

## **Associations between lesion-specific lameness and the milk yield of 1,635 dairy cows from seven herds in the Xth region of Chile and implications for management of lame dairy cows worldwide**

LE Green<sup>\*†</sup>, J Borkert<sup>‡</sup>, G Monti<sup>§</sup> and N Tadich<sup>#</sup>

<sup>†</sup> Department of Biological Sciences, University of Warwick, Coventry CV4, 7AL, UK

<sup>‡</sup> Master of Science Programme, Faculty of Veterinary Sciences, University Austral de Chile, Chile

<sup>§</sup> Department of Veterinary Preventive Medicine, Faculty of Veterinary Sciences, Universidad Austral de Chile, Chile

<sup>#</sup> Department of Veterinary Clinical Sciences, Faculty of Veterinary Sciences, Universidad Austral de Chile, Chile

\* Contact for correspondence and requests for reprints: [laura.green@warwick.ac.uk](mailto:laura.green@warwick.ac.uk)

### **Abstract**

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Lameness is one of the greatest infringements of welfare in dairy cows. The objective of this study was to investigate associations between milk yield and foot lesions causing lameness in Chilean dairy cattle with the hypothesis that if we can demonstrate that lameness reduces yield, and so income, from lame dairy cows then we have both economic and welfare arguments for reducing lameness in dairy cattle. For one year, all lame cows from seven farms with Holstein Friesian cattle were treated by their herdsmen. Herdsmen were trained by the researcher and a colour atlas was utilised to assist in diagnosis of lesions. All abnormalities on the foot and the suspected cause of lameness were recorded, and cattle were treated. A two-level hierarchical model with repeated monthly test-day yields within cows was used to investigate the impact of double sole (DS), sole ulcer (SU), white line disease (WLD), digital dermatitis (DD) and all 'other' causes of lameness on milk yield before and after treatment. There were 1,635 cows with complete data. Cattle with a DS were higher yielding than cattle that were never lame with a reduction in yield from four months before treatment. Cattle lame with DD were higher yielding than non-lame cattle before and after treatment. For all causes of lameness, yield increased the month after treatment. We conclude that lesions causing lameness reduced the milk yield of dairy cows in these seven herds in Chile. We discuss the current evidence base for prevention of lameness in dairy cows and hypothesise that rapid treatment is a feasible current approach to improve cow welfare immediately and probably reduce milk lost; more evidence for effective prevention is required.

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**Keywords:** animal welfare, claw lesion, dairy cow, lameness, milk loss, mixed effects model