

Sub-optimal mobility in pasture-based dairy

COWS

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Summary

- Sub-optimal mobility refers to any abnormality to a cow's gait which causes a deviation from the optimal/normal walking pattern of a cow.
- Sub-optimal mobility is associated with economic losses due to decreased milk yield, elevated somatic cell count, prolonged calving intervals and early culling.

Introduction — why is sub-optimal mobility important?

Sub-optimal mobility has the potential to reduce the overall lifetime performance of dairy cows due to milk production losses and increased culling. Sub-optimal mobility has been identified as one of the most important health-related economic losses, whereby a severe case of sub-optimal mobility (lameness) has been estimated to cost up to €300 per case. The direct costs associated with sub-optimal mobility arise from reduced milk yield, discarded milk, veterinary bills and antibiotics, and increased labour, while the indirect costs arise from reduced fertility, increased risk of future mobility issues or other diseases, body condition losses, and increased culling. As well as being a concern for economic losses, sub-optimal mobility is also associated with pain, making it an important issue in terms of animal welfare.

Is sub-optimal mobility an issue in pasture-based systems?

A recent study of 62 Irish dairy farms in which all the cows were mobility-scored, found that 37% of all the cows had some form of sub-optimal mobility, whereby sub-optimal mobility refers to 'any abnormality to a cow's gait which causes a deviation from the optimal walking pattern of a cow'. Cows were mobility-scored twice (once during early lactation and again during late lactation) using the UK Agriculture and Horticulture Development Board four point scale. Using this scale; a score of 0 refers to a cow with optimal/perfect mobility. A score of > 0 refers to a cow with sub-optimal mobility, ranging from mild to quite severe deviations from the optimal walking pattern of a cow. The majority of cases of sub-optimal mobility are caused by claw disorders. Claw disorders can be either infectious or non-infectious types, and range in severity and are usually quite painful to the cow. Infectious claw disorders include; digital dermatitis (mortellaro) and interdigital phlegmon (foul) and non-infectious claw disorders include; overgrown claw, sole hemorrhage (sole bruising), whiteline disease and sole ulcer. Non-infectious claw disorders are by far the most prevalent in pasture-based systems. The most common non-infectious claw disorder was sole hemorrhage (sole bruising), followed by overgrown claw, whiteline disease and sole ulcers. It was found that even cows with mild forms of the various claw disorders are more likely to be classified as having sub-optimal mobility. It was also found that cows with lower body condition are more likely to have sub-optimal mobility compared to cows with relatively higher body condition, and that higher parity cows are more likely to have sub-optimal mobility.

What are the consequences of sub-optimal mobility?

Although it is well known that severe forms of sub-optimal mobility are associated with substantial losses in terms of milk production and increased culling, less is known regarding the impacts of mild and moderate forms of sub-optimal mobility, particularly in pasture-based systems. When comparing 305-day milk yields of Irish pasture-based cows with sub-optimal mobility, compared to cows with optimal mobility, milk yield losses of up to 320 kg per cow per lactation were found (Table 1). Cows with sub-optimal mobility were also found to be associated with elevated somatic cell count (SCC), whereby the average lactation SCC was increased by up to 1.4% for cows with sub-optimal mobility compared to cows with optimal mobility. Calving interval was longer for cows with sub-optimal mobility (up to 6.3 days longer) compared to their optimally mobile herd mates. It was also found that cows with sub-optimal mobility were more likely to be culled compared to their optimally mobile herd mates.

Table 1. Estimates and the standard error (SE) of the effect on 305-day, milk, fat, and protein yield for each level of sub-optimal mobility (mobility score 1, 2, 3) compared to cows with optimal mobility (mobility score 0)

Yield (kg)	Mobility score 1		Mobility score 2		Mobility score 3	
	Estimate	SE	Estimate	SE	Estimate	SE
Milk	20.00	17.26	-155.27**	42.23	-320.74**	94.64
Fat	0.35	0.81	-7.22**	1.99	-6.8	4.46
Protein	0.74	0.60	-4.85**	1.46	-10.2**	3.27

***, **, *, † Estimate is significantly or tends to be different from 0 ($P < 0.001, 0.01, 0.05, 0.10$).

Conclusions

Sub-optimal mobility is an issue in pasture-based dairy farms in Ireland, associated with economic losses (reduced milk yield, prolonged calving intervals, increased somatic cell count, earlier culling), and welfare concerns. The prevalence of sub-optimal mobility could be reduced by good management practices, appropriate infrastructure and by routine mobility scoring to facilitate earlier identification and treatment of problem cows.

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