



Recycled manure bedding: recommendations for safe use to protect milk quality

Duration: 2017–2020

Highlights

- There is a growing interest in using recycled manure as bedding for dairy cattle due to the rising costs of quality bedding.
- Using recycled manure has some drawbacks. Most notably, the bedding may serve as a reservoir for or support the growth of pathogens for cows and/or zoonotic pathogens.
- The risk of encountering these problems certainly varies based on the preparation method used and the bedding management practices in place.
- Currently, very little scientific information exists to make recommendations on best practices for producing and managing this type of bedding.
- This research project aims to develop recommendations for producing and safely using recycled manure bedding.
- The material and data required to achieve the objectives will all be obtained from 29 dairy herds using recycled manure bedding (RMB) and 63 herds using straw bedding.

Objectives

The project's specific objectives are:

- To describe the various bedding production processes currently used on farms, as well the bedding's bacteriological and physicochemical characteristics.
- To assess the impact of the RMB on cow hygiene and comfort and on mammary gland health.
- To verify the influence of the production and management of RMB on microbial populations present in the mammary gland.
- To analyze the impact of using RMB on the microbiota of bulk tank milk.
- To determine the survival rates of cryptosporidiosis and coccidiosis and the risk of transmitting the diseases through recycled bedding.

Results and potential benefits

We believe that the methods of completely transforming manure into compost will allow us to produce bedding with an acceptable level of risk. The potential for the various types of RMB to support the subsequent growth of bacteria remains to be established, as these are rich microbial ecosystems and therefore sites of intense inter-microbial competition.

Our assumption is that in certain conditions, these competitions are detrimental to the bacterial populations that we want to control (pathogens for cows and humans). Finally, our hypothesis is that mammary gland health and the milk bacteria count will be similar to that of herds using conventional bedding. However, the milk microbiota will probably differ because it may be moderately influenced by the milk environment during milking.

Ninety-two (92) dairy farmers have agreed to participate in this study, and sampling is currently underway. We have already observed the presence of certain zoonotic parasites and/or parasites that could harm the health of replacement cows in some certain unused RMBs (e.g., *Cryptosporidium* spp and *Coccidium*). Using RMB with young animals could therefore pose a risk to their health. The risk to human health remains to be analyzed.

The project will establish best practices regarding RMB production methods that will support dairy farmers who wish to safely integrate this bioprocess into their nutritional management strategy. The project will also inform dairy processors about the quality of milk produced through different methods. As a result, the project will make it possible to quantify the risk to animal and human health and the impact on milk quality.



Professionals trained

Annie Fréchette (masters), expertise in veterinary epidemiology at Université de Montréal.

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Jessica Beauchemin (masters), expertise in veterinary microbiology at Université de Montréal.

For further information

The research results will be transferable to dairy farmers in the very short term (i.e., once the research project is completed). Articles will be published in *Le producteur de lait québécois*, *Le Savoir laitier* and *The Milk Producer*, and training sessions and conferences for users will be held (Novalait Forum Techno and Symposium sur les bovins laitiers) in collaboration with our partners at Valacta and as part of the transfer activities of the FRQ-NT Op+Lait strategic cluster.

Financial contributions

Partnership for innovation in dairy production and dairy processing (EPI2015-2020):

- Consortium de recherche et d'innovation en bioprocédés industriels du Québec (CRIBIQ)
- Fonds de recherche Québec – Nature et technologies (FRQNT)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Novalait
- 92 dairy farms

Total budget: \$318,839

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