February 1, 2017

AGGP2-024 - High Performance Management systems to reduce Greenhouse gases in Canada's forage and grasslands

The Canadian Forage and Grasslands Association (CFGA) has received funding from the Canadian Federal Government through the Agricultural Greenhouse Gas Program (AGGP) to develop and pilot a carbon reduction protocol built for High Performance Forage Management Systems in Canada. The Canadian Forage and Grasslands sector is the single largest land use component of Canadian agriculture covering over 70-million acres of cropland. Roughly 36-million acres are devoted to native rangeland, with the remaining 34-million acres dedicated to the production of annual and perennial tame forages, including 675,000 acres of corn silage.

While it is well known that forages create valuable carbon sinks, to date no approved carbon sequestration quantification protocol has been approved for Canadian conditions. This creates two distinct challenges. 1. The full value of the Ecological Goods and Services provided by the grasslands sector to Canadian society cannot be quantified, and; 2. The economic value of contributions made by individual landowners to increase soil carbon storage through the adoption of beneficial management practices (BMPs) and/or the use of new, high performance forage genetics cannot be quantified, thus no carbon offset credit value can be assigned to improvements at the farm level. Without an approved protocol to quantify carbon sequestration, the significant contribution of the Canadian forage and grasslands sector to combat climate change will continue to be under-valued. Additionally, addressing these issues will support agri-food supply chain sustainability initiatives to instill public confidence in the management practices of Canadian farmers.

The proposed project has two key phases:

The first phase will be to develop an approved GHG quantification protocol for the Canadian forage sector, that will be flexible enough to incorporate all climate zones in Canada, where forages can be reasonably produced. This will expand and complement the existing work by Canadian researchers related to BMPs, forage and soil sequestration potential, both at the university and AAFC levels.

The second component of the project will be to field test the approved protocol with forage producers across Canada. This pilot is intended to gauge the sector wide opportunity for enhancing carbon sequestration, and creating carbon offset credits for Canadian Grassland managers. This phase similarly to previously pilots of annual crop, nitrogen use, dairy and beef protocols, will field testing the protocol and identify any outstanding gaps and challenges in protocol implantation, and test the ability and willingness of primary producers to maintain the necessary records management systems to allow for farm scale GHG quantification.

Thought the entire project, CFGA will also incorporate a sector wide communications strategy to ensure that all stakeholders and forage producers are kept up-to-date of project activities. It is CFGA's intention to highlight this and its other activities yearly at regional and national meetings and through its provincial forage associations.

Project Activities

1. Development of a carbon sequestration protocol for semi-arid and temperate zones of Canada.

2. Compilation of a BMP Manual for Canadian forage producers, researchers and extension experts to directly supports farmer's implementation of the protocol.

3. Pilot the developed Quantification Protocol and hold extension workshops (field crop tours) across the country.

Activity 1. Development of a carbon sequestration protocol for Canadian forage and grassland systems

Start Date: February 1, 2017
End Date: March 31, 2019

Deliverables

a. Development of the carbon sequestration protocol and underlying quantification methodology for forage and grassland systems in semi-arid and temperate Canadian climates.

Activity 2. Analysis and synthesis of forage and grassland management BMPs into farmer manual

Start Date: February 1, 2017
End Date: March 31, 2019

Deliverables

a. Development of a farmer and agronomist focused BMP manual of high performance management systems
   - Use of certified seed for highly digestible forage species and varieties
   - Intensive rotational grazing systems
   - Intensive forage harvesting systems
   - Forage stand establishment, fertility and management for high performance yields
   - Advanced crop production systems for perennial and annual forages (no-till cropping, crop covers)

Activity 3. Pilot phase of protocol and supporting BMPs
Start Date: April 1, 2019
End Date: March 31, 2021

Deliverables

a) Series of knowledge transfer workshops and crop tours over 2 growing seasons
   a. 5 demonstration sites located at various academic and/or applied sites
b) Measurement and analysis of the economic and environmental impacts of pilot farm activities.