Project Summary

Challenges in Sustaining Beef and Temperate Grasslands in Alberta

Institution: University of Alberta

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Background: Grazing is regarded as the most beneficial use of temperate grasslands from both an agricultural and ecological point of view. However, scientists and consumers are often conflicted about the environmental footprint of beef production and the complex relationship between cow-calf production and grassland conservation. Within these areas of uncertainty, we do know that under sustainable grazing practices, grasslands provide critical habitat for co-habiting species, help maintain critical water resources and help sequester carbon, reducing greenhouse gases, thereby limiting the impacts of climate change. Canada's grasslands are a vital and endangered resource and well managed cattle grazing can contribute to their sustainability. The challenge is how to quantify the totality of costs and benefits of raising cattle on temperate grasslands and use that information to make improvements within the beef industry and ensure the public, industry and science are working towards the same goals with the same information. Additionally, there have been considerable advancements made on cattle genetics to reduce the environmental effects of beef production, but the role of cattle genetics in regulating effects within pastures has not received much attention. The project also will examine the relationship between cattle genetics and environmental parameters in pasture.

Goal: to align ecosystem benefits of grazing with public environmental concerns and maintain beef productivity to help achieve these benefits

Objectives: to understand how variation in pastures, forage grasses, beef cattle, and the vast number of microbes they come in contact with, work together to influence sustainable beef production in a relationship that enhances ecosystem quality

1) To determine if cattle-herd heterozygosity (degree of crossbreeding) is related to measurable indicators of ecosystem goods and services (i.e. soil carbon, plant diversity, plant productivity, etc.) and herd performance on the landscape
2) To determine if producers are willing and able to incorporate beneficial heterozygosity into their herd management decisions
3) To determine if breeding/selection for ecosystem goods and services benefit or present trade-offs with other parts of the value chain (i.e. meat quality)

Benefit: This project will develop tools that help farmers decide which types of cattle are best for the grasses on their land, while better aligning the availability of forage resources with cattle nutritional needs throughout the grazing season. We will also quantify the environmental benefits of grazing grasslands to help build public trust in the beef industry.

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