

# Enhancing resistance to digital dermatitis in Canadian dairy herds

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A key goal of dairy herds is to reduce the incidence of hoof lesions, which can be achieved both by improving management practices and through genetic selection. In 2014, a four-year project funded within the Dairy Cluster 2 began, aiming to improve hoof health in Canadian dairy herds. The first part of the project focused on creating a data collection system of hoof lesions using standardized scores. Hoof trimmers willing to share data and to develop a standard recording protocol were identified across Canada. Subsequently, a pipeline for a routine flow of hoof lesion data from hoof trimmers to Canadian DHI and to Canadian Dairy Network (CDN) was developed. The data collected through this pipeline were then used to develop a herd management report, which will be provided by DHI, and a national genomic evaluation for resistance to digital dermatitis offered by CDN. The genomic evaluation for Holsteins was introduced in December 2017. Digital dermatitis represents the most prevalent lesion in Canada, with almost 20% of cows been affected. Despite a low heritability, an exploitable genetic variation for digital dermatitis was found, where higher estimated breeding values corresponded to sires with a higher number of healthy daughters. This variation implies that it is possible to improve resistance to digital dermatitis through direct selection in the long term. Moreover, the availability of new tools, such as genomic information, helps to effectively select for low heritable traits, increasing the accuracy of the estimated breeding values. Single-step genomic evaluation was implemented using a reference population of 18,580 animals (8,978 sire and 9,602 cows). The average reliability for bulls in the reference population was 77%. Proof correlations between resistance to digital dermatitis and economical important traits were all favorable.

Implications: This research project will provide dairy producers with advanced tools for improving management practices and for genetic selection of cows resistant to hoof lesions.