



Written Submission for Agriculture and Agri-Food Canada's Fertilizer Emissions Reduction Target Consultation

SaskCrops & APAS

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Introduction

The Saskatchewan Crop Commissions (SaskCrops) comprised of SaskBarley, SaskCanola, SaskFlax, SaskOats, Saskatchewan Pulse Growers, and Sask Wheat, along with the Agricultural Producers Association of Saskatchewan (APAS) welcomes the opportunity to provide feedback to Agriculture and Agri-Food Canada (AAFC) on the Government of Canada's Fertilizer Emissions Reduction Target.

Our organizations represent over 24,000 grain, pulse, and oilseed growers in Saskatchewan. The common goal of our organizations is to ensure that Saskatchewan farmers remain competitive and profitable. We support and advocate for science-based policy to support the competitiveness of Saskatchewan growers.

Agriculture is a critically important segment of Canada's economy, and Saskatchewan plays a vital role in Canada's agriculture sector, accounting for 43 percent of Canada's cropland¹ and 23 percent of total Canadian agri-food exports.² Saskatchewan's agricultural exports are not only a key driver of the Canadian economy but are also crucial to maintaining global food security.

Saskatchewan farmers have been and remain at the forefront of innovation in agricultural production globally and have long been early adopters of technologies that have greatly lowered our emissions compared to other regions of Canada.³ Saskatchewan farmers as a group are unique among the provinces in their low emission intensity coupled with high agricultural intensity. This clearly indicates the meaningful contributions Saskatchewan is making and can continue to make to help other jurisdictions meet their environmental goals and increase the resiliency of Canadian agriculture.

Prior to development of the current discussion document, the Government of Canada endorsed a goal of achieving \$85 billion in agri-food exports by 2025 and \$140 billion in

¹ Statistics Canada, 2022. Canadian Agriculture at a Glance. Saskatchewan continues to live up to the title of breadbasket of Canada <https://www150.statcan.gc.ca/n1/pub/96-325-x/2021001/article/00008-eng.htm>

² Government of Saskatchewan, 2021. Saskatchewan Agriculture Exports 2020.

³ Agriculture and Agri-Food Canada, 2021. Agricultural Greenhouse Gas Indicator. <https://agriculture.canada.ca/en/agriculture-and-environment/climate-change-and-air-quality/agricultural-greenhouse-gas-indicator>



domestic sales by 2025.⁴ Recently, through the agreement in principle for the Sustainable Canadian Agricultural Partnership, the federal, provincial, and territorial Ministers of Agriculture set targets for \$250 billion in sector revenues and \$95 billion in sector export revenues by 2028.⁵ The current AAFC discussion document further supports an increase of production as these goals require but specifically constrains it within an overarching goal of reducing GHG emissions when it states, “the defining challenge for Canadian agriculture in the 21st century will be to reduce absolute GHG emissions, and ultimately reach net-zero emissions by 2050, while finding ways to increase yields and economic growth- all while feeding a growing global population.” Given the short timeframe to 2030, a major increase in production and exports as well as a 30 percent reduction in fertilizer emissions presents significant challenges and it is improbable to achieve these goals simultaneously.

Saskatchewan farmers continue to increase grain production, largely through per hectare (acre) yield increases, while at the same time adopting a variety of environmentally sustainable practices, but we cannot afford to get ahead of the science as we pursue these parallel lines of action. Calling for an increase in reliable food production and, at the same time, developing fertilizer emission targets without the support of accurate measurement techniques and protocols that yield sound, adequate, and representative data, will limit Canada’s ability to meet the challenges of sustainably feeding the world. Our organizations strongly believe that any agricultural environmental policies and targets need to be grounded and supported by science and verifiable data.

In particular, nitrogen fertilizer as a vital input for Saskatchewan, Canadian, and international field crop production will remain essential for increasing production to meet rising global food demand. It is, thus, imperative that the fertilizer emission reduction target takes into account increases in fertilizer use efficiency.

We appreciate AAFC’s recognition that there is no one-size fits all approach to meeting this target as there are many variables at the regional and individual farm level that will impact what solutions work for each farmer. It is crucial that any recommended or incentivized

⁴ Innovation, Science and Economic Development Canada, 2018. Report of Canada’s Economic Strategy Tables: Agri-food. <https://www.ic.gc.ca/eic/site/098.nsf/eng/00022.html>

⁵ AAFC, 2022. Annual Meeting of Federal, Provincial and Territorial Ministers of Agriculture. <https://www.canada.ca/en/agriculture-agri-food/news/2022/07/annual-meeting-of-federal-provincial-and-territorial-ministers-of-agriculture.html>





practices are economically, operationally, and environmentally feasible for farmers. Additionally, we are only eight growing seasons away from 2030, and this short time frame will also make it challenging for farmers to evaluate Best Management Practices (BMPs) for their farm and possibly make large capital investments in equipment and technology.

We have provided further comments below on the three issues/themes outlined in the discussion document.

Issue 1: Developing a Strategic Approach to Meeting the Fertilizer Emissions Target

After water, nitrogen is the most limiting factor in crop production in western Canada; therefore, nitrogen fertilizers are fundamental to optimizing production levels⁶. However, nitrogen fertilizer often represents the highest input cost for farmers; therefore, farmers rely on BMPs to apply nitrogen fertilizer in the most efficient way possible to maximize production subject to the economic returns to the farm.⁷ Aside from the cost of purchasing the fertilizer, there are many other factors that each farmer needs to take into consideration to determine the most efficient and cost-effective way to apply fertilizers, including available equipment and technology, time and labour availability, crop rotation, and soil and weather conditions. Farmers also rely on soil testing to quantify the available nutrients in relation to the specific needs of each crop before considering any application. This further highlights the point that there is no one-size fits all solution to lowering emissions from nitrogen fertilizer application. Farmers are already constantly evaluating their fertilizer application practices ensuring they are optimizing their use and maximizing the return on production. Additionally, farmers evaluate production practices to ensure the sustainability and productivity of their land for generations to come. As new technologies and recommendations are developed, farmers will evaluate their potential and implement solutions that are economically and environmentally beneficial for their own farms.

Enhanced Efficiency Fertilizers (EEFs) are identified in the discussion document as one technology that may help to improve the efficiency of nitrogen fertilizer application. However, further research and knowledge transfer is needed so farmers can make

⁶ Farrell et al, 2020. Environmental and Agronomic Benefits of Enhanced Efficiency Nitrogen Fertilizer. <https://harvest.usask.ca/handle/10388/12764>

⁷ Government of Saskatchewan, 2022. Crop Planning Guide and Crop Planner. <https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/farm-business-management/crop-planning-guide-and-crop-planner>



informed decisions supported by science whether a product might be a good fit for their operation. Saskatchewan crop commissions continue to fund research projects in this area, to ensure farmers have local, unbiased research results available to them.

The majority of research on the use of EEFs has been conducted in areas outside of western Canada and involves cropping systems that are significantly different than those in Saskatchewan. Research completed at the University of Saskatchewan has shown the environmental benefits of using EEFs with reduced nitrous oxide emissions; however, no significant agronomic (i.e., yield) benefits were detected.⁶ Further research is ongoing to determine how best to optimize the agronomic benefits of using an EEF in prairie cropping systems. Until then, the uncertain comparative economic benefits of using more expensive EEFs will be a disincentive for adoption. Fertilizer Canada's 4R Nutrient Stewardship program holds great potential to lower fertilizer emissions, and many Saskatchewan farmers are already following the 4R principles of right source, right rate, right time, and right place. Although most farmers do not have a certified 4R plan, these principles and the practices supporting them are widely recommended as BMPs by researchers, producer commissions, agronomists, and retailers.

As the cost of new products, equipment, and technology is often one of the largest barriers to adoption, cost-sharing programs should continue to be explored. We recognize that the government is developing funding programs; however, the practices/technologies available for funding need to be flexible and suitable for various and diverse regions across Canada. Ultimately, government needs to ensure that incentivized practices have been broadly tested at the farm level to ensure they are practical and beneficial for farmers in the region they are being promoted in. While the Living Labs program aims to fill some of this knowledge gap, the results from these projects will not be available for several years. In addition, the number of projects is small with the risk of the results being very location specific, thus perhaps only providing limited information for a broad-cross-section of farmers. This highlights the need for increased data collection, reporting, and monitoring from a wide range of locations and conditions as discussed in the next section.

Governments, producer groups, academics, and other stakeholders need to continue to work together to ensure that applicable research is designed, funded, completed, and shared that accurately measures emissions and the impact of technologies and on-farm practices on reducing emissions across all of western Canada. Saskatchewan crop





commissions are committed to continuing to fund and communicate research needed to inform farmers on BMPs and to assist with knowledge and technology transfer.

Overall, more research is not only needed on the environmental impact of possible emission reducing technologies, but also on the economic and agronomic impacts. Farmers need accessible, unbiased research to assist them to trial and evaluate practices and technologies to understand what will work for their farm.

Finally, we appreciate the discussion around economic implications in the document and the recognition that “depending on the characteristics of the individual farm, the economic costs of adopting different fertilizers or fertilizer management practices may outweigh any potential yield increase.” While cost, especially relative to expected returns is often a large barrier to adoption, other factors such as time and labour availability, and weather also impact adoption choices and can be nearly impossible to overcome.

Issue 2: Data, Reporting and Measurement

Current modelling of emissions and the impact of management practices at the farm level is a large concern for farmers. It is crucial to be able to accurately measure the impact of on-farm practices on emissions reduction to not only understand current emission levels, but also to correctly measure progress towards the target. Many farmers are already implementing 4R and other BMPs, and those need to be accurately measured and accounted for. Without improved data collection and accurate modelling to measure emission levels, we risk developing policies that will negatively impact our ability to feed the world.

Saskatchewan producer groups are willing to work with governments and researchers to ensure necessary and adequate research is undertaken to reliably measure emissions from nitrogen fertilizer. Tracking fertilizer application practices and modelling emissions is certainly no small feat; however, it is absolutely vital if the government is serious about fully understanding emissions from fertilizer application and the impact BMPs have on mitigating emissions. We also believe there is an opportunity to strengthen existing surveys, such as Fertilizer Canada’s Fertilizer Use Survey and Statistics Canada’s Farm Management Survey, to provide better data on detailed fertilizer use and practices.

Furthermore, improving data collection and modelling should not create additional reporting burdens for individual farmers. Surveying a representative sample of Canadian





farmers, reflective of diverse regional production conditions and levels, on fertilizer management practices should not create any more of a burden for respondents than current government or industry survey collection does. Compensation for participation in the survey should also be considered.

While we recognize there are challenges in developing internationally acceptable measures, the uniqueness of Canadian crop production, and specifically from the prairie provinces, which account for over 80 percent of Canada's farmland, needs to be accounted for in Canada's metrics. Similar to the need to recognize that there is no one-size fits all solution to reducing emissions across Canada, Canada must advocate for flexibility internationally for the acceptance of the accuracy of its measurement of Canadian emissions when other regions are not using the same production practices or technologies. This has been a problem for international comparisons of GHG emissions of individual crops as, unlike Canada, most countries do not include GHG reductions from carbon sequestered through zero-till practices. Therefore, in direct comparisons of Canadian emissions to other countries, the impact of zero-till on carbon sequestration and overall GHG emissions is left out. As Saskatchewan farmers have adopted production practices such as zero-till and continuous cropping that have significantly reduced our carbon footprint, this needs to be considered in international GHG emissions comparisons to present an accurate reflection of GHG emissions for Canadian crop production and not put us at a disadvantage.

Issue 3: Innovation and Transformation Opportunities

Our organizations view research and variety development as the primary way to increase agricultural sustainability and resiliency. As climate change and environmental protection are main priorities of the Sustainable Canadian Agricultural Partnership, we believe breeding activities that develop trait technology and innovation 'ingrained' in the seed will help the government meet their sustainability goals by providing farmers with higher yielding varieties with improved nutrient use efficiency, reduced herbicides needed, and better ability to withstand abiotic and biotic stressors. Therefore, it is vital that the Government of Canada continue to fund breeding activities through the Agri-Science Cluster Program and at the same level as other sustainability work being considered.

Continued research into new technologies and production practices for use on-farm is also crucial to ensuring the sustainability and resiliency of Canadian field crop production.





Agronomic research can identify BMPs that result in reduced GHG emissions, more effective input use and more efficient carbon capture, furthering farmers' contribution to Canada's climate change and sustainability goals. However, there are many variables at the regional and individual farm level that will impact what solutions work for which farmer. It is critical that any recommended or incentivized practices are both economical and environmentally feasible for farmers. Wide scale testing at the regional and farm level is needed to assist in the adoption process.

Conclusion

Saskatchewan farmers have been and remain at the forefront of innovation in global agriculture. Through innovations, farmers have been making meaningful emissions reductions on-farm for decades, while consistently growing more food. Saskatchewan farmers' already low emission intensity levels show that we have meaningful contributions to make as governments determine how best to manage environmental and agricultural policy issues in the ever more turbulent future, as we look to ensure global food security for a growing population.

Saskatchewan crop commissions will continue to fund research that supports the economic and environmental sustainability of Saskatchewan farms. We believe the unique experience and expertise of Saskatchewan farmers can be an invaluable resource for the government. Saskatchewan farmers want to be involved early in discussions with the government on environmental policy, emissions reduction, and the path to net-zero and hope their positive contributions to date and future opportunities specific to their diverse on-farm production environments will be acknowledged and reflected in current and future government policy in this area. Finding solutions that work for both farmers and the government is vital to ensure farmers remain competitive and profitable while at the same time ensuring a healthy, sustainable environment for future generations.

Overall, more research and data collection are needed to accurately measure emission levels and understand the impact of on-farm practices on emissions reductions. Additionally, more research is not only needed on the environmental impact of possible emission reducing technologies, but also on the economic and agronomic impacts.

We appreciate the opportunity to provide feedback on AAFC's Fertilizer Emissions Reduction Target and invite you to reach out to us to further discuss any points we have raised. Additionally, we would welcome an opportunity to show AAFC officials the





technologies and practices being implemented on our farms to ensure nitrogen fertilizer is used by crops in the most efficient way possible.

We look forward to future consultations and discussions with AAFC on emissions reduction including the Green Agricultural Plan.

Sincerely,

Ian Boxall
President, APAS

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Charlene Bradley
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