



Best Management Practices to Improve Productivity and Reduce Greenhouse Gas Production of Grassland Systems using Hog Manure

Research/Demonstration Project Turns Challenges into Opportunities

- Expansion in the hog sector has created opportunities for the beef and dairy cattle industries to improve forage productivity in an economically viable fashion through the application of hog manure.
- Recent ratification of the Kyoto protocol and associated commitment by the Canadian Government to reduce greenhouse gas (GHG) emissions by 6% has created an interest in learning more about greenhouse gases, the avenues by which these reductions can be achieved and the economic consequences associated with adoption of such practices. A considerable portion of greenhouse gas production in the agricultural sector is associated with digestion of feed (enteric fermentation) and manure management.
- Although application of hog manure may be mutually beneficial to cattle and hog producers, the consequences in terms of productivity of the pasture and the animal, as well as environmental sustainability (methane/nitrous oxide production, soil nutrient profile and potential persistence/transmission of bacteria from the manure to the forage/cattle), have yet to be explored.



Project Objectives

Identification of best management practices

- To develop a series of best management practices that can be employed by cattle and hog producers to improve production efficiencies and reduce greenhouse gas emissions in grassland agricultural systems utilizing hog manure as a fertility source.
- Treatments will include:
- 1) No manure and grazing
 - 2) No manure and harvesting hay
 - 3) Split spring and fall application of manure and grazing
 - 4) Split spring and fall application of manure and harvesting hay
 - 5) Spring-only application of manure and grazing
 - 6) Spring-only application of manure and harvesting hay

The harvested plots will provide an opportunity to explore the potential benefits associated with removal of excess nutrients in the form of hay.

Establishment of a research/demonstration site

- The project has been established on a 160-acre section of land near La Broquerie, Manitoba, owned and operated by HYTEK Limited.
- By establishing a high profile research/demonstration project at this site, project partners (including local forage/livestock producers, industry partners, provincial and federal organizations and research scientists) are able to work together to not only identify best management practices but also to ensure that they are rapidly and effectively communicated to producers such that they may be implemented on-farm.
- Producers have the opportunity to tour the site during the summer months and observe, in a practical production environment, the feeding and management opportunities available to ensure environmental sustainability while, at the same time, improving productivity.

Improved economic sustainability for the livestock sector

- By increasing forage and cattle productivity, reducing input costs, improving nutrient utilization, and increasing the potential opportunity to benefit from GHG credits, the project will serve to improve the productivity, profitability and environmental sustainability of cattle and hog producers in the prairie region.

| Benefits of our activities | Benefactors |
|---|---|
| Improve productivity of grassland systems in terms of forage quality and yield, as well as animal performance | Beef and dairy producers |
| Improve nutrient (N and P) and water-utilization thereby improving soil and water quality | Beef, dairy and hog producers, general public |
| Minimize potential cycling of harmful bacteria thereby improving water quality and health of animals | Beef, dairy and hog producers, general public |
| Potential reduction in nitrous oxide and methane emissions associated with application of manure on grassland pastures | Beef, dairy and hog producers, livestock industry, general public |
| A model that may be utilized in other regions of the country to demonstrate and disseminate information related to greenhouse gas mitigation and nutrient management strategies | Canadian agricultural sector |
| Provide an avenue for several sectors of the industry to work together to establish a coordinated approach to land and nutrient utilization | Livestock sector, municipalities |

Support for the project provided by:

- HYTEK Limited
- Manitoba Agriculture, Food and Rural Initiatives
- Manitoba Cattle Producers
- Manitoba Pork Council
- Manitoba Livestock Manure Management Initiative
- Greenhouse Gas Mitigation Fund (Dairy Farmers of Canada, Canadian Cattlemen's Association and Canadian Pork Council)
- Beef Cattle Research Council
- Dairy Farmers of Manitoba
- Canadian Agri-Food Research Council
- Manitoba Rural Adaptation Council
- Sustainable Development Innovations Fund
- HiQual Manufacturing Limited
- Water Stewardship
- Prairie Farm Rehabilitation Association
- Seine-Rat River Conservation District