TEAMALBERTA ADVANCING POLICY ON BEHALF OF ALBERTA'S CROP SECTOR

Climate Change Policy & Alberta's Cropping Sector: Implications and Mitigation Solutions

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ALBERTA'S CROPPING SECTOR

Alberta farmers and the Alberta-based value-added industries that support them are reliant on global markets. Impeding climate change policy must ensure that Alberta's expanding agriculture and agri-food industries remain competitive in their ability to contribute to the diversification and strength of the Alberta economy and the demands of a growing global population.

- Over the past 10 years, exports of unprocessed agricultural products rose 158% to $5.5 billion. In 2015, crops accounted for 86% of primary agricultural exports from wheat, canola, barley and pulses rising 175% from 2005 to $4.7 billion.
- The grain and oilseed-milling sub-sector in Alberta exported $1 billion in 2015, a 90% increase from 2005. Canola oil cake and meal reached $249 million in 2015 and malt $238 million – all processed in Alberta.
- Much of this growth in the cropping sector growth is related to voluntary adoption of sustainable cropping practices in Alberta, which are among the most advanced globally contributing to yield increases (the ability to producer more per area of land).
- Alberta producers have made significant financial investments in research and development to improve crop genetics using biotechnology and traditional plant breeding methods. This has resulted in higher yields as well as herbicide tolerance, drought and disease resistant cultivars, water use efficiency, and nitrogen use efficiency.
- Continuous improvement over decades in land management practices (i.e. conservation tillage, reduction in summer fallow, increase in soil sampling, adoption of precision agriculture, enhanced crop rotation, increased nitrogen use efficiency, and improvements in diesel engine combustion) and a strong commitment by farmers to address soil degradation have vastly increased the amount of CO2 that is effectively removed from the atmosphere and stored or 'sequestered' in the soil. This has resulted in crop productivity increasing at twice the rate of increases in GHG emissions between 1990 and 2013. In 2000, for the first time in Canada's history, agricultural soil sequestered more carbon than was emitted.

Alberta farmers are a part of the climate change solution

CONSIDERATIONS

Policies that aim to achieve GHG reductions and the adoption of practice changes must consider the economic impact on a producer's economic viability and current best management practices. Our farmers rely on global prices and are therefore price takers. Any regulations that increase the cost of inputs, such as fuel and fertilizer, cannot be passed on to buyers and are therefore borne entirely by producers, which will have an impact on the future of agriculture in Alberta.

- Team Alberta thanks the Alberta government for the exemption in the Climate Leadership Plan on marked gasoline and diesel used by farmers in farming operations.
- Based on recent analysis, the biggest impact on farmers from the carbon levy will by far come from the levy on natural gas use. The second largest impact will be the potential for increased costs of custom grain hauling. Farmers worry about the impact of the carbon levy on their already thin margins.

- Nationally, while CO2 is the biggest contributor (80%) to GHG emissions, agriculture contributes a very small percentage at around 2.8% of the national CO2 emissions, mostly through on-farm fuel use.
- CH4 (methane) contributions in the cropping sector are very minimal (some manure application).
- N20 (Nitrous oxide) emissions, while accounting for the lowest percentage of Canada's GHG emissions at 6%, are the biggest area of opportunity for the cropping sector to contribute to reductions in activities such as agricultural soil management (further uptake of conservation cropping, soil sampling and efficiencies in the application of inorganic nitrogen fertilizers).
- Farmers should be recognized for their sustainable practices that contribute to significant reductions of GHG emissions in the absence of any existing regulations.
- Lack of education and extension are the greatest barriers to the adoption of practices such as automation, crop rotation, and the ideal timing of fertilizer application.

Solutions for the reduction of overall emissions and hydrocarbon use in the cropping sector must take these above considerations into account

SOLUTIONS

The Government of Alberta can mitigate the impacts of the Carbon Levy on the agricultural sector while still exceeding their intended reductions in GHG emissions. This potential hinges on recognition of the fact that agricultural production is an asset in the fight against climate change, and offers several opportunities for meaningful reductions and sequestration under the right program framework that: offsets costs to farmers for their investments, cost increases and allows for the generation of new revenue. We propose the following solutions:

1. Establishing an agricultural GHG Strategic Investment Area within Alberta's Climate Change and Emissions Management Corporation (CCEMC).

- It is generally recognized that the potential for biologically-based GHG reduction, such as removal and replacement activities, can far exceed the emissions contributions of the sectors from which they arise including agriculture.
- The CCEMC commissioned a study to assess the potential for bio-based mitigation opportunities.
- The study estimates that the Canadian biological GHG mitigation potential is at a range of about 52.91 to 65.65 Mt CO2 e /yr. [1]
- In the cropping sector this can largely be achieved through investments in the continuous uptake of existing best management practices (i.e. wetland conservation, soil amendments, soil nitrogen management) that have already been increasing in adoption at a cost to producers in the absence of regulations.
- As an example, in Alberta to date, the number of verified tonnes of atmospheric carbon sequestered in soils through zero till management, is nearing 4.1 million tonnes since 2007.[2]
- CCEMC is in a unique position to enable and mobilize the biological capture and storage opportunities across Canada and thus realize the significant tonnage that could arise from these activities through coordinated, supported and strategic investments.
- Incentives could further be directed to the agri-food value chain in the cropping sector, i.e. maltsters, canola crushers, grain elevators/buyers and flour millers to help reduce actual energy use. This would ensure that

[1] The study estimates the Canadian biological GHG mitigation potential is at a range of 200 Mt CO2 e /yr. Applying the constrained potential, the more achievable estimates range from 52.91 to 65.65 Mt CO2 e /yr.

[2] this based on a very conservative carbon sequestration rate of approximately 0.1 tonnes of CO2e/acre, and selling on average for between $10 to $13/tonne of CO2e.

costs are not added to the basis and thus passed on to farmers, improving the competitiveness and diversification of the Alberta economy.

- Steps should be taken to ensure that the costs of fertilizer do not rise significantly. Exemptions could be granted for fertilizer production at facilities, which do not fall under SGER. The regional emission tax will raise the cost of fertilizer production in the province and will decrease our regional suppliers in relation to their competitors in areas where no such environmental standards exist. This further reduces competition in the sector and results in higher fertilizer prices for producers.
- Funds can be directed to offset costs borne by producers though a rebate/incentive structure for their investments in GHG mitigating technologies. Funds could also be directed to investment in innovative research in the agriculture sector aimed at reduction of carbon equivalents.

➢ **Some cropping-specific investments that can reduce GHGs include:**

a. An immediate way to encourage cropping sector reductions in GHGs is through investment to overcome barriers to the continuous uptake of the world-renowned 4R nutrient stewardship program[3]. The total reduction potential of N2O emissions by the target date is predicted to be between 15-25% and could show a result benefit of up to $87/acre.

b. Enhancing the value and productivity for farmers in running DEF (diesel exhaust fuel systems): Farmers must pay the cost of the emission package on Tier 4 B diesel machinery, plus bear the costs of the DEF fuel, higher costs of parts, and the costs of specialized technicians and loss of productivity when failures occur.

c. Sectional control on seeding and planting units: Inefficient shaped fields with trees, sloughs and other ecological preserves result in overlaps. Sectional control can reduce seeding overlap by 2-12 percent, resulting in an immediate reduction in emissions related to seed, fertilizer (N20), seed treatments etc. The adoption rate remains low due to the initial capital cost. This technology has potential to bend emission curves, reduce double fertilization, reduces P and N loading to ecosystems while saving producers money.

d. Investment in soil water probes to help improve irrigation efficiency and reduce energy use while improving water use efficiency and conserving water.

e. Research into climate change mitigation related to drainage in periods of heavy rainfall and storms, moisture retaining ponds for drought periods, investment in shelterbelt programs (reversal of cuts to PFRA for shelterbelt programs and trees for producers) to enhance wildlife and pollinator habitat, reduce soil erosion and increase ecological services.

2. Offset System Improvements

- Alberta's regulatory carbon market has a number of protocols applicable to agriculture. To date the number of offsets generated under the Conservation Cropping Protocol – the most widely adopted protocol – is over 13.5 million tonnes resulting in over $100 million dollars being injected into farms and rural communities.
- Recent analysis shows that emission reductions of up to 4. 14 MT CO2 EQ/year could be achieved through wide-scale adoption in Alberta of approved and yet to be approved protocols.
- The Nitrous Oxide Emission Reduction Protocol (NERP) has the potential to improve nitrogen management reducing GHG emissions and creating revenue incentive for farmers.
- According to the Alberta Governments 2016 Environmentally Sustainable Agriculture Survey, participation in carbon credit trading has fallen from 22% in 2012 to 16% in 2016. Farmers are seeing a declining value in the program as it is currently structured.
- The procedures and requirements of the emissions offset program should be reformulated and streamlined so that farmers are able to see value in their participation. This includes (1) simplifying the certification process; (2) restructuring the program to equalize the benefits seen by farmers and aggregators; (3) ensuring that the returns to producers through emissions offsets is high enough to encourage participation and; (4) ensuring

[3] *4R Nutrient Stewardship (Right Source @ the Right Rate, Right Time, and Right Place®*

that the practice, not the land, is recognized to avoid landlord approval issues.

2. The Next Agricultural Policy Framework: Recommendations from Team Alberta

- Include initiatives designed to practically mitigate the emissions most attributed to the cropping sector to allow for success in meeting any impeding targets. As such, the framework should focus on investments in technological barriers to achieve N20 reductions through agricultural land management is imperative.
- Include continued agronomic, genetic, and environmental research and development.
- Investments in projects that increase energy efficiency such as fuel conversions (e.g. from LP or diesel to NG), building and structure upgrades (e.g. energy efficient windows and lighting), and machinery modernizations (e.g. sectional control for seeding units, shared cost for soil sampling, extension activities for the 4R Nutrient Stewardship Program). Provincial programs which may already provide some of these services should be better advertised to increase uptake
- Upon completion of National Environmental Farm Plan (NEFP), The Next Agriculture Framework should tie financial support and resources to the crop sector in order to help producers address areas of weakness and implement best practices in fields of sustainability to build the robustness of the industry and support the sectors ability to demonstrate sustainability in a changing domestic and global context.
- Financial incentives within the Next Policy Framework programming can encourage implementation of practice changes required to meet climate change objectives, avoiding additional costs to producers.

4. Education and Extension

- Through Team Alberta, the cropping sector has already partnered with the Alberta Government to support extension and education activities pertaining to sustainability practices.
- Lack of education and extension are the greatest barriers to the adoption of GHG mitigating practices and continuous adoption of Best Management Practices
- Investment of further resources in the area of extension and education under the Next Policy Framework can help the cropping sector leverage their reduction, removal and replacement activities.

CONCLUSIONS

Going forward, collaboration between government and producer commissions is critical in areas of research, education and extension. In most instances, reducing the GHG emission intensity goes hand-in-hand with economic viability. Production practice changes where this is the case are a win, win, win for the achievement of the Alberta Government's intended objectives, promoting ecosystem services and protecting producers' livelihoods.

- While farmers understand the need to be proactive in finding solutions to minimize the negative effects, they worry about the impact of the carbon levy on their already thin margins and other policy implications.
- Team Alberta is working hard to make sure farmers are not unfairly taxed and that they are recognized for their sustainable practices that contribute to significant reductions of GHG emissions. We continue to work to identify the range of impacts the carbon levy and the broader climate change policies will have on our producers.
- Team Alberta supports a system where producers are enabled to be part of the solution through compensation for additional costs and support for generating new revenue.
- Climate change policies aimed at the cropping sector must be fluid in nature. Economic and environmental conditions change rapidly and producers employ different production practices for diverse agro-climatic regions and soils. A one-sized-fits-all policy approach will not be effective.

The crop commissions will commit to partner with the Government of Alberta to implement education and extension related to the various beneficial management practice changes that enable farmers to meet those objectives.

TEAM ALBERTA

Team Alberta represents a working relationship between Alberta's four crop commissions. The commissions are producer-elected and directed organizations established to represent the interests of barley, canola, pulse and wheat producers across the province. The commissions are funded by our members through a refundable check-off to deliver extension and education initiatives and to advise government on their behalf in the areas of research, policy and market development, among others.

For More Information

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