



DAIRY CATTLE HEALTH AND WELFARE

Research Highlights
2017 – 2018



Dairy Farmers of Canada in partnership with Agriculture and Agri-Food Canada, the Natural Sciences and Engineering Research Council of Canada (NSERC), and provincial partners, is supporting 10 research projects in dairy cattle health, care and welfare under the Dairy Research Cluster 2 and the NSERC Industrial Research Chairs program.



Key Outcomes:

- Canada's first National Dairy Study led to key findings on milk quality and milking practices, animal care and biosecurity on Canadian dairy farms:
 - › A new method to calculate the Canadian average somatic cell count (SCC) resulted in a national average of 208,000 cells/ mL.
 - › Based on bulk tank samples, the most common mastitis pathogens were *Staph. aureus* (46%), *Prototheca* spp. (6%), *Mycoplasma bovis* (<1%), and *Strep. agalactiae* (<1%).
 - › Risk factors for *Staph. aureus*-positive farms included: not fore-stripping cows before milking, milking with a pipeline system and stall bases with a rubber surface (rubber mats, gel mattresses, waterbeds).
 - › The most important factor associated with lameness and hock injuries was the depth of bedding on top of the lying surface. The odds of lameness increased by 53% when bedding depth was 0-1 inch vs. 3-6 inches.
 - › Farms with pasture access and farms that used a professional hoof trimmer had less lameness.
 - › Findings highlight the need for stricter biosecurity, especially in the purchase of animals.
- Quarter-based selective dry cow therapy for mastitis proved to reduce the use of antimicrobials on dairies by 60% on average (range: 32.1 – 74.5% among herds).
- New information, which includes the identification of important Coagulase-Negative Staphylococcus (CNS) species, are improving the accuracy of mastitis diagnosis in Canada and around the world.
- Discovery of antibiofilm molecules produced by CNS generates the potential for a new tool to control/treat bovine mastitis caused by staphylococci and other Gram positive mastitis pathogens.
- The economic model developed for the costs of mastitis on Canadian dairy farms indicated substantial losses due to mastitis with median costs of \$662/cow/year. Total costs for Canadian dairies using year 2014 demographic data were estimated at \$665 million.
- A research agreement with an option of license was signed with a private company to potentially commercialize a chitosan hydrogel infusion to prevent new intramammary infections at drying-off by stimulating mammary gland immunity.
- Results from an evaluation of alternative therapies for the treatment of clinical mastitis on organic dairies indicate that no alternative or non-antibiotic methods have demonstrated efficacy for the treatment of clinical mastitis. However, the administration of bismuth subnitrate internal teat sealants (approved by Health Canada) used without antibiotics is a very efficient method for the prevention of mastitis at dry-off in organic herds.
- Automated activity monitors measure estrous expression/intensity and have potential as management tools to improve the efficiency of timed AI programs based on estrous detection and therefore, decrease hormone use.
- New information generated from a survey of producers using AMS was conducted to assess the impact of automatic milking systems on milking labour management, milk production and milk quality.

Ongoing Projects:

1. Dairy cow management for the next generation – PI: Pierre Lacasse, AAFC-Sherbrooke
2. A national dairy cattle health and management benchmarking study – PI: David Kelton, University of Guelph
3. Canadian Bovine Mastitis and Milk Quality Research Network – PIs: Mario Jacques and Simon Dufour, Université de Montréal
4. Sustainable solutions to improve estrous detection and reproductive efficiency in dairy cows – PI: Ronaldo Cerri, University of British Columbia
5. Better animal welfare leads to improved animal health and longevity, and economic advantages to dairy producers – PI: Doris Pellerin, Université Laval
6. Innovative feeding and best management practices for the very young dairy calf to improve calf performance, welfare, and future productivity – PI: Derek Haley, University of Guelph
7. Automatic milking systems: factors affecting health, productivity and welfare – PI: Ed Pajor, University of Calgary
8. NSERC Industrial Research Chair on Dairy Cattle Welfare – Chairs: David Fraser, Daniel Weary and Marina von Keyserlingk, University of British Columbia
9. NSERC Industrial Research Chair on Infectious Diseases of Dairy Cattle – Chair: Herman Barkema, University of Calgary
10. NSERC/Novalait/DFC/Valacta Industrial Research Chair in Sustainable Life of Dairy Cattle – Chair: Elsa Vasseur, McGill University

RESEARCH SUCCESS STORIES

A mobile application for iOS and Android devices is being developed in English and French. Producers and veterinarians across Canada will be able to use this app. to assess the financial costs associated with mastitis and record information on clinical cases, milk culture results, treatment suggestions, selective dry-cow treatments and other practices based on protocols specific to each farm.

A simplified and practical advisory online tool was tested on farms to assess and benchmark cow comfort. The tool allows farmers to compare their scores for each welfare element evaluated and have access to information and resources about how to improve their score for each of these elements.

benchmarkcowcomfort.com

“As dairy farmers, we are very proud to collectively demonstrate responsible stewardship of our animals and land, sustainably producing milk and meat that are high quality, safe, and nutritious. Treating our animals well, and providing excellent care is one of the highest priorities of the Canadian dairy sector.”

David Wiens, DFC vice-president and chair of the proAction committee

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