Foresight

Smart Policy Series

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INCENTIVIZING LOW CARBON PATHWAYS FOR AGRIFOOD

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Canada is the world's fifth largest global exporter of agri-food products with sales of over $55 billion. The agri-food system is an integrated complex production chain ranging from primary agriculture to the food and beverage services sector. In 2016, the sector accounted for 6.7% of Canada's total GDP.[1]

Insights from Foresight

Canada is one of the largest global producers of flaxseed, canola, pulses, oats and durum wheat.[2]

On the horizon, we see continued policy signals from government and institutions to invest in innovation, encourage adoption of clean technology across the value chain and support creation of added value products to create new economic opportunities. This is good news for the recent wave of agtech clean technology companies out there who are looking to enhance productivity of farm activities, reduce GHG emissions and minimize water usage while yielding more dollars.

Insights from Foresight

The sector employs approximately 2.3 million people, representing 12.5% of Canadian employment in 2016 or 1 in 8 jobs.[3]

TRENDS IN AGRI-FOOD

Digital technology, advanced chemistry and new business models are helping to change on-farm and production practices. These range from remote sensing of crops to robotics completing manual tasks to developing new types of proteins. What's even better is that the sector is attracting investment. According to AgFunder's 2018 report, AgriFood Tech had a record-breaking year, with $16.9 billion in funding in 2018.[4]

The need for these innovations is driven by systemic challenges, sometimes filling a crucial economic gap or solving an environmental problem, as we discover below.

Climate Change

Agriculture is directly impacted by changing weather patterns, and at a heightened risk due to climate change impacts. In some regions, this can result in a decrease of crop productivity due to water stress or increase in wildfires affecting land use. Identifying crop stress early is key to productivity. B.C company, Ecoation uses robotics and proprietary sensors to do exactly this.[5] Their technology allows growers to find and fix their crop problems faster and results in lower greenhouse gas emissions and chemical usage.

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Agriculture accounts for 70 percent of all water withdrawals globally. [6]

Vancouver company, Semios, provides precision technology in the form of a scalable data analytics platform for tree fruit and nut crop growers (dependent on wireless sensors) to help predict, identify, and prevent pest and disease pressure to protect plant health.[7]

Labour Shortages

A number of sub-sectors within agriculture are often dealing with labour shortages, this can be due to a number of factors including seasonality, wages and costs of safety insurance.

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In 2014, labour shortages cost BC's Ag sector an estimated $70 million or 2.4% of sales.[8]

This gap is expected to widen, particularly in the greenhouse, nursery and floriculture industries. AIS Robotics, from Burnaby, is looking to solve this challenge by deploying autonomous robotic solutions to farms to conduct repetitive tasks such as moving pots or trimming leaves. They have an affordable Robotics as a Service business model providing a significant cost savings to the farmer.[9]

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The global market for agricultural robotics is expected to grow from its current $1 billion to $14–18 billion by 2020.[10]

Alternative Farm Inputs

Public attitudes towards food and need for transparency is driving demand for alternative and sustainable farm inputs at the growing and rearing level. For those seeking replacements to synthetic and chemical pesticides, they should look to Terramera. Based in Vancouver, they developed proprietary technology to replace use of synthetic pest control and crop protection chemicals. They reduce synthetic chemical and pesticide use by 80% and support increase of yields by 20%.[11]

Enterra, based in Langley, manufactures sustainable animal feed made from black soldier fly larvae. They use traceable, recycled food including fruits, vegetables and grains to feed the insects, displacing the need for additional land. According to sustainability think tank, Forum for the Future, meeting future feed demand would require approximately 280 million hectares of additional land by 2030 which is impossible to meet with existing protein crop sources.[12] Enterra's environmentally responsible approach reduces food waste volumes in landfill while delivering high quality nutrients to create high quality animal feed and pet food (which are $400 billion and $90 billion markets respectively).[13]

Food loss and waste

Finally, food loss and waste has an economic and environmental cost and impact. According to a recent report from Value Chain International and Second Harvest, a staggering 58% of all the food produced in Canada is lost or wasted, amounting to 35.5 million tonnes.[14] Vancouver company, FoodMesh is a business to business marketplace that matches surplus food to a verified network of businesses and charities. By diverting food waste from landfill, they are helping to prevent further methane emissions released into the atmosphere.

LANDSCAPE OF INNOVATION FUNDING

From our scan of the sector, it's clear there is a business and sustainability case to improve current practices across the agri-food supply chain. Furthermore, both Federal and Provincial governments have grant programs to encourage investment and deployment of clean technology, tools and resources to reduce environmental impact in agriculture such as:

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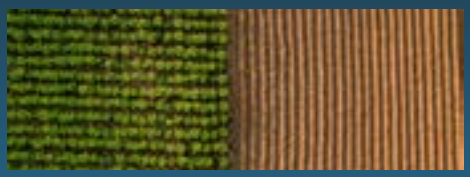

Global food waste and loss cost $940 billion a year, have a carbon footprint of 4.4 Gt CO2-equivalent, and a blue-water footprint of about 250 cubic km.[15]

1. The Canadian Agricultural Partnership, launched in April 2018, is a five-year, $3 billion investment by federal, provincial and territorial governments to strengthen the agriculture and agri-food sector. Under this:

- *The Agri-Innovate program provides repayable contributions for projects that aim to accelerate the demonstration, commercialization and/or adoption of innovative products, technologies, processes or services that increase agri-sector competitiveness and sustainability.*[16]
- *The Canada BC Agriculture Program allows industry, academia, value-added food processors, retailers and others to access funding for projects involving late-stage research; pilots and demonstrations; as well as the commercialization and adoption of innovative products, technologies and practices for agriculture, food or agri-products sector.*[17]

2. The Agricultural Clean Technology Program is a $25-million, three-year investment (2018-21) to support the research, development and adoption of clean technologies through investments in, and promotion of precision agriculture and agri-based bioproducts. Provinces and Territories are eligible to apply for federal funding through this program and are encouraged to work with industry on projects that focus on precision agriculture and/or bioproducts.[18]

3. The BC Agriculture & Food Climate Action Initiative develops tools and resources to enhance the ability of the BC agriculture sector to adapt to climate change.[19]

Endnotes

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