BCRC RESEARCH FACTS

BEEF CATTLE RESEARCH COUNCIL   RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

IN PROGRESS

Modeling the impact of grazing on water and nutrient cycling

Project Title:		Project Code:	ENV.07.19
Watershed-scale assessment of water and nutrient dynamics of improved pastures utilized by beef cattle		**Completed:**	*In Progress. Results expected in May 2023.*
Researchers:			

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Background:

Nutrient export through surface run off from Canadian pastures is a concern for producers, lawmakers, and the public, but little work has been done in a Canadian-specific context to assess this problem. Water quality issues in watersheds surrounding pastureland arise from a variety of sources including nearby pastures but also other farming practices, other livestock, households or even towns, cities, or factories. Attributing water quality issues to a single source fails to consider complex interactions among water movement, land management, and nutrient sources. Models developed for other locations and management conditions don't account for some of the unique complexities of Canada's pastures including beef production systems, vegetation, and cold-regions hydrological processes (e.g., blowing snow, freeze/thaw cycles, frozen ground).

Objectives:

To develop a Canadian-specific model to evaluate the relative contributions from cattle production, vegetation and soil to nutrient export from pastures taking into consideration pasture conditions, beef production management practices, climate and hydrology; and to use this model to estimate nitrogen and phosphorus export through surface runoff from pasture landscapes.

What they will do:

These researchers plan to build an integrated model to estimate N and P export in surface run off under different pasture management and weather conditions. The integrated model will be comprised of animal, pasture, soil and hydrology components

using western-Canada specific algorithms to predict nutrient run off. The model will be based on weather data from the past 15 years for three watersheds across the prairies.

Implications:

Having accurate models to predict nutrient run off will help producers better understand how management affects pasture watersheds as well as what they can do to prevent runoff. It will also give policy makers accurate, Canadian-specific data to use when writing future policies around watershed management.

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