
Road to 2050

Policy Recommendations

Introduction

The Road to 2050 for Canada's Grain Sector is an initiative of the Grain Growers of Canada (GGC) that provides a guide for federal government programming to enable the grain sector to sustainably intensify production to feed a growing world population while addressing climate change and ensuring the long-term economic prosperity of grain farms. Canadian grain farmers and their production practices continue to provide an important solution as Canada seeks to contribute to reducing net carbon emissions. As the national voice for Canada's grain farmers, GGC represents over 65,000 cereal, oilseed, and pulse producers through our 14 grower groups. GGC advocates for federal policy that supports the competitiveness and profitability of grain growers across Canada.

Canadian grain growers are part of a holistic solution to mitigate the effects of climate change. To date, grain farmers have made strides towards these goals, and they must be recognized for these achievements. In particular, Canadian grain consistently ranks as having the lowest GHG emissions per kilogram of grain relative to other grain-producing nations¹. Even more, grain production can generate co-benefits for sustainability, including biodiversity, water quality, and soil health. In partnership with government, grain producers can be a solutions provider to environmental challenges. Future policies and programs should be designed to assist grain farmers in making incremental improvements in sustainable practices and technologies they already employ. In determining appropriate actions, factors such as the large diversity of crops, local differences in soil and climate, farm size, production systems, and differing weather variability are key considerations. As a result, there is no one-size-fits-all solution regarding how the grain sector can contribute to emission reductions. Recognizing this, solutions must make environmental, agronomic, and economic sense regionally and for individual farmers.

This backgrounder outlines three core themes with a series of policy recommendations. These policy recommendations proceed from the core realities that Canadian grain farmers must be profitable to be sustainable, and they must be globally competitive to be profitable.

1. Position Canada as a global leader in agriculture investment and innovation

The federal government must maintain and increase its financial support of public and private research and development. Unfortunately, Canada currently lags in agriculture investment and innovation, putting Canadian grain farmers at a disadvantage relative to their global competitors. Government involvement

¹ Bamber et al. 2023: *Carbon footprint analysis of Saskatchewan and Canadian field crops and comparison to international competitors*. Global Institute for Food Security

through funding and investment is fundamentally important in reducing direct and indirect emissions while improving climate adaptation of the crop sector in the face of increased frequency and intensity of weather events such as drought, heat, and floods. Furthermore, public infrastructure investment is crucial to the development of new technologies and its subsequent adoption.

Expand public and private plant breeding research

Crop variety development is an effective way to support agricultural sustainability and climate adaptation. Breeding activities that develop trait technology and innovation ingrained in seeds will help to meet climate change goals by providing farmers with higher-yielding varieties with improved nutrient use efficiency, reduced pesticides needed, and a better ability to withstand pest, disease, and climate stressors. Additionally, there must be support and investment for accelerated modern breeding technologies. Cereal and pulse crops rely on public research dollars to develop new varieties, which result in substantial varietal improvement benefits for grain farmers (i.e., every dollar of public wheat breeding research equates to a \$33 return for western wheat farmers²). To halt the current decline in public research, the government should invest more dollars in Agriculture and Agri-Food Canada (AAFC) crop breeding programs and ensure an adequate representation of research sites remain open to reflect regional differences in soil, climate, disease, and pest pressures to test new varieties. For crops that rely more heavily on private breeding (i.e., canola), governments should leverage public-private partnerships (e.g., increasing AgriScience clusters funding).

Expand research on agronomic practices

In addition to new varieties, grain growers need continued access to agronomic research to inform practices (i.e., soil and nutrient management, pest management, and seeding, tillage, and harvest practices). This research is most often done in partnership between post-secondary institutions, AAFC centres in rural areas (e.g., Living Labs), provincial governments, and multi-national enterprises for crop input products. Governments should increase research funding to expand the AAFC research centre network and research funding available to post-secondary institutions while emphasizing information dissemination to farms.

Expand machinery research

The development and adoption of machinery technology (e.g., fuel-efficient equipment, drone and mapping technology, sectional control, variable rate, etc.) is an avenue for grain farmers to reduce emissions. The federal government should increase research funding and facilitate public-private partnerships with organizations (e.g., Prairie Agricultural Machinery Institute (PAMI), Enterprise Machine Intelligence & Learning Initiative (EMILI), and Olds College Smart Farm) and provincial governments that facilitate machinery and digital agriculture tool research. These innovations can contribute to climate mitigation once they are scaled up and available at a reasonable cost to adopt. Enabling regulations (i.e., right to repair legislation) are also essential for technology accessibility.

Continued expansion of rural cellular networks and broadband

Farm management systems and precision agriculture are tools that help growers make better management decisions, which lead to climate mitigation. However, these technologies remain inaccessible without widespread cellular connectivity to use these products in the field and broadband internet access in the farm office (e.g., soil testing programs that inform optimal fertilizer rates often require cellular connectivity).

² Bolek-Callbeck, K., Gray, R. (2022, March). *The Benefits and Costs of Producer and Public Investments: Wheat Varietal R&D in Western Canada 1995 to 2020*. University of Saskatchewan.

Farm connectivity is also crucial to the farm safety of employees, as well as attracting the next generation of workers who rely on being connected for their day-to-day activities. While good progress has been made to connect rural and remote communities to high-speed internet, more investments are needed for last-mile infrastructure and to improve the accessibility (i.e., cost) of rural broadband. The government must also prioritize the expansion of high-speed cellular infrastructure (i.e., 5G+) as part of their connectivity plan.

Foster a supportive legislative and regulatory framework

While Canada may develop effective seed, crop input, and machinery to reduce emissions, grain growers need timely access to these technologies. This requires implementing efficient regulatory approval processes backed by data and science to mobilize technology and artificial intelligence (e.g., pesticide application timing predictions) that can contribute to climate goals. Improving future efficiencies and mitigating delays within regulatory processes (e.g., Canadian Food Inspection Agency's guidance on novel feeds) will ensure Canadian grain growers can adopt new technologies at a reasonable pace to remain competitive in the global market (e.g., in 2018, 27% of plant breeders moved or considered moving field research outside of Canada³).

2. Constructively recognize, publicly support, and reward the advances of grain producers

Canadian grain growers have made and continue to make significant strides in sustainable production, largely in response to economic signals. Government must firstly showcase the positive contributions farmers make to Canadian society (e.g., contributing to climate mitigation through carbon sequestration, solution providers to protecting wetlands, and preserving critical habitat). Additionally, government can provide appropriate financial investments, payments for ecosystem goods and services, and knowledge transfer provisions to realise policy objectives and enable grain producers to contribute to achieving public goods.

Expand eligibility criteria and funding for current climate programs

Certain programs (e.g., On-Farm Climate Action Fund (OFCAF), Agricultural Clean Technology Program, On-Farm Technology Adoption Program in Nova Scotia and British Columbia, etc.) provide financial incentives for grain growers to adopt beneficial management practices (BMPs) on their operations. However, eligibility criteria remains narrow, and local solutions must be considered (e.g., OFCAF only funds three BMPs). Additional regional solutions (e.g., inclusion of all enhanced efficiency fertilizers, soil testing programs, etc.) should be allowed as determined by provincial stakeholders. Additionally, current programs are oversubscribed and lack the funds to deliver programming (e.g., in 2023, 276 of Alberta's Results Driven Agriculture Research OFCAF nitrogen management programs were not funded, and BC's On-Farm Technology Adoption Program funding was only \$3M⁴). Expanding eligibility criteria and increasing funding for these programs will support growers in implementing projects that contribute to climate mitigation. Finally, the consultation mechanism for program conception should be improved to ensure programs accurately capture farming practices.

³ Smyth SJ, Gleim S, Lubieniechi S. *Regulatory Barriers to Innovative Plant Breeding in Canada*. Front Genome Ed. 2020 Oct 20;2:591592. doi: 10.3389/fgeed.2020.591592. PMID: 34713222; PMCID: PMC8525381

⁴ Government of British Columbia. (2023, Nov 24). *Canada, B.C. supporting B.C. farmers with access to technology*.

Develop tax incentives to bridge financial gaps between old and new technologies

In addition to technology adoption programs, the federal government should implement tax incentives to offset the capital costs of adopting new technologies. Government programming through tax credits, as well as retaining and increasing the Accelerated Investment Incentive, which allows for an accelerated capital cost allowance, will help to bridge the gap between old and new technologies. Considerations should also be made for retrofitting existing equipment (e.g., sectional control), which ensures that earlier adopters have options for continuous improvement.

Re-investment in provincial agronomy extension services

At times, it can be difficult for growers to adopt BMPs that contribute to climate mitigation and adaptation on their operations because they lack the agronomic support to implement the practice. Many grain growers can benefit from one-on-one help from a trusted agronomist to develop and implement these BMPs on their farm. The federal government should provide provinces with dedicated funding to broaden agronomic extension support services to growers, which would increase the success of BMP adoption and increase the likelihood of BMP retention on farms. Supports for existing agronomy networks (i.e., commodity associations) and funding for private agronomists should also be explored.

Support crop commissions programming across Canada to facilitate knowledge transfer

Regionality is an inherent aspect of Canadian agriculture, which impacts the management practices and technologies used by grain growers on their farm. Crop commissions play a vital role in financing regional agronomy research (e.g., BMPs, climate-resilient varieties) and communicating findings to growers. With increased financial support from the federal government, crop commissions can expand their current research, crop extension, and communication efforts to accurately capture local differences between Canada's agricultural landscapes and facilitate knowledge transfer. Furthermore, pre-existing programs (i.e., Scientific Research and Experimental Development program) should be re-vamped for commissions' levy investment research.

3. Develop a comprehensive approach to data and metrics development and use

The federal government should work with provinces and industry across the country to determine accurate and agreed-upon measures, baselines, and reporting including historical, ongoing, and future, so that we can best leverage, improve, and innovate on measurement and data systems.

Development of data management strategy

Accurate data is critical to developing science-based policies. However, a lack of empirical on-farm data and technology for data collection exists, and modelling is often used as a replacement. Accurate farm-level data (e.g., BMP adoption metrics) would facilitate policy development, though this must be traded off against privacy risks. AAFC should implement a farm data working group to better understand how farm data can be safely collected, used, managed, and protected in a way that safeguards individual privacy yet informs policy decisions. Collaboration with non-profits that promote transparent agriculture data usage agreements (e.g., Ag Data Transparent) should be explored.