THE EPIDEMIOLOGY AND CONTROL OF LAMENESS IN PASTURE-FED DAIRY CATTLE

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Abstract

A series of studies was conducted on lameness in dairy cattle in New Zealand. All cases of lameness that occurred in three dairy herds over a 12-month period were studied to establish the types of lesions that commonly result in lameness, and to monitor the recovery process. White line disease (39%), traumatic pododermatitis or sole bruising (42%) and septic pododermatitis or sole abscess (9%) were the most common lesions. There was a close association between the onset of lameness and time since calving, regardless of season of calving. Lameness was associated with wet weather conditions. Total lactation yields of the lame cows were significantly less than matched herd-mates of similar age and calving date.

A longitudinal study of the feet of cows from a spring calving dairy herd with a low incidence of lameness (2% over 12 months) was conducted over a 12 month period to measure the occurrence of subclinical hoof lesions. Sole haemorrhage, erosion of the heel bulb and minor white line separation were the most commonly observed lesions. Waves of each type of lesion affected different digits and passed through the herd at specific times of the year and breeding season.

Methods were developed for assessing physical hoof properties such as hardness, moisture content, elastic modulus, compressive strength, resilience and sole concavity. A series of epidemiological studies was conducted to determine to what extent these properties varied between digits on different cows, between digits on the same cow, with changes in environmental moisture conditions, and with changes in husbandry over the course of a dairy herd's production year. There was a clear tendency for hoof moisture to vary in concert with various measures of environmental moisture and for the other physical hoof properties measured to be affected by hoof moisture content.

Hoof growth and wear studies were also conducted on both autumn- and spring-calving cows. Rates of hoof wall growth were lower in autumn and winter than during spring and summer and were greater in 2-year-olds than in mature cows. Both wall wear and sole wear were greater in lateral digits than in medial digits. Lateral digits almost always had less sole concavity than medial digits. Cows suffered a rapid and substantial loss of sole concavity following calving regardless of season of calving. Lame digits tended to

have less sole concavity than non-lame digits, providing some evidence that lack of sole concavity is causally associated with occurrence of lameness.

The effect of two different surface hoof treatments (daily formalin footbathing and bimonthly Hoof Bond application) on hoof characteristics and occurrence of lameness was examined. Both treatments failed to prevent lameness, reduce the incidence of subclinical hoof lesions or substantially alter hoof moisture, hardness or sole concavity changes.

A tentative hypothesis is proposed to explain the well recognised association between lameness onset and rainfall. Mechanisms involved in the development of common claw lesions in pasture-fed cattle are discussed.

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