different from others on the market.

“Differentiation is key,” Vandenhurk said. “Healthy snacking is certainly a need out in the industry. It’s growing exponentially year over year, that demand, and there’s not a lot of people who can do whole,



Three Farmers Founders Elysia and Natasha Vandenhurk. Photo provided by Three Farmers

roasted pulses, especially the way we do them.”

Having such a unique product is serving Three Farmers well in their ultimate goal: To become the number one whole bean snack brand in North America. It’s been a journey getting that far, after starting with an idea and growing into a company that spans the continent. At its heart, however, Three Farmers is still just that: three farmers and two sisters who came together to provide others with healthy, Canadian-grown and -made snacks.

Fund II investment roundup

Protein Industries Canada launched its second round of funding—a commitment of \$150 million under the Government of Canada’s Global Innovation Clusters program—in early 2023. Since then, the cluster has worked with partners across the ecosystem to launch a variety of projects, spanning the Technology Program’s four pillars of Genetics, Crops, Ingredients and Products.

The projects launched so far represent the potential and growing success of Canada’s ingredient manufacturing, food processing and bioproducts sector.

The stats below are as of April 15, 2024. To stay up to date on Protein Industries Canada’s projects, please visit www.proteinindustriescanada.ca/projects.

\$177M
Committed to projects

\$104M
Leveraged from industry

6
Provinces with lead project partners

57
Partners involved in committed projects



You're invited to:

Annual Conference & General Meeting

*September 10 & 11, 2024
Saskatoon, SK*

Join us at this year's AGM and conference to connect with members of the Canadian ingredient manufacturing, food processing and bioproducts sector and hear from our lineup of speakers, including futurist and innovation expert Jim Carroll and returning speaker Steve Lerch.



Jim Carroll



Steve Lerch



Protein
Industries
Canada