



**FARMERS
FOR CLIMATE
SOLUTIONS**



Rooted in Climate Action

**An ambitious roadmap for emissions reduction and
resilience in the next Agricultural Policy Framework**

Farmers for Climate Solutions (FCS) assembled a task force of farmers, researchers, economists and policy experts in late 2021 to examine how the next Agricultural Policy Framework (APF) could accelerate climate action in Canadian agriculture. This task force is seeking to identify beneficial management practices (BMPs) that can reduce greenhouse gas emissions, increase carbon storage and increase resilience on Canadian farms, and to suggest policies and programs that will encourage the rapid adoption of these practices. This work complements the findings of FCS's Business Risk Management task force, which completed its work in March.

This Interim Report is intended to provide preliminary findings and recommendations to policymakers and agricultural stakeholders as early as possible in the APF development process. Key practices, costs, mitigation potential and policy recommendations have been identified and calculated, but some values may be subject to change. A final report, including a comprehensive technical report that describes all assumptions and calculations, will be released in early June. FCS welcomes input and suggestions at this interim stage to improve the findings and recommendations.

Emissions Mitigation Potential

The task force identified 18 beneficial management practices that have the potential to reduce GHG emissions, increase carbon sequestration, and increase resilience on Canadian farms. All of these BMPs are proven, implementable practices that are already in use in Canada, and all are supported by peer-reviewed data that quantify GHG mitigation potential. Together, these BMPs have the potential to mitigate emissions from the agriculture sector by 11.6 million tonnes of CO₂ equivalent in 2030. This mitigation potential is in addition to the projected mitigation from the current phase of the On-Farm Climate Action Fund. This level of mitigation will require rapid and widespread adoption of the identified BMPs, which will require substantial investment by governments and farmers.

Incentivizing the adoption of the BMPs identified in this report will require annual government investment of approximately \$565 million in 2030. Because spending is projected to ramp up over the next eight years, the average annual expenditure over the five-year life of the next APF will be \$365 million, for a total of \$1.8 billion during the APF period. These expenditures do not include the cost of program administration and delivery. Federal and provincial governments must invest in capacity to manage, administer and coordinate the large and complex programs necessary to deliver these emissions benefits.

The nitrogen management BMPs proposed in this report are sufficient to achieve the government's target of a 30% reduction in emissions associated with nitrogen fertilizer by 2030.

Beneficial Management Practices

Practice	GHG Mitigation (Mt Co₂e in 2030)	Average Abatement Cost (\$/tonne Co₂e in 2030)	Total cost (\$/year in 2030)
Nitrogen Management <ul style="list-style-type: none"> Quantitative determination of right rate Precision nitrogen management Enhanced efficiency nitrogen fertilizer Elimination of fall nitrogen application 	3.5	\$52	\$180 million
Manure Management <ul style="list-style-type: none"> Synthetic impermeable floating covers Acidification of liquid manure 	2.0	\$10	\$20 million
Livestock Management <ul style="list-style-type: none"> Increased legumes in pasture Rotational grazing Extended grazing period Ration formulation and precision feeding 	1.6	\$5	\$8 million
Soil Management <ul style="list-style-type: none"> Cover cropping Intercropping 	3.0	\$101	\$302 million
Wetland and Tree Management <ul style="list-style-type: none"> Avoided conversion of wetlands* Wetland restoration Alley cropping Silvopasture Planting riparian trees Avoided conversion of shelterbelts 	1.6	\$35	\$55 million
TOTAL	11.6	\$49	\$565 million

* The program design considerations for this BMP are complex, and we have a lower level of confidence in the emissions mitigation potential of this proposal than the others.

Additional Costs

The expenditures listed in the table above are annual costs to incentivize practice adoption in 2030. They do not include program design, delivery and administration costs, the cost to governments to increase internal staffing and capacity to administer the necessary programs, or the cost of enhanced data collection and analysis. Some of the policy recommendations listed below will also require additional investment, such as designing and delivering an enhanced Environmental Farm Plan or establishing a national set-aside program. More detailed spending estimates will be included in the final technical report.

Policy and Programs

The Canadian Agricultural Partnership and previous iterations of the APF have tended to focus on the adoption of individual environmental BMPs, with limited resources for BMP incentivization and little coordination between provinces. A much more ambitious, system-wide approach will be necessary if agriculture is to make a meaningful contribution to achieving Canada's goal of reaching net-zero emissions by 2050. FCS will recommend a range of policy options – from traditional cost-share programs, to reverse auctions, to collective bonus payments – to incentivize and promote the adoption of climate-friendly BMPs, but at this interim stage it is important to highlight some broad policy objectives and themes.

Systems approaches

The science is clear that much greater mitigation can be achieved through a systems approach that encourages the adoption of a suite of BMPs, rather than focusing on individual practices. For example, many individual practices can reduce enteric methane emissions from cattle by five to ten percent. However, complimentary practices can be “stacked” or adopted simultaneously to achieve emissions reduction in excess of 15%, and secondary impacts on animal health and reproductive success can push overall mitigation to 23%. Producers should be encouraged to adopt low-emissions farming *systems*, rather than individual BMPs.

The Environmental Farm Plan

The Environmental Farm Plan (EFP) is an established framework that could be harnessed to drive systemic change and reduce emissions on Canadian farms. The federal government should establish minimum standards for the EFP, including climate and nutrient management modules and standardized renewal periods, while giving provinces and territories flexibility to adapt the EFP to local conditions. The EFP could be a powerful tool to help farmers understand where their emissions are coming from and how they can be reduced. A complete and updated EFP should be a prerequisite for accessing cost-share and other supports through the APF and programs such as the On-Farm Climate Action Fund.

Farmer Education and Extension

Farmers need information and support if they are to embrace change on their farms. Creating and renewing Environmental Farm Plans offers an opportunity to connect individual producers with agricultural professionals and fellow farmers who can provide practical advice. The long-term erosion of public extension services in Canada needs to be reversed, but in the interim, all sources of agricultural information need to be strengthened and supported, including farmer-to-farmer information sharing networks, independent agrologists and Certified Crop Advisors, farm organizations, and agricultural colleges and universities.

Voluntary Set-Aside Programs

Canada must create a new national set-aside program. Set-asides are a vital tool to avoid the conversion of grasslands, wetlands and forested areas to crop production, and to encourage the conservation of marginal lands, which tend to have the highest emissions intensity per unit of production.

Data Collection and Standardization

Environmental programs in Canadian agriculture have a history of poor data collection and inadequate assessment of program outcomes. Robust data collection and analysis requirements need to be built into every aspect of the APF to better identify emissions sources and mitigation strategies. The National Inventory Report does not accurately account for all agricultural emissions sources, and in some cases fails to capture significant mitigation practices: this must change as quickly as possible.

Equity and Inclusion

Many farmers have been historically marginalized in the Canadian agriculture sector and left out of government programs, but these same farmers have been some of the most progressive in adopting climate mitigation and adaptation measures in their operations. Young farmers, women farmers, farmers with disabilities, Black farmers, Indigenous farmers and food providers, farmers of colour, small-scale farmers, 2SLGBTQ+ farmers, and new Canadian farmers often experience additional and unique barriers to enter and succeed in our sector. Climate-related programming in the next APF must be accessible to all farmers. For example, cost-share programs should have an advance payment provision for equity-deserving farmers so that lack of up-front capital is not a barrier to participation. The AgriDiversity program should be expanded, and financial support given to groups that represent equity-deserving farmers to help spread and support climate-friendly practices.

Research Methods

The BMPs listed in this report were selected based on the availability of peer-reviewed and extension-based research that demonstrates GHG mitigation potential, in addition to other criteria, including the availability of data on current adoption levels, farm-level costs and benefits of implementation, and how readily each BMP could be incentivized. BMPs that are not currently in use in Canada or that are experimental were not considered. FCS will release a full technical report in early June that details all data sources, assumptions and calculations.

The list of practices considered for this report is not exhaustive. Other opportunities exist for emissions reduction and carbon storage on Canadian farms. This research project did not examine on-farm energy use, which is an important source of agricultural GHG emissions.

Task Force Membership

Farmer Co-Chairs



AMANDA ELZINGA
Livestock producer,
Alberta



CAMERON GOFF
Grain and oilseed producer,
Saskatchewan

Emissions Team

Nitrogen



DAVID BURTON
Dalhousie University

Livestock



CLAUDIA WAGNER-RIDDLE
University of Guelph



SUSANTHA JAYASUNDARA
University of Guelph

Wetlands



PASCAL BADIOU
Ducks Unlimited Canada



KIM OMINSKI
University of Manitoba



GENET MENGISTU
University of Manitoba

Soils and Trees



BRIAN MCCONKEY
Viresco Solutions



KARIN WITTENBERG
University of Manitoba



EMILY BOONSTRA
University of Manitoba

Economics Team



AARON DELAPORTE
University of Guelph



DAN SCHUURMAN
University of Guelph



ALFONS WEERSINK
University of Guelph

Equity



ANGEL BEYDE
Ecological Farmers Association of Ontario

Programs



KAT LORIMER
Smart Prosperity Institute



RYAN TOUGAS-COOKE
Smart Prosperity Institute



DEREK EATON
Smart Prosperity Institute

FCS Policy Working Group



ALICE FEUILLET
Équiterre



DARRIN QUALMAN
National Farmers Union



BRENT PRESTON
Farmers for Climate Solutions

About Farmers for Climate Solutions

Launched in February, 2020, Farmers for Climate Solutions is a national coalition of farmer-led and farmer-supporting organizations advancing policies and programming that support farmers to reduce emissions and build resilience in the face of climate change.

Current members of Farmers for Climate Solutions include:



Cover image: Shannon McCreary, McCreary Land & Livestock Ltd in Bladworth, SK



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