

# Risk factor associated with lameness and hoof lesion in all year round grazing cattle

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## Abstract

Lameness is considered one of the three most common occurrences in dairy cattle and represents the major welfare problem in dairy herds. The main cause for lameness in cows are injuries in their hooves, which however can be present in subclinical form. Lameness and hoof lesions are multifactorial conditions and a large number of risk factors were identified. However, the majority of the epidemiological studies regarding lameness were carried out in temperate climate with housing cattle. In this context, studies that examine risk factor for lameness in grazing cattle is warranted. In this work, we evaluated possible risk factors concerning lameness and hoof lesion in all year-round grazing cows in Minas Gerais, Brazil. It was visited 48 farms in which all lactating animals were mobility scored, and a small sample were evaluated for hoof lesions using a portable trimming chute. A questionnaire and a checklist was used to apprehend husbandry practices and the management of the farm. Multivariable models were build based on the observation of 2262 dairy cows for lameness score and 392 for hoof lesions. The factors associated with impaired mobility score were body condition score (BCS) (OR = 0.26), keep the animals in paddocks during the dry period (OR = 2.1), spend more than 3 hours in the corral per day (OR = 2.4) and a bad hygiene score of the animals (OR = 2.6). The last two factors were also associated with an increase chance for digital dermatitis (OR = 2.1) for longer time spend in corral and OR = 2.4 for bad hygiene score). Tracks features was the factor affecting adversely the largest number of hoof lesions. It was associated with increase odds of 7.1, 5.5 and 3.5 times the chances of finding heel horn erosion (HHE), white line fissure (WLF) and sole hemorrhage respectively. Poor condition of the corral exit and cleaning the corral less frequently were associated with an increase in 2.8 and 5.2 times the odds for HHE, while extensive systems and the use of foot-bath were protective factors. The presence of damaged concrete increase in 3 times the odds for interdigital hyperplasia. White

line fissure was associated with increased age (OR = 1.12 per year) and access to pile of manure (OR = 4.91). Identified risk factors related with the human-animal interaction were the patience of herdsmen conducting the cows from pasture to milking and if the animals were hit. These factors were related to increase odds for interdigital hyperplasia (OR = 3.2) and sole hemorrhage (OR = 2.1) respectively. Our results highlight the importance of track maintenance, hygiene conditions and animal-human relationship to reduce and control lameness in grazing systems, representing a first step to plan future actions and control programs.