Ontario Federation of Agriculture

200 Hanlon Creek Boulevard
Guelph, ON N1C 0A1

Tel: 519.821.8883
Fax: 519.821.8810

August 31, 2022

Agriculture and Agri-Food Canada
1341 Baseline Road
Ottawa, ON
K1A 0C5

Email: aafc.fertilizer-engrais.aac@agr.gc.ca

Re: Discussion Document: Reducing emissions arising from the application of fertilizer in Canada's agriculture sector

The Ontario Federation of Agriculture (OFA) is pleased to provide comments to Agriculture and Agri-Food Canada (AAFC) on the *Discussion Document: Reducing emissions arising from the application of fertilizer in Canada's agriculture sector*. OFA is the largest general farm organization in Ontario, proudly representing more than 38,000 farm family members across the province. OFA has a strong voice for our members and the agri-food industry on issues, legislation and regulations governed by all levels of government. We are passionate and dedicated to ensuring the agri-food sector and our rural communities are included, consulted, and considered in any new and changing legislation that impacts the sustainability and growth of our farm businesses.

Fertilizers are an essential input on a modern farming operation. While some farmers choose to operate without synthetic fertilizers, the vast majority of food production in Canada relies on fertilizers to maximize crop yields for domestic and international markets. Global market pressures drive farmers in Canada to seek a balance between crop input costs and yield potential. With the support of the best available science and advice from trusted agronomic advisors, farmers use synthetic fertilizer inputs judiciously during the growing season to produce food, fibre, and fuel. However, depending on a number of interrelated factors, the application of nitrogen fertilizer can result in nitrous oxide (N_2O) emissions, a powerful greenhouse gas with a global warming potential 265 to 298 times that of carbon dioxide (CO_2) over a 100-year period. Evidence suggests that N_2O is responsible for a growing share of overall agricultural emissions that could jeopardise farmers' positive standing as stewards of the land, water, and air.

With the right level of supports and investments from the Federal Government, OFA sees an opportunity for our farmers to remain leaders in the efficient, responsible use of fertilizer inputs without compromising our position in the world as producers of sustainable, nutritious food. For this to happen, OFA sees a need for frequent, meaningful engagement between Government and the agricultural sector, increased extension of unbiased information and agro-environmental education, and a significant expansion of Government programming that provides flexible cost-share funding and grant options to farmers to facilitate the adoption of new farming practices or technology that carry an economic and environmental benefit.

Addressing climate change will not be easy and will require sacrifices from everyone to mitigate future impacts; however, we contend that any commitments towards mitigating greenhouse gas

emissions and the impacts of climate change must be balanced with food production. OFA's Position Statement on Climate Change, added as an appendix to this submission, provides more details on how we believe the agricultural sector, government, and society should address the growing threat of a changing climate.

The agricultural sector is a primary industry dependent on relatively stable and predictable water and temperature cycles. While farmers are inherently adaptable and familiar with adjusting their practices to respond to cyclical variability in water and temperature regimes, climate change introduces isolated extremes to this variability that poses significant challenges and risk to production. In the interests of our members, we are responding to this consultation recognizing that farmers must continue to do their part to prevent further negative impacts from climate change.

The following submission discusses options and recommendations for how Canada can show leadership on the global stage with the efficient use of fertilizer inputs.

Ontario 4R Nutrient Management Program Memorandum of Cooperation

Recognizing the need for continuous environmental improvement by the agriculture sector, OFA has signed a Memorandum of Cooperation (MOC) with Fertilizer Canada, the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA), Ontario Agri-Business Association (OABA), Grain Farmers of Ontario (GFO), and the Christian Farmers Federation of Ontario (CFFO) to acknowledge and promote the value of the 4R Nutrient Stewardship Program to our members. Going into its third signing, this MOC shows the commitment and leadership of the agriculture sector towards economic and environmental sustainability.

Through this MOC, we have mutually agreed that the 4R Nutrient Stewardship Program is an effective, science-based, voluntary approach to continuous improvement of nutrient use efficiency thereby reducing fertilizer emissions, and have committed financial support, technical expertise, and significant in-kind resources towards continued and expanded implementation of 4R in Ontario.

As signatories to the Ontario 4R Nutrient Stewardship Program MOC, OFA shares in the concerns of other member associations over the feasibility of the fertilizer emissions reduction target, and supports recommendations put forward by member associations. As a member of the Canadian Federation of Agriculture (CFA), OFA also supports their recommendations in response to this consultation.

Fertilizer Emissions Reduction Target

Under Canada's Strengthened Climate Plan, the Government of Canada has set a target to reduce *absolute levels* of greenhouse gas (GHG) emissions associated with fertilizer application by 30% below 2020 levels by 2030. OFA disagrees with this approach. While Government insists that this target is not about establishing a mandatory reduction in fertilizer use, considering the estimation of emissions is largely based on fertilizer sales and applications, current modelling shows that a total emissions reduction approach necessitates reduction in fertilizer use. This has the potential to negatively impact the incomes of Canadian farmers, reduce overall Canadian exports and limit economic growth and food production.

It is important to note, that according to data from the National Inventory Report (NIR), emissions from the agricultural sector in Canada have remained stable at roughly 10-12% for the last thirty

years (1990-2020). During this time, overall agricultural production of commodities has increased dramatically. With stable emissions and a significant increase to food production, this alone would suggest that farmers are indeed doing their part to use fertilizer inputs efficiently and reduce emissions from agricultural production, while remaining competitive in a global marketplace.

Given both the continual need to increase food production, and that Canada's food system is already among top in the world for nitrogen management, we believe an emissions-intensity approach is a much more viable approach to measuring emissions from fertilizer use, that balances environmental performance with continued economic growth. Considering the yield of Canadian crops is directly linked to proper fertilizer application, an emissions intensity-based reduction does not put restrictions on Canadian farmers, allowing crop yields to continue to grow while progressively minimizing the emissions from each crop. An emissions-intensity approach may also provide better estimations of non-application-based emissions reductions, providing a more accurate accounting of the agriculture sectors' attempts to reduce greenhouse gas emissions associated with agricultural production.

OFA appreciates that the intention of this target is not to reduce crop yields or impact the global competitiveness of Canadian farmers, and that Government is not proposing a mandatory reduction in fertilizer use. Furthermore, we acknowledge that the expressed intent of this consultation is to investigate ways to help farmers better utilise nutrient inputs to achieve the fertilizer emissions reduction target. We see this target as aspirational and intending to leverage a number of existing beneficial management practices (BMPs) that are known to reduce GHG emissions from fertilizer use, including:

- The 4R Nutrient Stewardship Program
- Increased use of enhanced efficiency fertilizers and nitrogen inhibitors
- Broader use of cover cropping and pulse crops, where applicable
- Transitioning from fall to spring applied fertilizer and increasing split application
- Increased use of soil testing to determine nutrient requirements
- Replacing synthetic fertilizer with manure, compost or digestate
- Greater adoption of precision agriculture techniques
- Nutrient management planning and funding for precision nutrient application technologies

While Government has stated that this emissions reduction target is not about establishing a mandatory reduction in fertilizer use, should that position change, OFA would categorically reject any efforts that seek to place mandatory reductions in use or restrict access to fertilizer nutrient inputs by Canadian farmers.

OFA asks the Federal Government to consider the current context of this fertilizer emissions reduction target. OFA has heard from our membership that the introduction of this ambitious target is causing added mental stress and anxiety on top of the already high stress caused by significant supply chain disruptions and global political instability.

In the process of responding to this consultation, OFA circulated a survey to our membership from mid-July to mid-August. With over 700 responses, we heard overwhelmingly (77%) that Ontario farmers feel they are under greater pressure than other sectors of the economy to provide solutions to climate change for the benefit of society. We believe the anxiety and stress, misinformation and distrust related to this target illustrates that basic capacity building and onboarding with the agricultural community has not been done. Our survey release coincided with a significant rise in media coverage discussing the fertilizer emissions reduction target, yet almost 30 percent of respondents indicated they were only just learning of the initiative.

Furthermore, our survey confirms the language of climate change action does not resonate with those who are being asked to make potentially costly and risky changes to their farming practices for the benefit of Canadians. A majority of farmers responding to our survey indicated that they had little to no familiarity with terms and language common among academia, government, and environmental groups - for example, Natural/Agricultural Climate Solutions, Climate Smart Agriculture, or regenerative agriculture. When those who are attempting to effect change in a community do not speak the same language as those who are expected to carry out change, the chances of achieving measurable, positive change are low.

The Government must do more to engage effectively with the agricultural community to communicate this message, build trust and establish buy-in at the ground level. Clear and concise communication and active engagement is required with producers regarding government intentions to reduce emissions from agriculture and alleviate fears that this target will compromise current and future agricultural production. The target date of 2030 means there are only seven growing seasons remaining to achieve this target; building a sense of approval and ownership over reducing agricultural greenhouse gas emissions must be a primary activity.

We strongly recommend that Government form regional Working Groups across Canada between AAFC, Environment and Climate Change Canada (ECCC), farmers and agricultural organizations, and relevant stakeholders. These groups would work collaboratively to examine the scalability and regional applicability of proposed emission reduction approaches, improve communications between all active partners, define measures of success applicable to the variety of commodities and regional production systems in Canada's agriculture sector, and provide early engagement with producers on any further targets that impact agriculture. OFA can play a key role in bringing stakeholders together and providing input on emission reduction approaches that work for Ontario farmers.

Soil Health

The role of soil health in reducing emissions cannot be undervalued, and the approach to emissions reduction must recognize the work already completed and currently underway in Ontario to improve soil health, as well as existing initiatives that help reduce fertilizer emissions. OFA recognizes the strong connection between farming practices that build soil health, increased resiliency to the impacts of climate change, and the reduction of agricultural greenhouse gas emissions.

OFA is a strong supporter of the Ontario Soil Health and Conservation Strategy tabled in 2018 and have been working with OMAFRA, commodity associations, and interested stakeholders to implement the Key Actions and recommendations developed through consultation with the Ontario agriculture sector. The strategy is guided by a number of widely recognized soil health principles (building soil organic matter; diversifying crops; minimizing soil disturbance; and keeping the soil covered) that echo those recommended in the Fertilizer Emissions Reduction Target discussion paper. Implementation of the Ontario Soil Strategy is ongoing and would benefit from Federal recognition and support. Any programs or actions developed under the Fertilizer Emissions Reduction Target must complement planned and ongoing activities developed through the Ontario Soil Strategy implementation process.

Improving soil health is not a one-size-fits-all activity across Canada's varied agricultural landscape and requires establishing a modern baseline for soil health and uses in Canada. OFA supports the proposal by Senator Rob Black to initiate a national soil health study examining soil conditions; potential federal measures to support soil health; implications of soil health on human

health, food security, prosperity and air and water quality; and the role new technology can have in improving soil health. Again, activities or programs initiated under the direction of the Fertilizer Emissions Reduction Target must align with the insight and recommendations stemming from this baseline study.

Section 1 - Developing a Strategic Approach to Meeting the Fertilizer Emissions Target

What are the biggest barriers to the adoption of practices that reduce emissions from fertilizer application and how can these best be overcome?

The adoption of simple, practical, and economical BMPs is key to the success of this emissions reduction target. However, adoption behaviour is complex and rarely, if ever, is there a universal approach that proves successful. Why farmers chose to implement, delay, or withdraw from adopting a new agricultural practice or technology is often based on a number of interrelated variables. Literature on BMP adoption often identifies access to quality information, financial capacity, and ability to be connected to a local network of farmers as variables that have the largest positive impact on adoption.

Access to quality, unbiased information

Agricultural production relies on a very complex and well-developed information and knowledge transfer system that consists of researchers, trusted advisors such as agronomists and Certified Crop Advisors, input suppliers/retailers, local agricultural organizations, commodity groups and government technical experts. It is critical to understand the regional system and the interrelationships when planning knowledge transfer with the goal of changing practices and behaviour. It is also imperative to ensure access to trusted advisors and knowledge transfer in smaller agricultural communities where access may currently be limited.

Farmers rely on this well-developed system to obtain new knowledge about products and production practices. In reference to input suppliers as a key, trusted part of the knowledge and information system, the OFA survey confirmed what we know - almost 70% of surveyed members have worked with an input supplier to develop crop nutrient recommendations and more than 60% garner advice from a Certified Crop Advisor (CCA), often one associated with their input supplier. Farmers are very comfortable discussing crop nutrient requirements with their input supplier or fertilizer dealer, and many maintain long-term relationships with their supplier - the OFA member survey indicated that more than three-quarters of respondents have been working with their input supplier for more than five years. Further, farmers rely on input suppliers for a variety of nutrient use efficiency services from soil sampling to crop recommendations and custom application.

A critical component of this information system is access to unbiased, practical knowledge and guidance for farmers to investigate BMPs that may be applicable to their operations. Launched in 2021, OFA partnered with AAFC and OMAFRA to create virtual library (www.bmpbooks.com) of in-depth BMP books, booklets and infosheets. This extraordinary online resource is easily shared, updated and promoted in addition to traditional printed resources, and provides access to information to help farmers find a range of BMP options from which to choose the right solutions for their farm. We look forward to continuing this partnership and expanding the resources available through this virtual library.

The 4R Nutrient Stewardship Program is another key part of the system. For more than 15 years, industry, academia and provincial governments have been working together to educate and help farmers adopt 4R practices with great success - to date, more than six million acres are verified under 4R management in Canada. Delivered through certified input suppliers in Ontario, 4R is an effective, science-based, voluntary approach to continuous improvement of nutrient use efficiency.

However, there is still more work to do. The OFA member survey shows that more than 50% are only somewhat familiar, or not very familiar, with the 4R program, while more than 20% are not at all familiar with it. The majority don't know if their CCA holds a 4R Nutrient Management Speciality and the vast majority don't know if their input supplier is 4R certified. This demonstrates there is ample room to build on the success of 4R nutrient use efficiency by expanding to more input suppliers/agricultural retailers as well as Ontario farmers.

Currently 4R in Canada is focused on the grains and oilseeds sector. In the interest of working towards national fertilizer emissions reduction targets, there is opportunity to expand 4R nutrient use efficiency practices to other sectors. With investment in research, knowledge transfer and communications, 4R practices could be conveyed to specialty field crops, horticulture and fruit and vegetable sectors.

OFA recommends Government significantly invest in knowledge transfer support to farmers across Ontario through established communication channels, trusted advisors, and those who can tailor advice to the variety of farming operations in Ontario, and to establish those channels in areas where they do not currently exist. Additional support to promote 4R practices and scale up 4R adoption more widely will greatly enhance nutrient use efficiency and lower fertilizer emissions, thereby working to achieve Government's fertilizer emission reduction target.

Financial Capacity to make changes

Paramount in any attempt to influence behaviour is to recognize that the nature of farming presents a unique set of circumstances that are not seen in other sectors of the Canadian economy. At its core, farming involves the management of biological processes and living organisms that are subject to the vagaries of climatic and environmental conditions. Farming attempts to control the growth of plants and animals under conditions that are rarely under a farmers' control.

Agricultural production is a highly competitive industry in Canada; the vast majority of producers have small margins and are price-takers in the market. That is, as a producer there is no control over the cost of inputs, nor the price of their product in the domestic or global marketplace. Every year, climate and related soil conditions offer a very short window of opportunity to start a crop for optimum production. Similarly, the length and intensity of harvest varies, driven by a number of climatic or environmental conditions. In addition to issues of seasonality and climate, the agriculture sector trades in a highly perishable product. Many of the good things grown in Ontario have a narrow window between emergence, harvest and spoilage – the speed at which various commodities can begin to lose value before, during and after harvest creates a unique management context.

In this context, the adoption of practices that generate increased risk or add costs are unlikely to succeed without effective supports and a deep understanding of the challenges farmers face bringing products to market. Successful adaptation involves appreciating the potential economic impacts of adopting new management practices. A best management practice will not be adopted

without careful consideration of how it will fit practically into a farm's current business structure and how it will suit existing farm equipment and expertise. New tools and resources for farmers are needed to support better on-farm decision making, not only to assess changes to soil health management, but also to assess the economic impacts of these changes.

Recent analysis by The Canadian Agricultural Policy Institute (CAPI) of Statistics Canada data reinforces the agricultural sector's long-term commitment to using sustainable farming practices. AAFC's discussion paper also correctly states that many of the practices that can reduce greenhouse gas emissions are already in use. The OFA member survey confirms this, with almost 70% of respondents working with advisors to develop crop plans, 61% regularly utilize agronomic advice from a Certified Crop Advisor and almost 60% implementing 4R Nutrient Stewardship practices that are not currently reported as 4R-certified acres. It is critical to account for these already implemented BMPs in measuring emissions reduction, and to recognize these early-adopters in program supports and funding.

When efforts to reduce greenhouse gas emissions already in place are accounted for, progress to meeting the emission reduction target is demonstrated. However, it is important to realize this potentially limits the opportunities for further reductions. As many of the easily attainable efficiencies and BMPs have already been put in place, achieving the next round of reductions will require significant additional investments.

While OFA appreciates the program funding offered by Government to implement emissions reduction activities, continued adoption of practices that reduce fertilizer emissions will require additional time and money from farmers to implement. Support is required to offset costs and help farms of all sizes and profit margins adopt these products and practices. OFA's recent survey showed that more than 35% of members would be able to adopt new beneficial management practices that reduce emissions with the right kind of supports in place.

However, funding supports must be accessible to be successful. Funding program applications must be easy to complete and require reasonable, easy-to-access supporting documentation. Additionally, intake windows must be open for an appropriate amount of time (three to four weeks) that do not occur at the busiest windows of farming activity (avoid spring planting and fall harvest seasons). Winter timing often works best for producers to complete funding applications.

OFA recommends that levels of financial support to farmers must be significantly enhanced, eligibility requirements and funding options must be broadened to allow the greatest number of farms to apply, early adopters of efficiencies and BMPs must also be eligible for support, and application processes must be streamlined and offered in a timely manner that supports agricultural production.

Enhancing Broadband Internet Infrastructure

The rapid expansion of broadband internet and mobile technologies have the strong potential to satisfy both government policy objectives and strengthen farmer competitiveness and profitability. OFA commends both our Federal and Provincial Governments for increasing infrastructure investment and programming aimed at improving access to broadband and mobile service for Canadians. Precision agricultural technology is widely recognized as an innovative solution that can help producers efficiently manage nutrients, resulting in long-term cost savings and emissions reduction. With greater connectivity, relevant, real-time information and data can be sorted, analyzed, and used to help farmers make critical decisions that can improve their nutrient use efficiency and ultimately their crop productivity, while reducing emissions from nutrients.

The availability of broadband internet service, however, has not kept pace with demand for speed and bandwidth in rural areas. In a 2020 survey with OFA members, well over half (57%) of respondents indicated that they have not invested or have delayed investment in new farm technologies because their internet connection is inadequate. Similarly, half of farmers surveyed indicated that the reliability of their internet connection impacted their decision to invest in digital agricultural technologies that could improve their business. Farmers also indicated that a slow, unreliable internet connection results in a general inability to conduct regular business interactions, access timely market information, or participate in learning opportunities (webinars, training, research).

OFA recommends that to address this issue, Government must continue to prioritize the expansion of reliable broadband internet and mobile service to rural areas and funding must focus on enhancing networks in underserved areas, rather than maintenance of existing services. We have long advocated that rather than setting minimum download and upload targets, Government should establish a minimum customer service standard among internet service providers that ensures farmers are able to access broadband internet service at speeds consistent with their current and emerging technological needs.

OFA also recommends Government consider emulating innovative activities in other jurisdictions, such as the American Bill: H.R.4881 - Precision Agriculture Connectivity Act of 2018. With the goal of enhancing farming productivity through the adoption of precision agricultural technologies, this Bill creates a partnership between the United States Department of Agriculture (USDA) and the Federal Communications Commission (FCC) that requires the agencies to establish a task force to review the connectivity needs of precision agriculture technology in the United States. The task force's duties include identifying and measuring current gaps in the availability of rural broadband internet service and developing policy recommendations to promote the rapid, expanded deployment of fixed and mobile broadband internet access on unserved agricultural lands.

Placing the price on greenhouse gases where it is an effective tool to change behaviour

Carbon pricing policies attempt to recognise the external costs of greenhouse gas (GHG) emissions on our environment and in theory are intended to provide an economic incentive to emitters to change practices and lower emissions rather than pay an increased cost for their emissions. However, energy use in agriculture is often highly price inelastic – the legislated increase to the price of fuels resulting from Part 1 of the Greenhouse Gas Pollution Pricing Act (GGPPA) will have a relatively small effect on the quantity of the fuels demanded for food production.

OFA believes that the price on carbon is not appropriate or effective in the agricultural sector, and that all on-farm fuels used in agricultural production (including but not limited to gas, diesel, natural gas, and propane) should be exempt from carbon pricing policies. OFA believes that in a highly competitive marketplace, where margins are very tight, a carbon price represents a legislated increase in the cost of production that hurts competitiveness and ultimately threatens our ability to provide the local food products. Legislated added costs can place a heavy burden on producers, reducing the capital available to invest in solutions that increase nitrogen fertilizer efficiency and reduce overall emissions.

OFA recommends that the Federal government broaden the list of qualifying farming fuels under the GGPPA and revise the definition of eligible farming machinery to include "machinery used for the purpose of providing heating or cooling to a building or similar structure" so that agricultural

activities such as grain drying and the heating of livestock barns can be exempted from the fuel charge.

OFA further recommends that a greater amount of the proceeds collected through the fuel charge that are not returned through the Climate Action Incentive Payment should be directed towards programs supporting emissions reductions from the agricultural sector.

What steps can be taken to increase adoption of practices or the use of new, enhanced efficiency fertilizer products that hold the potential to reduce emissions from fertilizer application?

While new, enhanced efficiency fertilizer (EEFs) products can reduce nutrient losses to the environment, increase nutrient availability for plants, and reduce the potential for greenhouse gas emissions through denitrification, they also come with added costs to producers and may require technical expertise to know when their use is appropriate. In a low-margin, high risk industry like agriculture, added costs that may not result in a yield increase present challenges for adoption.

OFA recommends Government invest in further research into how EEFs can be easily integrated into farm management decision making, under a variety of soil types and weather conditions.

Incorporating EEFs into farm management decisions may require additional knowledge and expertise. OFA further recommends that Government invest significantly in knowledge translation and transfer to farmers through multiple communication channels regarding the benefits, use, and applicability of EEFs to their farm operations.

As EEFs carry an additional cost to production that may not be recovered from the market, OFA recommends that Government consider options for direct financial support for uptake through existing and new programming, and investigate the emissions reduction potential of EEF use to be included as an offset credit generating activity under Canada's Greenhouse Gas Offset Credit System.

In addition to existing programs, how can governments best work with industry and producers to mobilize increased adoption of emissions-reducing practices? What are the appropriate roles for the agriculture sector, governments and other partners and stakeholders in meeting this target?

As mentioned in the opening of this submission, we recommend Government continue open and direct engagement with farmers and farm organizations through regional Working Groups to develop approaches that work best in the many different growing regions across Canada. Government must act as a convener of these Working Groups and bring funding, technical and research capacity, and programming options to the table. The agriculture sector, through farm organizations and representatives of crop input companies, will bring commitments to working with their members to build capacity and acceptance to reduce emissions from fertilizer use, increase the reach of technical knowledge and expertise towards emissions reductions, and advise on program development options that will have the greatest acceptance and reach. OFA can play a key role in bringing stakeholders to the table and providing input on programming options.

Section 2 - Data, Reporting, and Measurement

How can important data on the changes in emissions from fertilizer application be more consistently and comprehensively collected, analyzed and reported?

Efforts must also be taken to ensure consistent measurement of emissions. As indicated above, the methodologies used to predict emissions needs to shift to an emissions-intensity approach, as a viable approach to measure emissions from fertilizer use that does not limit crop production. To ensure consistent analyzing and reporting on changes in emissions data from fertilizer, Government must update the methodology used to measure emissions reductions in the National Inventory Report (NIR) on an ongoing basis. OFA appreciates that AAFC has acknowledged in their discussion paper that the current methodology to estimate emissions can rely on inaccurate variables and needs to be strengthened, and that existing data does not capture on-farm activities related to fertilizer application practices. With more robust data, we would expect the estimations of greenhouse gas emissions from fertilizer use to decrease.

Key to collecting better data of fertilizer applications is to ensure that proper protocols are in place that protect the privacy of farmers. The majority of farmers responding to an OFA survey indicated that they are comfortable sharing data around fertilizer use if the right privacy protocols are in place. In addition to guaranteeing that proper protections are in place regarding the use of farmers' data, ensuring farm technology, machinery, and input supply companies are transparent with their data collection and use can support increased sharing of data and adoption of precision agricultural technologies. An excellent example of this is the *Ag Data Transparency Evaluator* (ADTE) based out of Indianapolis, Indiana. The ADTE scrutinizes user contracts of companies collecting data on farms and determines how transparent the company is around data ownership, use, portability, and security. Further expansion of the ADTE into Canada should be investigated.

Thirty-five percent of respondents, however, indicated that they do not want their data shared at all. While this number may never change, to increase reporting of fertilizer use, efforts should be made by Government to further minimize fears that data could be used inappropriately or to invoke regulations restricting the use of fertilizer inputs.

While increasing the amount and analysis of farmers' fertilizer use data will increase the reliability of emissions estimations, OFA believes that the collection and analysis of data related to the implementation of BMPs is a better way to measure success in reducing emissions. We recommend that a focus should be on the collection and analysis of BMP adoption data to better capture fertilizer emissions reduction activities.

What would be the most effective way for Government and industry to work in partnership to collect and make public detailed fertilizer use and 4R-related data to better understand areas where there has been success, or opportunities for improvement?

OFA is a member of the Ontario 4R Nutrient Stewardship Program Memorandum of Cooperation (MOC). This group is best suited to collaboratively determine which 4R-related-data can and should be released to the public.

It is also critical that Government work with our sector to ensure that any data collected and shared with the public does not compromise the privacy needs of individual producers. Consultations must be held to clarify the proposed nature of any data that is to be publicly shared.

Section 3 – Innovation and Transformation Opportunities

What is the best way for governments and industry to support the emergence of new and innovative solutions to address climate goals, such as emissions reductions?

Government must adjust funding mechanisms to ensure that innovative solutions can be adopted by as many agricultural producers as possible, regardless of scale or profit margin of their operations. Government must facilitate the change it would like to see and recognize that cost share ratios may need to be adjusted to reflect the various financial barriers to adoption.

For example, the Agricultural Clean Technology Fund (ACTF) provides cost-share assistance for producers to purchase precision agricultural equipment, which allows inputs such as fertilizer to be applied more efficiently through advanced sensors. These sensors help target which area of the crop needs the input the most, resulting in less cost spent on fertilizer and reduced emissions. However, the fund requires a minimum 50% cost share of $25,000 from producers for projects that must be valued at a minimum of $50,000. This poses significant challenges for farms with narrow profit margins who may not have the cash available to make the investment. Sadly, these producers are often the ones who would benefit most from cost savings resulting from the technology.

OFA recommends that this cost share be adjusted to help producers with smaller margins adopt innovative technology. It is also recommended that AAFC provide research support and technical expertise to scale down various precision agricultural technologies so that it can be adopted by smaller operations.

OFA also recommends that Government significantly invest in research into new and emerging technologies that have the potential to reduce greenhouse gas emissions while providing an increased efficiency (input reduction, time saving, etc) and/or increased yield.

Are there opportunities not listed in this discussion document that you think should be considered as potential pathways for achieving the emissions reduction target for both 2030 and 2050?

OFA maintains that agricultural activities make the highest and best use of arable land, and that agriculturally managed landscapes provide environmental and ecological co-benefits in the process of normal farm practices. Many of the environmental and ecological co-benefits that come from agriculturally managed lands produce the added effect of mitigating the causes of climate change as well as the potential impacts on the people of Ontario. These co-benefits include improved air and water purification, temperature regulation, biodiversity and habitat creation, flood management and erosion control, and carbon sequestration.

OFA believes that farmers should be recognized for their efforts to manage and enhance these co-benefits for the public benefit. We have seen from other jurisdictions that carbon offset credit systems can provide an effective mechanism to recognize and incentivize an enhanced level of environmental and ecological co-benefits from agricultural lands. We encourage carbon offset credit system that is flexible and practical to facilitate farm-based credits, eligible to satisfy the compliance needs of large industrial emitters.

Farmers use synthetic fertilizer inputs responsibly during the growing season following by advice from trusted agronomic advisors guided by the best available science to produce food, fibre, and fuel. The same may not be said about other users of nitrogen fertilizers including residential turf and garden applications, and municipal and private recreational turfgrass facilities. *We recommend that AAFC and ECCC consider addressing emissions from non-agricultural users of nitrogen fertilizers through better collection of data, and increased education to these users on proper application and responsible use of nitrogen fertilizers.*

OFA appreciates this opportunity to comment on the Fertilizer Emissions Reduction Target. We look forward to continuing this discussion with AAFC to find reasonable, practical approaches to address greenhouse gas emissions arising form Ontario's agricultural sector.

Sincerely,

Peggy Brekveld
President

Appendix: OFA's Position Statement on Climate Change

The OFA Board of Directors recently updated our climate change position statement to better reflect the increasing impacts on our membership:

> OFA acknowledges that Climate Change is happening and that it represents a real threat to agricultural production and the livelihoods of Ontario's farmers. We recognize climate change is a global challenge requiring action and investment from governments, communities, businesses, and individuals.
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> OFA believes that policies, programs, and research initiatives designed to address climate change must be developed with government and society to reduce the causes (mitigation) and to enable farmers to cope with the effects (adaptation) of climate change. Furthermore, we believe that no provincial or federal climate change policies should have the effect of negatively impacting the ability of farmers in Ontario to compete in domestic or international markets.
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> We believe that promoting further agricultural emissions reductions in the agricultural sector is best achieved through increasing the adoption of beneficial management practices (BMPs), extending equitable access to highspeed broadband internet, investing in the adaptation of precision agricultural technologies at multiple farm scales, and developing programs that incentivise enhancing the ecological goods and services (EG&S) provided by farming activities.

For more information, please visit https://ofa.on.ca/issues/climatechange/