

Project

Extending cow longevity on dairy farms by improving calf management practices in the first year of life



Principal Investigators:

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National Dairy Research Strategy investment priorities targeted:

- Dairy cattle genetic improvement (fertility, productivity, feed efficiency)
- Dairy cattle nutrition

PERIOD: 2018-2022

TOTAL BUDGET: \$269,100

Why this research is important:

Management practices in the early life of a calf appear to have long-term effects on the performance and future productivity of the animal¹. The pre-weaning period is a phase of development where calf growth and health can be modified to enhance the ability of the calf to reach its genetic potential and is directly linked to future productivity in first and subsequent lactations. But due to the long observation period required, a limited number of studies have been conducted on the influence of management practices and feeding strategies used in the early life of calves and the animal's future health, fertility, productivity and longevity. Dairy cow longevity has a significant impact on the sustainability of dairy production considering that an animal's profitability in milk production often only begins in its 3rd lactation.

Research objectives:

- Investigate the interrelationships and associations at the animal and herd level, between calf colostrum management practices, pre-weaning nutrition, health events and adult cow productivity and longevity; and,
- Determine the impact, at the animal and herd level, of management and welfare practices on achieving calf genetic potential as measured by adult cow productivity, health and longevity.

Project overview:

Data on colostrum management practices, pre-weaning nutrition (growth) and calf health events (morbidity and mortality) has been collected as part of a project conducted in New Brunswick. A comprehensive calf diary was designed to gather extensive information about the animals, blood samples were collected for health and immunity, and nutrition, weight gain and disease incidents were documented over time. New data from these animals, like milk production (305-day production for completed lactation, total lifetime production to end of study), date culled and reasons for cows leaving the herd will be extracted yearly from the DHI database. Association between calf early life management and adult cow productivity and longevity will be evaluated and calculated. The cost of production for raising dairy replacement heifers will also be calculated. The genomic profiles of the animals will also be connected with management, nutrition and health data to study the impact of early life management on achieving calf genetic potential as measured by the animal's future productivity and longevity.

At the herd level, data will be collected on 3,000 calves from participating farms across Canada and combined with existing data sets of 5,000 calves. Information on colostrum management, nutrition, housing type, bedding, dehorning, weaning and feeding methods, as well as cow productivity, health and longevity will be collected. Calculations will be made to determine interrelationships between the management factors, and associations with failure to achieve genetic merit. They will also investigate the relationship between calf and heifer rearing practices including welfare and longevity, milk production and health.

Expected outcomes:

Early life best management practices to help calves reach their full genetic potential and extend cow longevity will be identified to contribute to enhanced profitability, competitiveness, and sustainability of the dairy industry.

¹Lohakare et al., 2012. Asian-Australas J. Anim. Sci. 25(9): 1338; Dingwell et al., 2006. J. Dairy Sci. 89(10): 3992

The participation of 57 Canadian dairy farms will contribute to the successful completion of the project.

FUNDING PARTNERS:



NOTE: As per the research agreement, aside from providing financial support, the funders have no decision-making role in the design and conduct of the studies, data collection and analysis or interpretation of the data. Researchers maintain independence in conducting their studies, own their data, and report the outcomes regardless of the results. The decision to publish the findings rests solely with the researchers.