



Can cow/calf production efficiency be explained by maternal habitat selection and dietary composition in diverse pastures?

QUANTIFYING PRODUCTION EFFICIENCY WITH PRECISION GRAZING

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Background: Cattle exhibit complex behaviour when grazing rangelands that includes preferential selection across the landscape (e.g., hills vs. valleys, near water sources, etc.) and plant species. Several factors influence where and what cattle graze, including nutritional needs, their sense of smell, learned behaviours, and perhaps even genetics. While previous work has examined grazing selection and preference in certain environments, few studies have attempted to correlate grazing behaviours and selectivity with both genetics and performance data.

In addition, there is growing interest in the use of technology such as GPS eartags to support traditional grazing management practices such as cross fencing, water and mineral placement, etc., in order to ensure that grazing utilization and animal performance is optimized in diverse pasture environments.

Objectives: The objectives of this study are to:

1. Relate cow/calf production metrics (weight gain) in summer to the selective preference of cattle for individual habitat types and plant species while grazing.
2. Quantify differences in activity budgets (resting, grazing, ruminating, etc.) among cattle while grazing, and relate these differences to cow/calf productivity.

3. Quantify rumen fermentation parameters while open-range grazing, and explore their use as predictors of dry matter intake, cow/calf performance, and methane emissions.
4. Develop genetic markers for habitat selection and dietary preference in beef cattle and their potential relationship with cow/calf productivity and methane emissions.
5. Examine genetic and phenotypic correlations between residual feed intake (RFI) values previously measured in a drylot situation and the grazing behaviour traits identified in the previous objectives.
6. Evaluate the ability of currently available technologies to support precision grazing management.

Implications of the Research: This project will investigate novel approaches and technology to quantify cattle grazing behaviour and intake when grazing diverse pastures, determine how grazing behaviour and selectivity impacts performance, and identify genetic markers that may eventually be used to select cattle with productivity advantages for certain landscapes and forage types.

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