Dairy Research Summary

DRECA
Dairy Research and Extension Consortium of Alberta

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An update on the Alberta Lameness Reduction Initiative

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Why is lameness important?

Lameness in dairy cattle is a clinical sign of pain that causes a cow to change the way she walks and/or stands, primarily caused by hoof lesions. It is production-limiting with the average cost of a case of lameness estimated at $500. Lameness is the dairy industry's most visible animal welfare concern, as it affects cows' behaviour, longevity and well-being. Consequently, lameness has a negative impact on public perception about animal welfare.

In a broad survey of industry stakeholders, the majority (67%) of respondents being producers, lameness was identified as the number one health concern. Studies like the 2011-12 Cow Comfort Study and, more recently, the 2015 National Dairy Study, identified 19 to 29% of cows in Alberta and Canada are mildly to severely lame. According to data collected by hoof trimmers in Alberta on over 28,000 cows, 36% of cows had a hoof lesion, which can broadly be categorized into infectious and non-infectious types. Digital dermatitis, an infectious hoof lesion, was the most prevalent, affecting 22% of cows. Sole ulcer and white line disease, which are non-infectious lesions affected 6% and 5% of cows, respectively. Each type of hoof lesion develops in a different manner and different factors contribute to their development.

What did we do?

To help Alberta producers to reduce lameness prevalence in their herds and in preparation for proAction Animal Care assessments, Alberta Milk sponsored the Lameness Reduction Initiative (LRI). The project revolves around completion of a lameness risk assessment questionnaire (RAQ), designed to identify housing and management factors that contribute to the development of hoof lesions, serving as a tool to identify weakness and propose changes. A total of 41 veterinarians conducted RAQs with 116 participating in the Lameness Reduction Initiative from Sept. 2016 to July 2018. The RAQ deals with infectious and non-infectious causes of lameness and has 8 sections related to biosecurity measures, hoof-trimming records, and facilities and management of 3 animal groups: pregnant heifers, dry cows and lactating cows. Questions had categorical scores (2–4 categories); a higher score was associated with an increased risk. A maximum of 3 management/facility changes that the farmer and the veterinarian agreed upon were recorded in a management plan.

DRECA: Dairy Research and Extension Consortium of Alberta. A partnership in dairy research, extension and education activities. Alberta Agriculture and Forestry, Alberta Veterinary Medical Association, Alberta Milk, Lakeland College, University of Alberta, and University of Calgary.

Table 1. Percentages of farms with high scores for specific risk factors

Risk factors for lameness	Percentage of farms
Foot lesion data	
Do not keep hoof-trimming records	14%
More than 15% of trimmed cows had non-infectious lesions	31%
More than 15% of trimmed cows had infectious lesions	30%
Biosecurity	
Purchased cattle from ≥1 source	66%
Unknown/Positive digital dermatitis status of source herds	59%
Boots/coveralls are not supplied to visitors	76%
Unknown if hoof trimmer cleans chute/tools between farms	11%
Pre-calf heifer & dry cow management	
≤ 50% of pregnant heifers have their hooves examined	61%
≤ 50% of dry cows have their hooves examined	34%
Dry cows do not walk through footbath	90%
Dry cow lying surface has ≤ 5 cm (2 inches) of bedding depth	17%
Hoof-trimming practices	
Hoof-trimming performed solely by farm personnel	9%
Farms that do not have or use a hoof-trimming chute	26%
Failure to treat lame cows immediately after they are detected	40%
Cows' hooves are examined ≤1 time in a year	16%
Foot-bathing practices for lactating cows	
Cows never walk through a footbath	14%
Footbath is less than 3 m (10 ft) long	74%
Footbath is less than 10 cm (4 inches) deep	20%
Cows' feet are not rinsed before entering footbath	70%
Cows walk through a footbath less than once per week	13%
Footbath product is not renewed before 200 cows passes	28%
Cow comfort for lactating cows	
Cows are required to stand in holding pen/headlocks for more 2 hrs/day	22%
Barns with mattress, rubber, waterbed or concrete stall base	84%
Lying surface with bedding ≤ 5 cm (2 inches) deep	65%
Barns with inappropriate stall widths	22%
Barns with inappropriate stall lengths	12%
Barns with >1.1 cows per stall	13%
Barns with concrete surface in the holding pen	70%
Barns with slippery flooring in cow traffic areas	16%
Barns where cows are required to make sharp turns	46%
Barns with inadequate feeder space per cow	15%

What did we find?

The specific risk factors identified most frequently on participating farms were related to: 1) poor comfort of the lying surface (84% of farms had mattress, rubber, waterbed or concrete as stall base and 65% of farms used less than 2 inches of bedding depth); 2) lax biosecurity (76% of farms do not require visitors to wear disinfected, disposable or farm-supplied boots or coveralls); 3) poor foot-bathing practices (on 90% of farms, dry cows or close-up cows do not walk through a footbath, 74% of farms had a footbath shorter than 10 ft, and 70% of farms do not rinse cows' feet before entering the footbath); and 4) poor comfort of flooring with risk of trauma (on 70% and 46% of farms, cows stand on concrete while waiting to be milked and are required to make sharp turns as they travel to or from the milking parlor).

The most frequently proposed changes by veterinarians were related to: 1) hoof-trimming protocol (i.e. keep foot lesion records, buy a trim chute, increase frequency and optimize timing of trimming); 2) foot-bathing practices and infectious lameness control (i.e. modify frequency, concentration, refill of footbath products, change footbath design and set up, increase scraping frequency); and 3) management practices for pregnant heifers and dry cows (i.e. more bedding, run dry/close-up cows through footbath, reduce stocking density, examine/trim hooves).

Summary Points

- Poor comfort of lying and standing surfaces, lax biosecurity and suboptimal foot-bathing practices were identified as areas of high risk for lameness
- For most farms, participation in the LRI resulted in a lameness control plan that mostly included changes to management rather than facilities

What does this mean?

The LRI provided an opportunity to improve collaboration, knowledge and communication between farmers, advisors and veterinarians and for each farm to identify weaknesses and design targeted management and facility changes. In the past years, several extension tools in Alberta have been used to deliver messages on management practices intended to improve cows' comfort of surfaces for lying and standing, along with improvements in footbath design and protocol. However, preliminary results of this project suggest that there has been poor on-farm adoption of recommendations to decrease lameness. The increased scrutiny that the dairy industry is facing from the public and dairy regulatory bodies, may increase the likelihood of adequate adoption of best management practices. In addition, more collaboration is needed among industry stakeholders to improve the delivery of practical information to reduce lameness.

What's next?

The lameness risk assessment is currently being evaluated by the University of Calgary's Lameness Research Team. They want to know how accurately the risk assessment identifies risk for lameness on-farm; whether higher scores correlate to higher lameness prevalence herds and lower scores correlate to lower lameness prevalence herds. They will also evaluate the scores for non-infectious causes of lameness and infectious causes of lameness to determine whether they correlate to these two types of hoof lesion prevalence within the herd. The research team is in need of more participants, as this study requires a large number of farms within the province for increased quantity and quality of data. If you are interested in contributing to this research, please reach Michelle van Huyssteen for more information at (403)629-0394 or msvanhuy@ucalgary.ca.

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