

# GROWING OPPORTUNITY

Canada's plant-protein potential

Scaling up new  
businesses (pg.4)

Reducing our carbon  
footprint (pg.2)

Reaching global  
markets (pg.6)



PROTEIN  
INDUSTRIES  
CANADA



# MESSAGE FROM CEO BILL GREUEL

It's surprising how relatively little time it can take for one's definition of "success" to change.

Four years ago, when we were launching Protein Industries Canada, my definition of success would have involved attracting the support of industry—including establishing a membership base and finding trailblazing companies willing to attend our events or speak on our behalf.

We accomplished that, and my definition changed.

I saw success as a reflection of our project base and work initiatives. We needed to co-invest in projects that prioritized the innovative R&D interests of Canada's plant-based food and ingredients sector and that strengthened our ecosystem. We needed to work across the industry to encourage new businesses that they, too, could enter a growing space that's helping Canada's economy and offering consumers healthy, sustainable food choices.

We accomplished that, too, and my definition, once again, changed.



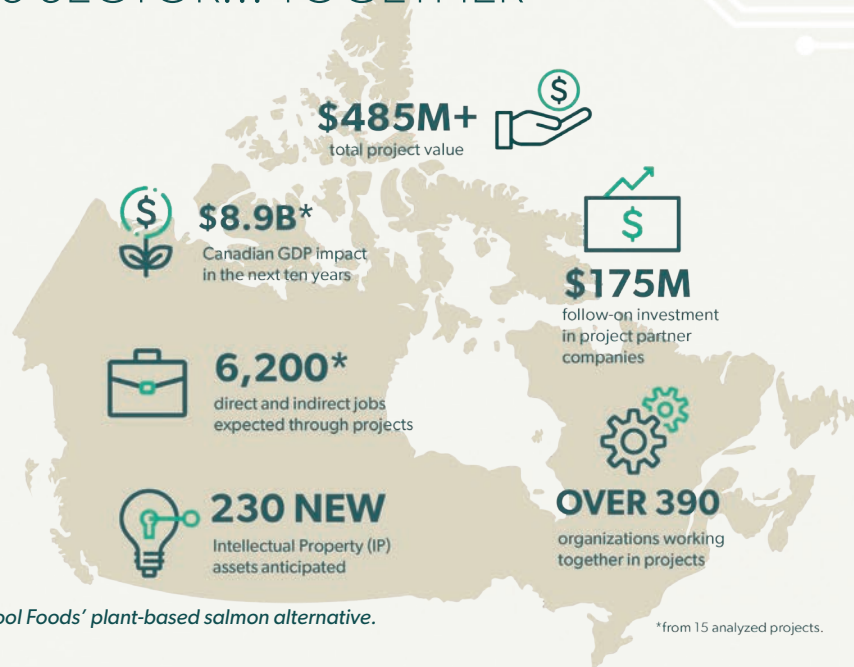
Success, suddenly, wasn't restricted to our initial five-year mandate. We had worked with industry to establish a goal out to 2035. We had helped companies reach their pilot-scale goals. We had only gotten started in our work.

Success was beyond March 31, 2023. It was receiving support and encouragement—from industry and all levels of government—to continue our work. Industry leaders are speaking up about the success of working collaboratively toward a more innovative plant-based food and ingredients sector in Canada, helping prove that our cluster method of building the sector is working.

As for success moving forward—there's a lot to consider. There are still plenty of innovative products yet to be invested in and plenty of companies to help scale up—and there's significant steps we have to take to ensure Canada has the appropriate infrastructure, processing capacity, and skills and talent to support them. If we work together, Canada's plant-based food and ingredients sector can provide the world with healthy, sustainable food options, while achieving \$25 billion in annual sales in the global market by 2035.

I hope you'll continue to join us on this ever-evolving journey toward success.

## ADVANCING CANADA'S PLANT-BASED FOOD AND INGREDIENTS SECTOR... TOGETHER



Cover photo: A test of New School Foods' plant-based salmon alternative.  
Photo by Julie Riemersma.

# HOW A PLANT-BASED SEAFOOD ALTERNATIVE IS HELPING CANADA REDUCE ITS CARBON FOOTPRINT

Chris Bryson didn't found New School Foods because of a drive to create or expand a new market. Instead, when the Canadian entrepreneur looked at the development of plant-based seafood products, he saw a different opportunity: a chance to help improve the health of our environment and our planet as a whole.

"We're trying to be thoughtful about where the planet is going," Bryson said. "If we keep making food the same way we make it today, we will never hit the Paris Climate Accord, we will not have a livable planet, not just for ourselves, but for all the other creatures that inhabit this planet. We have a responsibility to keep the planet healthy."

New School Foods began development of its plant-based seafood alternative after embarking on a Protein Industries Canada project with Liven Proteins in June 2021. Both companies have seen success since the project's launch, with their R&D efforts leading to promising initial results and further investment opportunities.

This partnership has led New School Foods down a path that Bryson said is leading to more environmental sustainability success than he believes they would have achieved had they pursued other investment methods.

"The beauty of working with Protein Industries Canada is that this has bought us more time to focus on what matters," he explained.

"We've been able to prioritize research and development above everything else. So I don't have investors that are rushing, basically, the process, and that has allowed us to basically stumble across this production method that wouldn't have happened otherwise. I don't think we'd be on the same path were it not for our support from Protein Industries Canada."

Currently, New School Foods' primary goals related to environmental sustainability largely revolve around

giving consumers a new choice in grocery stores that not only meets this sustainability expectation, but that also feels like an upgrade compared to regular seafood. Bryson said that many plant-based alternative products currently available offer some benefits for consumers, but don't always meet or exceed those of their counterparts while remaining cost effective. Creating a plant-based alternative to salmon that meets the fish's nutrition and taste profile, while being cost effective and sustainable, is a top priority for his company.

Looking toward the future, he hopes that New School Foods can improve upon both its product and its sustainability goals. This, he said, would involve further greenhouse gas reductions and lower water consumption benefits.

He hopes to see other companies look toward a similar future, and explained that an increased focus on their research and development stage can help them get there.

"What's been eye-opening for me is realizing just how much is unexplored," Bryson said. "So to whatever extent people can optimize the early days of their company toward prioritizing research and development, whether through working with a university or finding some sort of shared lab workspace or finding a scientist that's willing to work ... for whatever it may be, making sure that you prioritize research and development

at the beginning is important because I think it's hard to rewind the clock later down the line."

As companies like New School Foods work toward lowering their carbon footprint and other environmental sustainability goals, Canada can look forward to a net-zero future—one built on collaboration, innovation and a dedication to supply Canadians with healthy, sustainable food options.

**If we keep making food the same way we make it today, we will never hit the Paris Climate Accord, we will not have a livable planet, not just for ourselves, but for all the other creatures that inhabit this planet.**



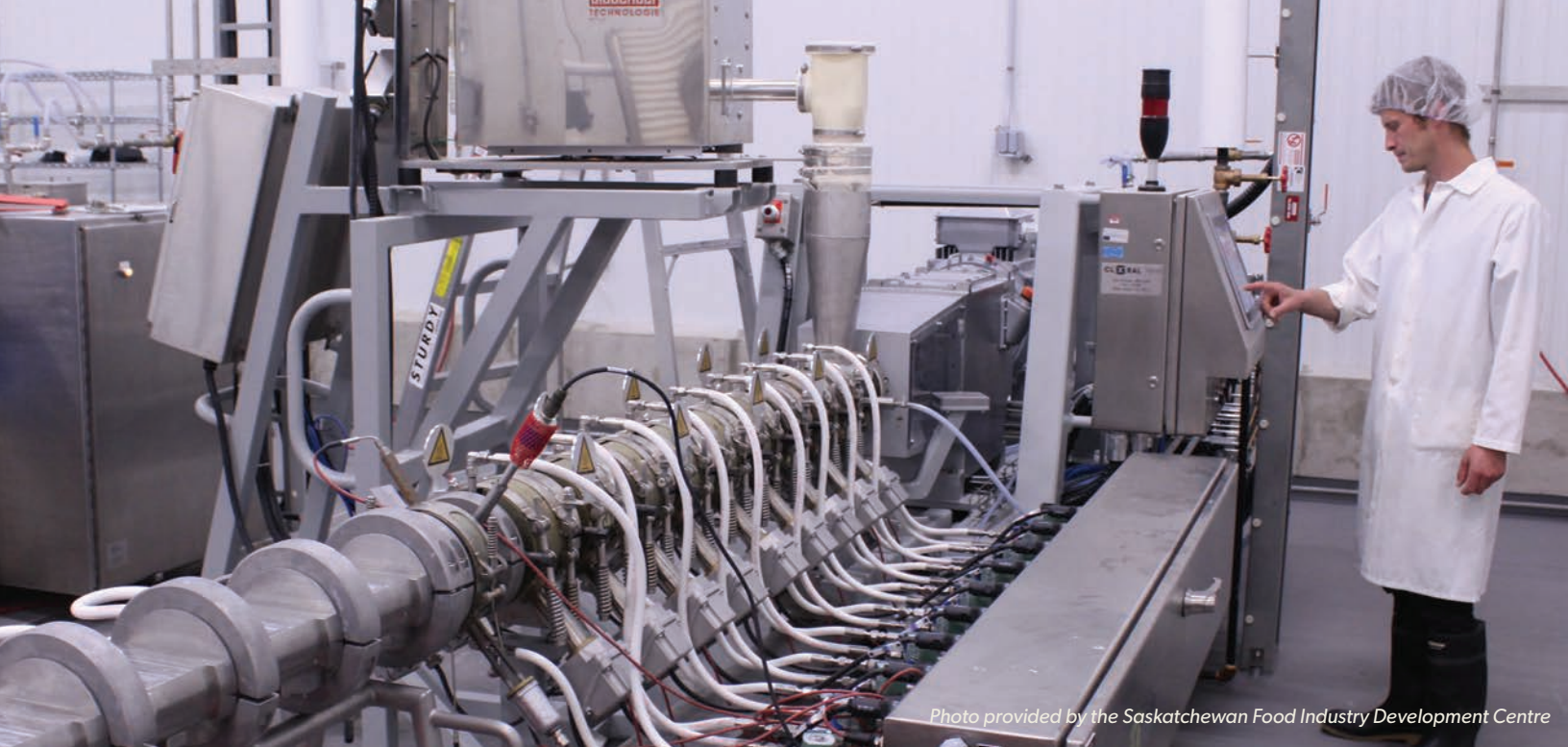


Photo provided by the Saskatchewan Food Industry Development Centre

## OPPORTUNITIES TO SCALE BUSINESSES AND PRODUCT LINES THROUGH COLLABORATIVE PARTNERSHIPS

The collaborative cluster model has proven to be beneficial in a variety of ways, both directly for the businesses taking part and indirectly for Canadians who benefit from economic and supply chain returns. For many small businesses and entrepreneurs stepping into the plant-based food and ingredients sector, one of the greatest benefits has been the opportunity to scale up their operations.

“The scale-up process is critical, costs time and money. Many ideas work at a small lab scale, but not at industrial scale,” Lucent BioSciences CEO Michael Riedijk said. “In March 2020—when we received our first Protein Industries Canada [co-investment]—Lucent Bio was only capable of manufacturing 1 kg of product per day in our lab. With the support of Protein Industries Canada and AGT Foods, we have been able to scale up over a very short

timeframe of 18 months to industrial-scale manufacturing of 1,000 kg per day. This year we’re making the next step to scale to commercial scale manufacturing of 20,000 kg per day.”

**What is so exciting about the Protein Industries Canada program is the opportunity for collaboration between small, innovative start-up companies like Lucent teaming up with globally operating companies like AGT Foods to bring impactful sustainable innovation to a global market.**

Lucent Bio isn’t the only company to see such success through its Protein Industries Canada project. Most have been able to add new product lines to their offerings, move from bench to pilot to commercial scale, or move into larger facilities to accommodate an increase in demand for their products.

This rise in demand has been common among Canada’s plant-based food and ingredients. Carmen Ly, Communications Director at the Saskatchewan Food Industry Development Centre, has seen this expansion first-hand. As part of the Food Centre’s mandate, businesses who sign on to work with

it are paired with experts in appropriate fields to help develop new ingredients and food products. The ultimate goal is for these products to reach store shelves across Canada, eventually on a level that allows the business to grow enough to move out of the Food Centre and into a facility of its own. The collaboration between the business and Food Centre employees is key to making this happen.

“Many SMEs don’t have the infrastructure to make that big leap,” Ly said. “They do not have the capital to invest in equipment and facility. Access to centres like us help take out some of the risk in scaling up. The Food Centre’s interim processing facility has the equipment and knowledgeable staff to help SMEs produce a large enough production run to test the market or fulfill a growing market.”

Riedijk agreed that capital can often be a barrier for businesses hoping to expand. This is where a collaboration model can be helpful. Not only does it lower each company’s risk, but it also allows for a melding of expertise, allowing each company to learn from the other and build new skillsets.

“What is so exciting about the Protein Industries Canada program is the opportunity for collaboration between small, innovative start-up companies like Lucent Bio teaming up with globally operating companies like AGT Foods to bring impactful sustainable innovation to a global market, so they can both leverage their expertise for a combined success,” Riedijk said.

*Photo provided by Lucent BioSciences*



## Access to new technology would mean introduction of plant-based food and beverage products in untapped markets or new product categories.

While collaboration opportunities like those offered through Protein Industries Canada and the Saskatchewan Food Industry Development Centre have helped numerous companies expand their market footprint, there’s both room and a need for more.

Small businesses that expand into new markets increase our GDP while offering Canadians new jobs and new healthy and sustainable food options, strengthening our economy and domestic food supply chain. In order to make sure these benefits continue, however, there’s

a need for increased investment into Canada’s small businesses, along with market assessments.

“Attaining product-market compatibility is very important for start-ups,” Lucent Bio CPO Jason McNamee said. “Going after either a good market

or tailored product can hinder an SME’s scalability because they won’t be able to get the long-term support. Founders should apply a regional/global mentality from the start. Canadian companies need to be more strategic and process oriented, taking the time to clearly identify your competitive advantage, re-envisioning your go-to-market strategy regularly, and constantly asking yourself questions that relate to your business development strategy. There is nothing wrong with pivoting, as long as your market is defined up front.”

Ly agreed, adding that access to new technology can also help small businesses step into new markets or expand their own.

“Consumers are still really learning about the health benefits of plant-based products in order to adopt to their daily lives,” she said. “Access to new technology would mean introduction of plant-based food and beverage products in untapped markets or new product categories.”

Regardless of which route a business takes, there is plenty of opportunity for growth available in Canada’s plant-based food and ingredients sector. And like a collaborative partnership, a scaling up of one business often leads to benefits for others along the value chain—from ingredient through to grocery store shelf.



# FROM START-UP TO INTERNATIONAL PLAYER: WAMAME FOODS TAKING CANADIAN PLANT-BASED MEAT ALTERNATIVES TO THE GLOBAL MARKET

Wamame Foods is a relatively new player in Canada's plant-based food and ingredients ecosystem, but the company has seen significant growth and success in its short lifespan.

"The ability for us to access new [investments] has been the biggest stepping stone that we've been able to achieve so far," Wamame Foods' founder Blair Bullus said. "Now we are in the process of deploying that capital to scale our operations, both domestically and with export partners, so we're seeing the fruit of the partnership with Protein Industries Canada come to fruition."

In November 2021, Wamame Foods launched a project in collaboration with Protein Industries Canada, and in partnership with Merit Functional Foods, Wismettac

*Photo provided by Wamame Foods*

Asian Foods and Crush Dynamics (formerly Winecrush Technologies), to turn Canadian plant-based protein ingredients into plant-based meat products that rival the

highly regarded Japanese wagyu beef. Since launching the project, the company has not only been able to develop their new products, but also to gain attention in both North America and abroad. Recent success includes product partnerships at the 2022 TED Conference in Vancouver, with the likes of Elon Musk, Bill Gates and Al Gore having the opportunity to test the product, as well as listings with JW Marriot and Shangri La hotel chains in Singapore.

**It allows us to kind of create products that are going to pave the way for the industry, but it'll also really put Canada on the map in terms of what kind of quality ingredients we have and what kind of quality manufacturing we need to have in order to compete against global competition.**

Alongside this success has come new and increasingly important opportunities for the Wamame Foods team.

"The project itself is a really great building block in terms of the overall company profile. By developing a long-term project roadmap through the Protein Industries



Canada application we were able to build and finance a strategic plan that sets the course for the next two years," Bullus said. "Because we have that initial lead financing on such a major project for the company, it de-risks and incentivises additional investors to partner with Wamame to build a stronger, well-capitalized plant-based business. Without Protein Industries Canada we wouldn't be where we are today, because it really was the catalyst in terms of starting the project in the first place. We are miles ahead of where we would be without Protein Industries Canada."

These initial investments and product development are only the first step in Wamame Foods' scale-up strategy. Bullus explained that the company is looking to expand its research and development efforts in the future, broadening both their product offerings and market footprint. This will allow them to introduce their products to consumers across Canada, as well as to other countries around the globe.

He added that their current Protein Industries Canada partnership and other future collaborations will be key to accomplishing these goals.

"Leaning on that consortium of partners is really the way that we're looking to achieve these goals ... The process of bringing together a consortium of companies and financing the project as a whole, rather than just having individual siloed companies working on their own, has really given us a roadmap to scale this."

This collaborative model has been so successful that it's the path Bullus recommends other companies take in their efforts to scale up operations.

"If there are opportunities out there for companies to work with Protein Industries Canada and to work with a consortium of companies to put together a great application and a great concept and then have the investment de-risked, I think that is a huge opportunity for any company," he said.

By working with, and building on, each others' expertise, Bullus believes those companies can develop their

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*Photo provided by Wamame Foods*

product lines and step into new markets at a quicker pace than working alone. And such scale-up, he said, isn't just good for individual companies—it's beneficial to the Canadian plant-based food and ingredients sector as a whole.

"We're trying to build world-class products, and we're really trying to innovate a new kind of space within the protein sector, so what [our consortium] allows us to do is take the time and the energy and the resources to develop the best products possible... it allows us to kind of create products that

are going to pave the way for the industry, but it'll also really put Canada on the map in terms of what kind of quality ingredients we have and what kind of quality manufacturing we need to have in order to compete against global competition."





## HOW UNIQUE PARTNERSHIPS ARE LEADING TO FULL VALUE-CHAIN BENEFITS

Every company has its area of expertise, but that also means every company has an area in which it can improve. Canada's plant-based food and ingredients sector is being built on the belief that by working together, companies can balance out those areas of improvement, helping each other to grow and create benefits for everyone along the value chain—from producer through to consumer.

Often, these benefits come about thanks to the innovative ways in which the partners are utilizing Canada's diverse product offerings—such as the new canola protein developed by Merit Functional Foods.

"In our case, because of the unique characteristics of our proteins, our proteins are higher purity than other plant proteins in the market," Merit Functional Foods Co-CEO Ryan Bracken said. "When blending canola protein with other plant proteins, you can achieve enhanced nutrition and functionality. With that said, we highly recommend they be used in a certain manner. So all of those things together lend itself to the

need to collaborate, the need to have dialogue."

Bracken added that an open dialogue between Merit and its partners is an important element to ensuring these new ingredients and formulations are successful. Without this open dialogue, he explained, it would be difficult to ensure the ingredients are performing in the way they're expected to, providing Merit's partners with a product that meets their needs.

The team at Crush Dynamics Inc. (formerly Winecrush Technology Inc.) has a similar view of their role in

a plant-based foods partnership. Working with the co-products from wine creation, Crush Dynamics develops ingredients that improve the taste, texture and overall functionality of plant-based foods and beverages. It's a sustainable approach to ingredient development that Kirk Moir, CEO of Crush Dynamics, is proud to provide.

**“We believe that we can take what we learn together working on the project and apply it in many, many other circumstances. We’re adding to the knowledge base of the food industry generally and the plant-based food industry a bit more specifically.”**

"We're in the business of transforming agricultural side-streams into high-performance food," Moir said. "We're



just scratching the surface of what polyphenols can do in food formulation. It's a surprisingly understudied area, so there is a significant need for more food science R&D in this area. We believe bio transformed polyphenols create significant opportunities in next generation food.

Both Merit and Crush Dynamics are involved in multiple projects under the Protein Industries Canada umbrella, and both have seen significant value in taking part. Bracken explained that such collaboration has allowed Merit to more easily solve any challenges they may encounter in their ingredient development, leading to quicker and more substantial success. Moir has seen similar benefits at Winecrush, including new knowledge that can be utilized by others in the sector.

"I'm a fan of the expression, 'One plus one equals eleven,'" Moir said. "We believe that we can take what we learn together working on the project and apply it in many, many other circumstances. We're adding to the knowledge base of the food industry generally and the plant-based food industry a bit more specifically."



**We are committed to working with brands to solve functional challenges and assisting in their achievements and goals. It comes down to having strong partnerships and collaborating to develop better plant-based products.**

Mutual trust among all partners has been key to seeing these benefits come to fruition. Moir explained that this high level of trust helps lead to each partner understanding where they fit into a project, and how they can help each partner succeed.

Bracken agreed, stressing that it's the most important element to a successful partnership.

"It's the willingness to have dialogue, to be transparent and open about their struggles and challenges," he said.

"At Merit, we are proud to be an ingredient solutions provider. We are committed to working with brands to solve functional challenges and assisting in their achievements and goals. It comes down to having strong partnerships and collaborating to develop better plant-based products."

By building on this trust and open dialogue, companies across the value chain can work together to bring their innovative ideas to the market, creating new ingredients, foods and beverages that will line grocery store shelves across Canada and around the world.





# INCREASED PLANT-PROTEIN PROCESSING PROVIDES OPPORTUNITY FOR NET-ZERO ECONOMY

Plant-based products have a reputation for environmental sustainability—so much so that it's one of the many reasons consumers cite for why they choose to increasingly incorporate such products into their diets. This environmental track-record toward the environment is also helping ingredient processors and food manufacturers across the country potentially lower the agrifood sector's carbon footprint, allowing Canada to reach its emissions reduction targets by 2030 and its net-zero economy goals by 2050.

"There are two big developments facing agriculture and food production, here and abroad," said David McInnes, who is leading an effort to create Canada's first

agrifood sustainability index. "First, there's an increasing desire to know how food is produced, how it is grown or raised, what its impacts are on society, on people, on the environment. Second, there's a need for the sector to show progress against bold marketplace and government goals being set to improve these outcomes, including net zero emissions, which is attracting significant national and global attention."

In this role, McInnes sees first-hand Canada's drive to reduce its environmental footprint. Approximately 85 organizations are working together on the index, broadly representing Canada's agrifood system. The plant-based food and ingredients sector is well represented in this novel effort. Together, these organizations are

**Better metrics has the potential to be a multi-faceted tool for a marketplace and society demanding greater proof of sustainability performance.**





seeking how best to benchmark Canada’s sustainability performance, including environmental impacts. The Index intends to measure outcomes on a consolidated basis, rather than at a farm or company level, but achieving these outcomes depends on efforts across the country to deploy technology, harness data and improve practices.

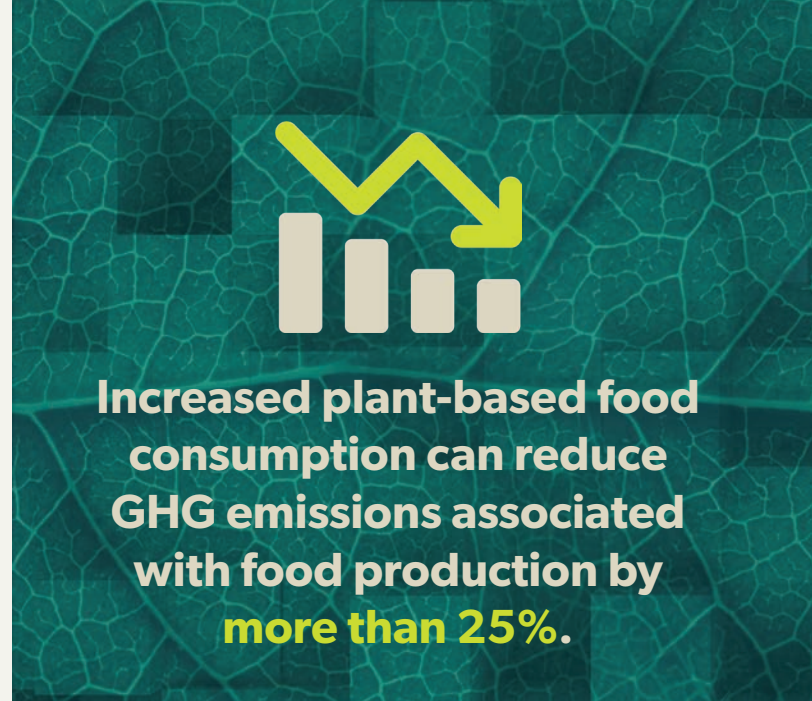
“Cropping systems, generally, can have a big role to play in meeting those objectives, whether it’s adopting precision technologies to reduce time on the combine and reducing fuel costs at one end, to conducting agronomy practices to help improve soil health,” McInnes said. “So how producers mark environmental progress on these practices is certainly going to become more relevant going forward. Not only will these efforts be beneficial on a proprietary basis, such as helping to build farmers’ production-level resiliency, but rolling up results at a national level can help create a better picture of performance.”

McInnes said the sector is already well on its way to creating positive change, thanks to the collaborative work of researchers, trailblazing companies, producers and investors across the country. For example, Pulse Canada has completed significant research to determine how much carbon the country’s pulse farmers displace each year, improving the health of soils while providing Canadians with healthy, sustainable food options.

“To date, the sector as a whole probably displaces what we would call three mega-tonnes,” Pulse Canada Director of Sustainability Denis Tremorin said. “Three million tonnes of carbon [per year] is what we’re displacing as an industry.”

But there’s more work to be done.

An essential step in ensuring Canada’s net zero goals is accomplished through benchmarking where the sector currently stands in regard to environmental sustainability. This will help provide greater insights on successes to date and to show where improvements can be made to meet rising supply chain, investor and regulatory expectations.



**Increased plant-based food consumption can reduce GHG emissions associated with food production by more than 25%.**

“Smartly measuring what matters is a key step,” McInnes said.

Working along the value chain—from on-farm production through processing and manufacturing through retail and restaurant distribution—to create the right benchmarks could allow the sector to better communicate about what’s being accomplished. McInnes also anticipates better evidence could lead to enabling greater consumer trust and more informed policy changes while helping advance Canada’s trade opportunities where demonstrating sustainability is a requirement to accessing markets.

“Better metrics has the potential to be a multi-faceted tool for a marketplace and society demanding greater proof of sustainability performance,” he said.

Canada’s plant-based food and ingredients are well-positioned to fully leverage their environmental sustainability reputation, particularly as attention to meeting emissions and net-

zero goals intensifies. Having the right metrics in hand is needed to show it.

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# Plant Forward

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November 1 – 2, 2022

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