



Variability in water quality on dairy farms and its effects on performance

Duration: 2022-2025

Highlights

- Water is an essential nutrient for dairy cattle growth, lactation, and reproduction.
- When poor-quality water is consumed, it can negatively impact animal performance, health, and welfare, as well as the entire farm ecosystem;
- Water quality can be assessed in terms of mineral concentration, pH, and bacterial concentration;
- Little attention is currently being paid to the quality of drinking water on dairy farms in Quebec;
- In fact, the factors that may contribute to its variability—such as the type of water management system used on the farm, the proximity of water bodies, the drain field, and the season—are not well characterized;
- This lack of data currently hinders the support offered to dairy farmers in order to improve the quality of the water available to dairy cattle and thereby optimize their health and performance.

Objectives

General objective:

- Document and validate the effect of variability in water quality consumed by dairy cows in Quebec

Research hypotheses:

- Based on the information gathered from the literature and in the field, the quality of water used in dairy production appears to vary from season to season, with a higher quality during the winter, depending on the farm's water management system and its location;
- In addition, water quality can have a significant effect on dairy herd performance in terms of the amount of milk produced per day.

Results and potential benefits

This project will help produce a complete picture of drinking water quality on Quebec dairy farms, identify factors that may influence its quality, establish the link between water quality and dairy cow performance, and provide solutions to dairy farmers and advisors to improve water quality on dairy farms. In the long term, these results are necessary to support dairy farmers in improving water quality and to develop future research projects to use water to correct deficiencies in food rations with the ultimate goal of optimizing animal health and performance. Providing quality water to dairy cows promotes herd health and productivity. Both of these aspects have a direct impact on the profitability of dairy companies, and the proposed project aims to optimize the economic sustainability of Quebec dairy herds. Maximizing the health and productivity of dairy cows optimizes their rations and efficiency in food conversion, reduces the use of medicines, and promotes their longevity. In our supply-management production system, high-performance cows allow us to reduce herd population. This, in turn, reduces the need for replacements, in addition to reducing waste emissions to the environment and greenhouse gas emissions. Quebecers are increasingly concerned about what is found in cows' diets. A project focusing on water quality, which is the food source most consumed by dairy cows, promotes the social acceptability of farming and a positive vision. In addition, quality water contributes to animal welfare, which is important for the social sustainability of farming.



Innovative aspects

Despite its importance to dairy production, there is currently a lack of knowledge about the effects and problems related to the quality of drinking water consumed by dairy cows. In addition, little information is currently available on the extent of the variation in water quality on dairy farms in Quebec and the impact of these variations on cow health and dairy production. Our research project aims to fill this information gap.

Professional trained

The project is currently in the process of recruiting a student who will be enrolled in the master's degree in animal sciences program at Université Laval.

For further information

The results of this project will be shared in a variety of ways to effectively reach users: Specifically:

- A podcast episode will be recorded
- A guide proposing solutions to improve water quality will be developed
- A popular science article and scientific article will be written
- A virtual presentation will be made to the advisors at Lactanet
- A presentation will be given at the Novalait Forum Techno

Financial contributions

- Novalait
- MAPAQ - Innov'Action Program under the Canadian Partnership for Agriculture, an agreement between the governments of Canada and Quebec.
- Lactanet

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Contact persons

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