



PROJECT 2013-2018

# A NATIONAL DAIRY CATTLE HEALTH AND MANAGEMENT BENCHMARKING STUDY

Principal Investigator:

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University of SaskatchewanNumber of students trained  
(MSc, PhD, Post-Doc):**18****TOTAL BUDGET****\$929,665****INVESTMENT PARTNERS**Agriculture and  
Agri-Food Canada**OBJECTIVES:**

Produce nationally relevant prevalence estimates of important diseases of dairy cattle, identify regional/provincial differences in the density of these diseases, measure the economic impact of these diseases, detail management practices on these farms that will help to identify possible causes of these diseases, provide accurate descriptive information that can be used to compare Canadian dairy herds to those in the USA and elsewhere in the world, and produce health and productivity benchmarks against which progress could be eventually measured.

**KEY OUTCOMES:**

- Needs Assessment (2014): Based on responses from 1,025 producers, advisors, academics and agricultural specialists, **the top management issue identified was dairy cattle welfare and the top health concern was lameness.** Other areas identified as priorities were reproductive health, antibiotic use, bovine viral diarrhea (BVD), and *Staph. aureus* mastitis.
- Phase 1 (2015): Based on 1,373 responses from dairy producers in all 10 provinces to an extensive survey questionnaire, regional similarities and differences in health and management were described and are presented on the NDS website ([nationaldairystudy.ca](http://nationaldairystudy.ca)).
- Phase 2 (2015) involved visiting 374 farms that participated in Phase 1 to assess management and farm characteristics and to collect samples of manure and bulk tank milk that were further tested for common bacterial pathogens. Here are the main findings across Canada:

**Milk Quality & Milking Practices.** The mean somatic cell count (SCC) was of 208,000 cells/mL. Based on bulk tank samples, the most common mastitis pathogens based on average apparent herd-level prevalence 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, mattresses, gel mattresses, waterbeds). Regarding milking practices: fore-stripping, cleaning teats, wiping teats dry, using single cow towels, and use of post-milking teat disinfectant were widely adopted. Use of gloves and glove hygiene, use of a pre-milking teat disinfectant, and use of automatic takeoffs were not as extensively implemented. However, in the past 10 years, the use of gloves by farm workers during milking had increased from 36% to 61%.

**Calf Health.** Treatment of male calves on some farms needs improvement as it was determined that 5% of producers indicated euthanizing at least 1 male calf within the past year; 9% did not feed them colostrum; 17% did not provide the same quantity of feed to male calves as heifer calves; 60% did not always dip their navels; and 88% of producers did not vaccinated male calves.

**Animal Care.** On average, 29% of cows in a herd were lame and 20% of cows had hock injuries. Farmers were failing to identify 2 out of 3 of their lame cows. The most important factor associated with lameness and hock injuries was the comfort of the lying surface, specifically the depth of bedding on top of the



surface. The odds of lameness increased by 53% when bedding depth was 0-1 inches vs 3-6 inches. Tie-stalls had the highest lameness prevalence, followed by free-stalls, and both were much worse than bedded packs. Farms with pasture access and farms that used a professional hoof trimmer had less lameness.

**Biosecurity.** Evaluation of biosecurity practices revealed that half of the herds had brought at least one animal into their herd within the past year; 27% had an animal leave and then return to their premises; and most producers rely on individuals to disinfect their own clothing/equipment instead of providing footwear and coveralls. Despite suboptimal biosecurity, most producers were concerned about introducing either BVD, Johne's Disease (JD) or Foot and Mouth Disease to their dairy herd; and most producers were trying to eradicate or control *Staph. aureus* mastitis, digital dermatitis and ringworm.

**Other infectious diseases.** For JD, it was estimated that 54% of farms in western Canada, 55% in Ontario, 39% in Québec, and 48% in Atlantic Canada were positive, based on herd-level test methods. It appears that different detection methods for JD should be used depending on herd size. Bulk tank milk ELISA test may underestimate JD in large herds; whereas environmental fecal PCR test may underestimate JD in small tie-stall herds. For Bovine Leukemia Virus, 78% of herds were identified as positive. In addition, this project identified that *Salmonella Dublin*, an important emerging bacterium in adult cattle with zoonotic implications, was present in some farms in western Canada. This finding highlights the need for stricter biosecurity, especially in the purchase of animals.

## LINK TO KTT TOOLS

A series of videos, posters, lay articles and infographics have been generated from various elements of the NDS. All of these can be accessed on the National Dairy Study website, which can be found at:

[nationaldairystudy.ca](http://nationaldairystudy.ca)

### VIDEOS:

1. Stephanie Croyle, Assessing Lameness in Dairy Cattle  
[youtube.com/watch?v=tMborOuGhw](https://www.youtube.com/watch?v=tMborOuGhw)
2. Emilie Belage, Understanding the Adoption of Best Milking Practices for Udder Health  
[youtube.com/watch?v=byaMfU-veS0](https://www.youtube.com/watch?v=byaMfU-veS0)
3. Stephanie Croyle, Training Assessors: A key step for the National Dairy Study  
[youtube.com/watch?v=OpxcoiwQmdI](https://www.youtube.com/watch?v=OpxcoiwQmdI)



**National Dairy Study**  
2015

# What were producers' priority management and disease issues?

~700 producers reported their top priorities for the dairy industry

[nationaldairystudy.ca](http://nationaldairystudy.ca)

Click on your topic of interest to find resources for that issue.

Producers' Top Management Issues	Producers' Top Disease Issues
<div style="background-color: #c00; color: white; padding: 2px 5px; font-weight: bold;">1st</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Animal Welfare</div>	<div style="background-color: #333; color: white; padding: 2px 5px; font-weight: bold;">1st</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Lameness</div>
<div style="background-color: #c00; color: white; padding: 2px 5px; font-weight: bold;">2nd</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Reproductive Health</div>	<div style="background-color: #333; color: white; padding: 2px 5px; font-weight: bold;">2nd</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Mastitis</div>
<div style="background-color: #c00; color: white; padding: 2px 5px; font-weight: bold;">3rd</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Cost of disease</div>	<div style="background-color: #333; color: white; padding: 2px 5px; font-weight: bold;">3rd</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Calf Diarrhea</div>
<div style="background-color: #c00; color: white; padding: 2px 5px; font-weight: bold;">4th</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Longevity/ Cow death</div>	<div style="background-color: #333; color: white; padding: 2px 5px; font-weight: bold;">4th</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Abortions</div>
<div style="background-color: #c00; color: white; padding: 2px 5px; font-weight: bold;">5th</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Udder Health</div>	<div style="background-color: #333; color: white; padding: 2px 5px; font-weight: bold;">5th</div> → <div style="border: 1px solid #c00; padding: 5px; text-align: center; margin: 5px;">Respiratory Disease</div>

Priorities were also analyzed by producer region and herd size, which added:

**Western Canada:**  
Feed costs, BVD

**Ontario:**  
Herd expansions, feed costs

**Quebec:**  
Nutrition

**Eastern Canada:**  
Feed costs, biosecurity, food safety, bovine leukosis

**Small and medium herds:**  
Johne's disease



Dairy Research Cluster

Dairy Research for a Healthy World.



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