
The Impacts of Suboptimal Mobility in Pasture-based Dairy Systems

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Suboptimal mobility refers to any abnormality to a cow's gait which causes a deviation from the optimal walking pattern of a cow. Suboptimal mobility is an area of concern from an economic, environmental and animal welfare point of view. While the potential risk factors and impacts of suboptimal mobility in non-pasture-based systems are reported on throughout the literature, the same information is lacking for seasonal calving, pasture-based systems. The overall aim of this project was to determine the impacts of suboptimal mobility in a pasture-based dairy system. To achieve this we determined 1) the association between claw disorders and suboptimal mobility; 2) the cow and herd-level risk factors associated with suboptimal mobility; 3) the production and reproductive impacts associated with suboptimal mobility; 4) the economic and environmental consequences of suboptimal mobility. Data from 11,116 cows from 68 Irish pasture-based dairy herds were collected. Cows were mobility scored and body condition scored (BCS). Production data (milk, fat, and protein yields, and somatic cell count), reproductive data (calving dates, calving interval, and culling), and other cow-level data (breed type, and genetic transmitting abilities for health and production traits) were available for each cow. Herd-level data including cow path quality and maintenance practices, distances cows walk to and from pasture each day, and foot bathing regimes on farm were collected for each herd via an online survey completed by the herd owners. Our study showed that all severities of claw disorders (ranging from mild to severe), are associated with specific mobility scores. Furthermore, cows with higher yields, elevated SCC, less body condition, and cows with a genetic predisposition for lameness are all potential risk factors for suboptimal mobility. We also found that certain cow breeds such as Jersey type cows are associated with a reduced risk for having suboptimal mobility. At the herd-level, both the quality of cow paths and the distance cows must walk each day are associated with an increased proportion of suboptimal mobility. Finally, herds with higher proportions of suboptimal mobility have lower economic returns and higher total costs. These herds are also associated with increased greenhouse gas emissions per kg of fat and protein corrected milk yield.