



ENVIRONMENTAL CONTRIBUTION OF AGRICULTURE

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Representing Canada's plant science industry | Représentant de l'industrie de la phytologie du Canada



CropLife Canada – Who We Are

CropLife Canada is the trade association representing the manufacturers, developers and distributors of plant science innovations, including pest control products and plant biotechnology, for use in agriculture, urban and public health settings. We are committed to protecting human health and the environment and we believe in driving innovation through continuous research.

Our mission is to enable the plant science industry to bring the benefits of its technologies to farmers and the public. Those benefits manifest themselves in many different forms, including driving agricultural exports, job creation, strengthening the rural economy and increased tax revenue for governments.

The Post COVID-19 Challenge Facing Canada

As Canada looks for opportunities to recover from the economic crisis precipitated by COVID-19, agriculture and agri-food could play a major role in achieving the goal of creating jobs and economic growth for all Canadians. The agriculture and agri-food industry accounts for 2.3 million jobs and 7.4% of Canada's overall GDP (\$143 billion). Growing this industry – if you'll pardon our pun – is low-hanging fruit to help drive Canada's economic recovery.

Even before the global pandemic hit, thought leaders were pointing to agriculture as an area with huge potential for growth. A [2019 Royal Bank of Canada report¹](#) suggested that Canadian agriculture could generate an additional \$11 billion for Canada's GDP by 2030 if the right investments are made. This, the report noted, would make the sector more productive than auto manufacturing and aerospace combined.

Prior to this, the Advisory Council on Economic Growth (a.k.a. the [Barton Report²](#)) also identified agriculture and agri-food as strong areas of potential growth in Canada. Stemming from that, [The Agri-Food Economic Strategy Table³](#) set a goal of growing agriculture and agri-food exports to \$85 billion by 2025, up from \$64.6 billion in 2017, in addition to similarly ambitious goals for increases in domestic sales of Canadian grown and processed foods.

While there is clearly an economic growth imperative, there is also the vitally important goal of environmental sustainability, and of reducing greenhouse gas emissions to allow Canada to meet its global commitments. Agriculture, like all industries, must do its share and be part of the solution to climate change. We feel very strongly that this sector does in fact meet these goals.

¹ <https://thoughtleadership.rbc.com/farmer-4-0-how-the-coming-skills-revolution-can-transform-agriculture/>

² <https://www.budget.gc.ca/aceg-ccce/home-accueil-en.html>

³ <https://www.ic.gc.ca/eic/site/098.nsf/eng/00022.html>



Thanks in large part to innovation, Canadian agriculture has made tremendous strides on sustainability in recent years, and if allowed to do so we can continue that success. Agriculture can be an engine for economic growth in Canada and demonstrate environmental sustainability, provided governments give the industry the tools to succeed.

Canada's Global Standing in Sustainability

It is important to put Canadian agriculture in a global context when it comes to measuring environmental impact. Agriculture accounts for eight percent of Canadian emissions, but 23% globally. This demonstrates that Canadian agriculture is both highly efficient and sustainable, and that our sustainability efforts compare quite favourably to those of other nations. This achievement has taken place simultaneously to tremendous increases in productivity. Today's Canadian farm can produce roughly twice as much output as 50 years ago, with the same amount of total input.⁴

While production has increased significantly, total emissions from Canada's agriculture sector have been relatively stable for twenty years, resulting in a decrease of GHG emission intensity (GHG/\$GDP) of 50% from 1997 to 2017⁵, compared to a 36% decrease for the economy as a whole during the same period. When it comes to sustainable practices and measurable improvement in environmental performance, Canadian agriculture has been a leader.

Due to the adoption of soil conservation practices (e.g., no-till, cover crops and crop rotations), agricultural soils in Canada have been sequestering carbon for twenty years, particularly in the prairie provinces. In terms of GHG emissions intensity, Canada is among better performing countries worldwide, notably in terms of its carbon footprint for beef and milk production, and its net carbon sink.

The Role of Innovation in Improved Sustainability

Advancements in biotechnology and crop protection products have helped make pesticide use in Canada more efficient and continue to address key climate change concerns. More recently, advancements in precision agriculture have allowed farmers to be more targeted than ever in their pesticide applications with some technologies allowing farmers to target regions or even specific weeds within their fields.

⁴ [Overview of the Canadian agriculture and agri-food sector 2018 - Agriculture and Agri-Food Canada \(AAFC\)](#)

⁵ [Overview of the Canadian agriculture and agri-food sector 2018 - Agriculture and Agri-Food Canada \(AAFC\)](#)



Seed innovations like the introduction of herbicide tolerant corn, soybeans and canola have reduced pesticide use by as much as 35% in Canada from 1996 – 2018. Specifically, herbicide tolerant corn and canola have reduced the amount of active ingredient used by 6.4 million kg in Canada in that time.

Precision agriculture accounts for a 4% increase in productivity, with significant reductions on the use of water, fertilizer, herbicides and fossil fuels.⁶ But there is room to increase this even further, with access to high speed rural internet, innovative financing and cost-share options, an additional 7% increase in productivity could be realized.

Preserving Biodiversity

As much as 33.6 million acres are maintained in a natural state (untouched by agriculture) due to plant science innovations, which preserves wildlife habitats and biodiversity. Without plant science innovations farmers would need 44% more land (an area roughly the size of all the Maritime provinces combined) to produce what they do today.⁷ Far from being a threat to biodiversity, modern agriculture is one of the solutions to protecting it.

Reducing GHGs

Modern agricultural practices are helping to reduce greenhouse gas emissions and address climate change concerns, as no-till and conservation tillage practices help prevent carbon from escaping the soil. The carbon sequestration and fuel savings from no-till and conservation tillage practices saved an estimated 20 billion kgs of greenhouse gas emissions from being released into the atmosphere between 1996 and 2018, which is equivalent to removing about 13 million cars removed from the road for a year.⁸

Canadian farmers continue to increase their no-till acres with 19 of our 33 million crop land acres (58%) being no-till. Reduced fuel use due to no-till and conservation tillage practices has prevented 3.3 billion kgs of CO₂ from entering the atmosphere between 1996 – 2018. Without herbicide tolerant traits and the active ingredient of glyphosate, this progress would not have been possible.⁹

⁶ <https://croplife.ca/wp-content/uploads/The-value-of-plant-science-innovations-to-canadians-2020.pdf> - The Value of Plant Science Innovations to Canadians in 2020

⁷ Ibid

⁸ Ibid

⁹ Ibid



From 1985 to 2019 Saskatchewan's crop production sector reduced its greenhouse gas emissions by an astounding 98% largely due to an increase in conservation and no-till practices.¹⁰

Improved Soil Health

No-till systems can reduce soil runoff by 79% while also increasing plant nutrients in the soil. More than 80% of farmland in Canada is now at a very low risk of soil erosion – a large improvement from forty years ago when soil erosion was a significant issue.

No-till and conservation tillage practices increase organic matter in the soil and show a 71% increase in soil microbes.¹¹

Continuous improvements

While we are proud of the progress that Canadian modern agriculture has made, we are not stopping here in our support of sustainability. There are ongoing investments and continuous research into new bio pesticides, precision agriculture, and gene editing. Gene editing is a particularly exciting field, as rapid advancements will make it possible to create new traits more resistant to climate change, amongst other benefits. We believe that Canada can, and should be, an agriculture technology hub for much of this research and development.

We have much of what is required already – what is needed now is a clear commitment on the part of the government of Canada to work with industry to help make our country a global agriculture superpower.

Recommendations

The record is clear – modern Canadian agriculture is more sustainable than it has ever been. We are producing more food on less land, using fewer inputs and less water per acre and burning fewer fossil fuels. All of this progress has come due to innovation. In many instances it is innovation directly attributable to the plant sciences sector, and we are proud of the role that our members have played in this success.

There is, however, more to do, and our sector wants to be part of that success. In order to further improve the sustainability of Canadian agriculture, we need a regulatory climate that encourages and rewards innovation, and makes Canada the agriculture technology hub that we know it can be.

¹⁰ Ibid

¹¹ <https://croplife.ca/wp-content/uploads/The-value-of-plant-science-innovations-to-canadians-2020.pdf> - The Value of Plant Science Innovations to Canadians in 2020



Our policy recommendations for government would be the following:

1. **Focus on regulatory modernization as a tool to encourage innovation.** Our industry needs a regulatory system that is prompt, predictable and science based. While health and environmental protection must always remain the top priority, we believe that there is room for regulators to also embrace a competitiveness mandate, working with industry to help foster innovation in Canada that can compete around the globe.
2. **Promote and defend the sustainability of Canadian agriculture on the world stage.** As global efforts to fight climate change continue, there will inevitably be comparisons of industries in different nations and regions of the world. We know that Canadian farmers are adopting new sustainable practices at a strong rate, and demonstrating clear progress. We would like to see the government of Canada promote the sustainability success story of Canadian farmers on the world stage, and ensure that it is recognized in all international forums and negotiations.
3. **Support exports by promoting science-based trade rules.** Trade is the lifeline of Canadian agriculture. We ask the government to support negotiations and enforcement of Free Trade Agreements, and to better use of international mechanisms and institutions to ensure science-based, predictable and transparent trade rules for agriculture products. We also join with other stakeholders in calling for continued efforts to revitalize the World Trade Organization and ensure it remains the effective and trade-facilitating organization it has historically been. The government should also work toward regulatory cooperation and alignment in order to facilitate the trade of agriculture products around the globe. A healthy, well-functioning trading system in agriculture is also part of sustainability, as it allows nations and regions to focus on the crops and products they produce most efficiently.
4. **Incentivize and reward efforts by Canadian farmers.** As discussed, Canadian farmers are world leaders in the adoption of technologies that enable the sequestration of carbon. At present, though, those efforts are not recognized by government policy. In order to fight climate change we believe that farmers need to be incentivized and rewarded as enablers of ecosystem services through the adoption of both innovation and technology, and nature-based solutions.