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MANITOBA



# SUSTAINABLE PROTEIN CHALLENGE DIALOGUE

Challenge Paper

JUNE 2020

## Purpose

The objective of this Dialogue is to engage a diverse group of stakeholders to share views on the Sustainable Protein challenge – for Manitoba, Canada and the world. The heart of this challenge is to advance new thinking and prioritize approaches to responsibly feed the world in the coming decades.

Our aim is to understand together where the opportunities lie, what the challenges are, who is doing what, and where innovative interventions can be made, by any stakeholder, for scalable impact.

Manitoba is looking to work collaboratively with stakeholders to position the province as a global leader in sustainable protein and develop a network of collaborators within which a range of sustainable protein initiatives can be mobilized.

This Sustainable Protein Challenge Paper lays out the background and context for sustainable protein and poses some critical questions. Everything that is uncovered through this process will be shared with all participating stakeholders. Please provide your feedback online by responding to the Dialogue questions at <https://engagemb.ca/sustainable-protein-challenge-dialogue>.<sup>1</sup>

## Key Definitions

Here are a few definitions to help frame our conversation:

### A. SUSTAINABLE PROTEIN

For the purposes of this work, Sustainable Protein is defined as: protein sources – animal, plant and alternative – that are sourced, developed and scaled to meet the need of the present, without compromising the future. Sustainable Protein is produced through globally best-in-class practices that mitigate climate change and environmental impact, support economic development, and provide safe and nutritious food to meet global consumer demand.

### B. AGRO-ECOSYSTEM AND ECOLOGICAL GOODS AND SERVICES

An agro-ecosystem is the complex where many species interact with one another and their physical setting.<sup>2</sup> An agro-ecosystem is under agricultural management, but it is interconnected to a broader natural ecosystem and its many elements, including water, biodiversity, soil health and greenhouse gas (GHG) emissions.

Ecological goods and services (EGS) are the environmental benefits derived from healthy ecosystems, including agro-ecosystems. Examples of EGS include the provision of food, clean water, wildlife habitat, the ability of natural systems to withstand flooding or drought, and carbon storage (or carbon sequestration).

<sup>1</sup> NOTE: Please answer as many questions as possible. Your feedback is important, especially in the Assumptions and Critical Questions sections.

<sup>2</sup> Loeuille et al., 2013; Mulder et al., 2013

## C. SOIL HEALTH AND CONSERVATION

Soil health is defined as: “the continued capacity of soil to function as a vital living system, to sustain biological productivity, maintain the quality of air and water environments, and promote plant, animal and human health.”<sup>3</sup> The five principles of soil health include:

- decreasing soil disturbance
- increasing soil cover
- increasing crop diversity
- increasing living roots
- integrating livestock

Soil conservation includes activities that “maintain or enhance the productive capacity of the land, including prevention or reduction of soil erosion, compaction and salinity; conservation or drainage of soil water; maintenance or improvement of soil fertility.”<sup>4</sup>

## D. REGENERATIVE AGRICULTURE

Regenerative agriculture can be defined as: “agriculture that protects and intentionally enhances natural resources and farming communities.”<sup>5</sup> Another definition is: “Regenerative Agriculture prioritizes soil health to create farm systems that work in harmony with nature to improve quality of life for every creature involved.”<sup>6</sup> In general, regenerative agriculture encompasses the same five principles as soil health.

### Input Request: Key Definitions

1. What reactions, questions or suggestions do you have regarding these definitions?
2. What key components or definitions do you think are missing?

## Key Challenge

Global demand for protein continues to increase and at the same time the world faces planetary environmental pressures, some of which are a result of present-day agricultural practices. Our key challenge is:

**To engage a diverse group of action-oriented stakeholders to advance our collective understanding of a global Sustainable Protein agenda that identifies ways both Manitoba and the global agriculture sector can play a leadership role in advancing policies, innovation, practices, products and services.**

### Input Request: Key Challenge

3. What reactions, questions or suggestions do you have regarding the key challenge statement?

<sup>3</sup>Doran et al. 1996: Adv. Agron. 56

<sup>4</sup><http://www.fao.org/soils-portal/soil-management/soil-conservation/en/>

<sup>5</sup><https://www.generalmills.com/en/Responsibility/Sustainability/Regenerative-agriculture>

<sup>6</sup><https://rodaleinstitute.org/why-organic/organic-basics/regenerative-organic-agriculture/>

## Expected outcomes

At the end of the Dialogue, we aim to achieve the following outcomes:

- A. **Understanding:** a shared understanding about Sustainable Protein approaches, desired outcomes, challenges and opportunities to bring to action
- B. **Strategic partnerships and network:** broad-based support developed through formal and informal partnerships to move forward with specific actions to advance Sustainable Protein initiatives
- C. **Vision, and strategies to achieve the vision:** alignment on desired future outcomes and priorities that will see Manitoba become a global leader in Sustainable Protein products
- D. **Tactics and potential actions (phase 2):** development of a strategic innovation framework, where metrics are defined, activities are prioritized and acted upon, and innovation is pursued to address the challenge

### Input Request: Expected Outcomes

4. What questions or comments do you have about the expected outcomes for this Dialogue?
5. What additional expected outcomes would you like to suggest?

## Background

### A. BACKGROUND EVENTS THAT LED TO THIS DIALOGUE

1. Manitoba is championing this Dialogue as part of its effort to become a global leader in Sustainable Protein.
2. In September 2019, Manitoba held a Protein Summit with over 200 stakeholders and released the first-of-its-kind Sustainable Protein strategy, called the *Manitoba Protein Advantage*. At the Protein Summit, Manitoba engaged a group of stakeholders in a similar, structured Dialogue and the outcomes of that Dialogue have framed this discussion.
3. In 2020, Manitoba created a Protein Consortium to provide leadership on projects of strategic importance and encourage stakeholders to continue actions to implement the Manitoba Protein Advantage strategy (for a list of members see Appendix).
4. Manitoba is situated in the agricultural heartland of North America. It is felt that the province has inherent advantages when it comes to taking the next steps towards advancing Sustainable Protein:
  - **Supply:** Manitoba is a rich and diverse agricultural hub, with extensive crop and animal protein production. Manitoba produces a wide range of proteins, such as pork, beef, mutton, lamb, fish, bison, poultry, dairy, peas, hemp, canola, wheat, oats and soybean.
  - **Location:** mid-continent location with access to road, rail, air and ocean shipping
  - **Soil:** Manitoba's agricultural soils and grasslands are highly productive
  - **Stable and supportive regulatory environment:** competitive business environment with minimal red tape
  - **Clean energy:** powered by 99 per cent renewable hydroelectric energy, the province is a leader in sustainable electricity

## B. TYPES OF PROTEIN

We view three main groups of protein in the global market:

Animal and Animal Feed	Plant	Alternative
<ul style="list-style-type: none"> <li>• Beef</li> <li>• Pork</li> <li>• Poultry</li> <li>• Fish and aquaculture</li> <li>• Dairy</li> <li>• Other (sheep, bison, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Plant protein (e.g. soybeans)</li> <li>• Plant-based food products (e.g. soya sauce, chickpea pasta)</li> <li>• Novel plant-based food products (e.g. Beyond Meat)</li> </ul>	<ul style="list-style-type: none"> <li>• Cellular/cultured meat (lab produced)</li> <li>• Precision fermentation</li> <li>• Insect</li> </ul>

## C. MARKET DYNAMICS AND TRENDS

Some of the high-level important global dynamics and trends are:

1. **Increased demand for protein and in particular, meat:** Global meat consumption has increased rapidly over the past 50 years, resulting from an ever-growing global population and the rise of a large middle class in the emergent markets of Asia.<sup>7</sup>
2. **Changing diets in western countries:** This trend is seen through an increase in plant-based and flexitarian diets in Europe and North America. The U.S. Food Marketing Institute (FMI) 2019 U.S. Grocery Shopper Trends report finds a rising number of households (33 per cent) have at least one member voluntarily following a vegan, vegetarian, pescatarian or flexitarian diet.<sup>8</sup> The global plant-based protein market is set to grow at 8.29 per cent annually.<sup>9</sup>
3. **Increased awareness of food security:** This desire for regional distribution networks and supply chain stability has been a growing concern, and has become front and center during the COVID-19 pandemic.<sup>10</sup>
4. **Increased demand for trusted, healthy food:** As part of this trend, there has been a rise in demand for organic, natural, local and sustainably packaged food products. Sixty-six per cent of Canadian shoppers are purchasing organic items weekly.<sup>11</sup> In 2018, sales increased five times more for food sold in sustainable packaging, versus product sold in nonrecyclable packaging.<sup>12</sup>
5. **Increased desire for food traceability:** This trend is riven by data tracking technology capabilities, including blockchain.<sup>13</sup>

<sup>7</sup> <https://www.bbc.com/news/health-47057341>

<sup>8</sup> <https://www.fmi.org/our-research/research-reports/u-s-grocery-shopper-trends>

<sup>9</sup> <https://www.ciwf.com/media/7433280/the-business-case-for-protein-diversification-and-expansion-may-2018docx.pdf>

<sup>10</sup> <https://www.weforum.org/agenda/2020/05/this-is-what-global-supply-chains-will-look-like-after-covid-19/> and <https://www.imd.org/research-knowledge/articles/A-post-COVID-19-outlook-The-future-of-the-supply-chain/>

<sup>11</sup> <https://www.cog.ca/home/about-organics/organic-statistics/>

<sup>12</sup> <https://www.producebluebook.com/2019/12/30/sustainable-packaging-evolves-with-consumer-demand/#>

<sup>13</sup> <https://medium.com/te-food/food-traceability-trends-to-watch-in-2019-179a00b3b625>

## D. AGRICULTURAL PRACTICES AND THE ENVIRONMENT

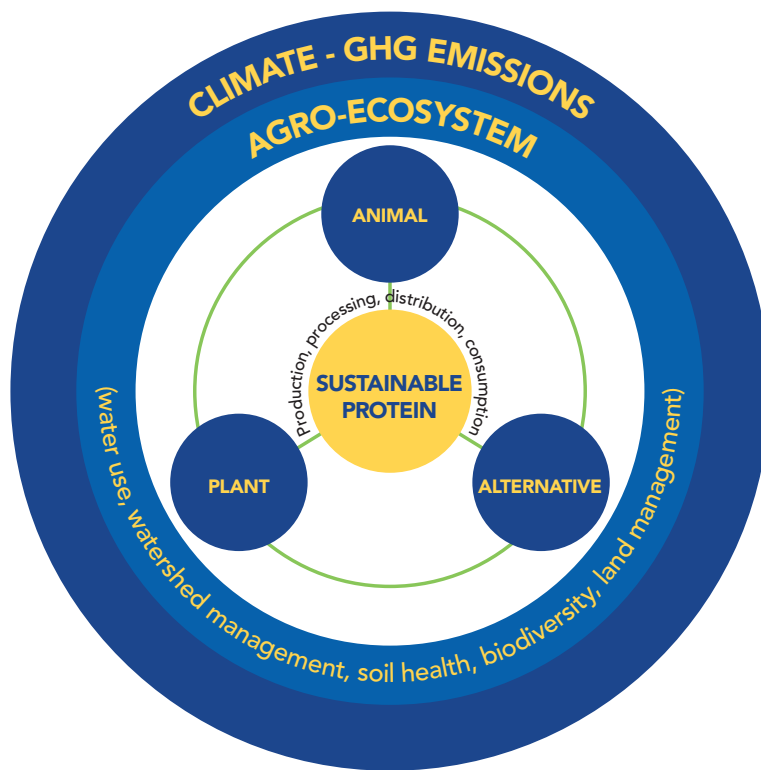
1. **Changing agricultural practices:** Farm practices have changed dramatically over the last 50 years with the introduction of specialty crops, large-scale farms, and the rise of precision agriculture.
2. **Availability and attraction of labour is a challenge in many jurisdictions:** This is a challenge at the production and processing stages, and includes an increased demand for skilled labour to work with technology.
3. **Increased focus on agro-ecosystem health:** The state of the agro-ecosystem and its ability to provide environmental goods and services has gained significant attention, from local and regional issues associated with water quality, maintaining wetlands, biodiversity and the global challenge of GHG emissions.
4. **Emergence of climate change as a dominant global issue:** The world has agreed on the need to flatline emissions by 2030 and move toward net zero emissions by 2050. As this relates to agriculture, the European Union's [Scientific Advice Mechanism 2020 report](#) estimated that the global food system accounts for up to 37 per cent of global emissions and is set to increase 30 to 40 per cent by 2050.
5. **Improved land and water management:** Agriculture sustainability needs to focus on improved management and increased agricultural production of existing land, not conversion of natural habitat to cropland. It must maximize the provision of environmental goods and services from natural areas and respect agriculture's interrelationship with, and affect on, larger watersheds.
6. **Increased awareness of the importance of soil health:** Actions to improve soil health, including soil conservation and regenerative agriculture practices, have gained considerable attention. Some reports point to regenerative agriculture as a potential mechanism to improve the health of soil, reduce local environmental impact and store significant volumes of carbon dioxide.

### Input Request: Background

6. What reactions, questions or suggestions do you have regarding the background statements (please refer to the statement number when appropriate)?

## Assumptions

As we move towards identifying the challenges and opportunities for advancing a Sustainable Protein agenda, there are some key assumptions we need to test.



### A. ASSUMPTIONS ON SUSTAINABLE PROTEIN OVERALL

1. **The production of Sustainable Protein is of paramount interest globally.** For much of the agriculture sector, it is now a driving objective and an important trend that will continue to advance in significant ways.
2. **Global demand for protein will continue to increase, including animal protein.**
3. **Sustainability is becoming** a necessity from the perspective of market acceptance, and sustainability objectives often diverge
4. **Our food systems are multi-dimensional,** with producing, processing, distribution and consumption all intertwined. There is a broad spectrum of agricultural practices. Plant and animal production are linked from the field to the plate and through by-product use.
5. **Advancing a Sustainable Protein agenda is a priority** of many diverse stakeholders who are keen to see innovative solutions emerge towards its achievement. Solutions and beneficiaries will involve both likely and unlikely stakeholders.
6. Due to its complexity, advancing a Sustainable Protein agenda **requires strong and inter-disciplinary collaboration** among many different groups on actions, potential actions and the interrelationships between them.
7. **There is an opportunity for leadership** in advancing a Sustainable Protein agenda. Being a leader in Sustainable Protein will require advancing innovative approaches and new agricultural solutions.
8. **The intersection of agricultural systems, big data and new technologies to make use of the data** allow us to better understand the land, crops and ecosystems, and allow us to act in ways we couldn't before.
9. As a jurisdiction of global agricultural relevance, **Manitoba has many elements in place to become a leader and a hub** in advancing various Sustainable Protein approaches.

## B. ASSUMPTIONS ON ENVIRONMENTAL IMPACTS AND AGRO-ECOSYSTEMS

1. **Agriculture has a significant opportunity to be an environmental solution provider.** The agriculture sector can contribute to the solution in addressing the numerous environmental issues of climate change, water quantity and quality, and loss of natural capital (e.g., soils, water, animal and plant life).
2. **Addressing climate change is a major driver for action.** The Paris Accord, the United Nations' Sustainable Development Goals and the Food and Agriculture Organization have all identified climate change as a priority.
3. **Soil health across the world is declining.** Soil health and regenerative agriculture practices, including the role that cattle and other livestock can play, are important and growing practices that are closely linked to sustainable agriculture, carbon emission reduction and soil health.
4. **Diversity is critical** to maintaining healthy genetic and landscape ecosystems.
5. **Strategies for reduction in water and land use** are global industry priorities when it comes to agricultural practices. A sustainable agriculture future needs to advance solutions that address these strategies.
6. **Nutrient management is a key component for healthy agro-ecosystems and watersheds.** Nutrients should be applied in a manner that enhances agricultural productivity, while decreasing the risk of loss to the environment.

## C. ASSUMPTIONS ON PROTEIN TYPES

1. There is a need to continue to produce livestock (e.g., cattle, pigs and poultry) in a **sustainable manner**, with minimal environmental impact. **Demand for product tracing** is increasing to ensure quality, safety and legitimacy.
2. **Demand for plant-based alternatives** to meat and dairy will continue to expand.
3. **The challenge for plant-based protein** is to improve sustainability of crop production and processing, and to adapt so it can respond to the fast-growing, plant-based protein demand and market, while also maintaining soil health and landscape diversity.
4. **The rise of protein alternatives**, from plant-based meat substitutes (look-alikes and taste-alikes) and insect protein to cultured meat, has been driven by technology advancements; the changing nature of western diets towards more of a flexitarian diet; and concerns regarding the sustainability of producing animal protein, given its significant impact on climate change.

### Input Request: Overall Assumptions

7. Are any of the overall assumptions unclear to you (please refer to the assumption number when appropriate)?
8. Do you strongly disagree with any of the overall assumptions? If so, which ones and why?
9. Are there any overall assumptions you think should be added to the list?



## Critical Questions

Listed below are questions that have arisen as we have considered this challenge. You may want to suggest other questions, with or without answering each of them. There are twelve critical questions here. Please respond to all of the questions or only those questions that most interest you (please refer to the question number when replying).

### Animal Protein:

10. What does success in sustainable animal protein look like to you?
11. What top three (a) opportunities and (b) barriers are there to dramatically increase the sustainability of animal protein?

### Plant Protein:

12. What does success in sustainable plant protein look like to you?
13. What top three (a) opportunities and (b) barriers are there to dramatically increase the sustainability of plant protein?

### Alternative Protein:

14. What top three (a) opportunities and (b) barriers are there to dramatically increase the sustainable impact of alternative protein?
15. In the future, how do you think emerging alternative proteins will interact with traditional animal and plant proteins in the marketplace?
16. In considering sustainable alternative proteins, what do you see as the future opportunities for an agriculturally-based jurisdiction like Manitoba?

### Agro-ecosystems:

17. What do you believe are the biggest actions that can be undertaken to enhance agro-ecosystem and soil health?
18. What do you feel needs to be done to enable adoption of practices, such as soil conservation or regenerative agriculture, to improve soil health and agro-ecosystem management at scale?

### Breakthroughs and Global Perspective

19. How do we increase protein production, while maintaining or improving environmental performance?
20. Considering the entire Sustainable Protein landscape, are there any areas that haven't been discussed that remain stuck and in need of a breakthrough?
21. As we move to action, are there any specific international organizations, jurisdictions, strategic alliances and/or partnerships that you believe should be engaged?

## Next steps and actions to follow:

Thank you for taking the time to share your ideas as part of the Sustainable Protein Challenge Dialogue. Here are the next steps:

**July 2020:** Gather feedback and create a non-attributable report on areas of alignment, disagreement and other insights. This report will be shared with everyone who was invited into the Dialogue.

**July-September 2020:** Invite a small group of Dialogue participants to an online workshop to re-engage around areas of misalignment, other open elements and the action plan.

**September 2020:** Prepare a Final Dialogue Report that outlines the main conclusions and recommendations to inform the Sustainable Protein Action Plan.

### Input Request: Next Steps

22. Do you have any questions about the next steps?

23. Do you have any other comments you would like to share?

## Attachments and links:

Manitoba Protein Advantage: <https://www.gov.mb.ca/agriculture/protein/index.html>

Sustainable Development Goal 2: End hunger, achieve food security, improve nutrition and promote sustainable agriculture. <https://sustainabledevelopment.un.org/sdg2>

## Appendix: Manitoba Protein Consortium Members

### **Dickson Gould, The Progressive Group of Companies Inc.**

Mr. Gould is the President of The Progressive Group which offers business management services and livestock production expertise. Mr Gould has a degree in agriculture economics and a professional agrologist designation. Mr. Gould has served as an executive council member to Maple Leaf Foods.

### **Dr. Emma McGeough, University of Manitoba**

Dr. McGeough is an assistant professor of sustainable grasslands and livestock production systems in the department of animal science for the University of Manitoba.

### **Emily Murray, Cargill**

Ms. Murray is the general manager for McDonald's beef patty production at Cargill, where she leads the sustainable beef pilot. She has a BA in comparative literature from Dartmouth College and an MBA from the Darden Graduate School of Business Administration in the University of Virginia.

### **James Battershill, Juno Food Labs**

Mr. Battershill is the founder of Juno Food Labs. He has experience as the general manager and policy analyst for the Keystone Agricultural Producers. Mr. Battershill has a bachelor of arts from the University of Manitoba.

### **Kristine Tapley, Ducks Unlimited Canada**

Ms. Tapley is a regional agrologist for Ducks Unlimited Canada as well as the owner and operator of Old Shore Cattle Company. She has a bachelor of science and a master's of science with a focus in animal sciences from the University of Manitoba

### **Neil Cunningham, Government of Manitoba**

Mr. Cunningham is an Assistant Deputy Minister at Conservation and Climate for the Government of Manitoba.

### **Sav Bellissimo, Federated Co-operatives Ltd.**

Mr. Bellissimo is the store brands manager for Federated Co-operatives Ltd. He has experience as the director of sourcing and procurement for Loblaw Companies and holds a BA from the University of Guelph.

### **Tracey Maconachie, Life Science Association of Manitoba**

Ms. Maconachie is the president of the Life Science Association of Manitoba, a non-profit dedicated to growing Manitoba's life science industry. She has served on the St. Boniface Hospital Research Enterprise Committee, the Manitoba Government/ Pharmaceutical Industry Liaison Committee and chaired the Business of Science Conference.

### **Manitoba Agriculture and Resource Development**

#### **Maurice Bouvier, Assistant Deputy Minister**

Mr. Bouvier is the Assistant Deputy Minister of the Production and Economic Development Division of Manitoba Agriculture and Resource Development. His areas of responsibility include crop and livestock production, applied production research, food and agri-product processing and the Manitoba Protein Advantage Strategy.

