

Detection of lameness in dairy cattle

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Introduction

Lameness in dairy cattle is an important welfare issue. The Farm Animal Welfare Council (FAWC, 1997) reports that current levels of herd lameness in the UK are unacceptably high. Herd lameness has been estimated at 22% by recent studies undertaken in the UK (Whay, 2002) and Wisconsin, USA (Cook, 2003). Whay et.al. (2003b) report that there has been little improvement in herd lameness levels over the last decade and the FAWC (1997) claim lameness is a greater problem now than it was 40 years ago.

Lameness appears to be a painful condition and one which affects the cow's ability to interact both socially and within her physical environment (FAWC, 1997). The Five Freedoms of animal welfare state that dairy cattle should have freedom from discomfort, pain, injury and distress, all of which are symptoms associated with lameness (FAWC, 1997). It is also stated that animals should have the freedom to express their normal behaviour (FAWC, 1997). Exhibiting normal behaviour is difficult for a dairy cow whose social interaction is curtailed through lameness. It is these issues that make lameness a major animal welfare concern.

In addition to welfare concerns, there are a number of economic implications related to lameness in dairy cattle. Klaas et.al. (2003) observed that in automated milking systems cows displaying lameness have a decreased number of voluntary milkings. Milk production may also be reduced (Warwick et.al., 2002; FAWC, 1997) and fertility adversely affected (Sprecher et.al., 1997) in lame dairy cattle. The reduction in milk production and decreased fertility levels lead to an increased likelihood of the animal being selected for culling (Sprecher et.al., 1997; FAWC, 1997).

An impediment to reducing lameness levels in dairy cattle is poor detection, particularly of early signs. It has been found that herd lameness estimates made by farmers tend to be lower than actual lameness detected by experts such as veterinarians and researchers from the dairy industry (Whay, 2002). Reasons for this disparity could be desensitisation of farmers who are frequently exposed to lameness, the misapprehension that mild lameness is not important, reluctance of farmers to admit actual levels of lameness and that farmers/herdsmen do not recognise early signs of lameness either due to poor observation or lack of knowledge (Whay, 2002). Assessment of lameness tends to be subjective and dependent on the person assessing the condition. These factors illustrate the necessity to develop objective animal-based measures of lameness that may be utilised industry wide.

Recent research

A recent study investigated the use of animal-based measures to assess the effect of animal husbandry on dairy cattle (Whay et.al., 2003a). Questionnaires were distributed among industry experts to identify issues that affect the welfare state of cattle. A subsequent questionnaire refined the issues into animal-based measures and established the relative importance of each measure. Lameness was identified to be the most important animal-based measure of welfare for dairy cattle (Whay et.al., 2003a). Whay et.al. (2003a) believe that animal-based measures may be useful in developing protocols that accurately assess dairy cattle welfare by addressing both animal husbandry (for example housing and nutrition) and the effect of that husbandry on the animals.

To determine animal-based indicators of pain and discomfort related to lameness, a study undertaken by O'Callaghan et.al. (2003) investigated daily activity levels and postures of dairy cattle. A posture scoring system was used to assess overall locomotion based on a number of factors including spinal arching, head carriage and ease of gait. The five point system ranged from good/normal (score 1) to severely abnormal (score 5) (O'Callaghan et.al., 2003). The study found that decreased activity levels and abnormal postures were associated with

lameness. Chronic foot lesions tended to be associated with higher posture scores (more abnormal) when compared to acute foot lesions. O'Callaghan et.al. (2003) concluded that both daily activity levels and posture scoring were useful indicators of the pain and discomfort associated with lameness in dairy cattle.

A third study undertaken in 2003 aimed to develop a protocol to assess welfare by direct observation of dairy cattle and examination of farm records (Whay et.al., 2003b). Observations were made using animal-based measures constructed around the Five Freedoms of animal welfare (FAWC, 1997). The study involved farmer feedback on herd health and production, animal-based measurements made by an expert and analysis of farm treatment records (Whay et.al., 2003b). One finding of this study was that farmer estimates of lameness were generally less than actual lameness and that farmers fail to recognise three in four cases of lameness (Whay et.al., 2003b). The study also noted that farmer estimates of lameness within the herd were greater than the records for treatment of lameness. This may be explained by farmers either not recording treatments or not treating lameness (Whay et.al., 2003b). The study identified lameness as a serious welfare issue.

Conclusion

The application of animal-based measures to assess dairy cow welfare is a useful method to determine the impact of husbandry practices on the animals themselves. Employing animal-based measures may also assist the farmer in identifying targets to reduce herd lameness (Whay et.al., 2003b). Objectivity and repeatability of measurements is the major limitation with animal-based measurements. Observers making the measurements need to be sensitive to signs of mild lameness and have access to a robust and simple posture scoring system (Whay, 2002).

A key factor in reducing herd lameness is detection, particularly the identification of mild signs indicating early lameness. Animal-based measures such as posture scoring and daily activity levels are a practical method of identifying lame cows. The frequent assessment of lameness in dairy cattle using animal-based measures has a number of advantages including; implementation of preventative strategies and target setting for herd lameness, accurate assessment of individual and herd welfare status and early detection and treatment of lameness in individual animals. Ability to address these factors will contribute to the improved welfare of dairy cattle by reducing the incidence of lameness and its associated pain and discomfort.

References

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