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The Science of Grazing: How Pasture Access Impacts Cattle Well-Being

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ABSTRACT

Grazing is widely recognized for its contribution to the behavioural and clinical welfare of cattle. Pasture access plays a vital role in promoting cattle well-being by enabling natural behaviours such as grazing, walking, and social interaction. It positively influences the physical, behavioural, psychological, and physiological health of cattle. The relationship between pasture access and cattle welfare is a critical focus in animal science, with broad implications for livestock management, environmental sustainability, and consumer preferences. Grazing systems, which allow cattle to forage on pastureland, are increasingly advocated as more humane and ecologically responsible alternatives to confined feeding operations. Research indicates that cattle with regular pasture access experience lower stress levels, improved physical condition, and enhanced overall welfare compared to animals in continuous confinement. Reported benefits include reduced lameness, fewer respiratory ailments, and improved mood—factors that also contribute to better milk quality. However, the success of grazing systems depends on variables such as pasture quality, weather conditions, and management practices. When well-managed, these systems offer a healthier, more humane, and sustainable approach to cattle farming.

Keywords: Cattle health, behaviour, pasture, grazing, animal welfare

INTRODUCTION

The physical and psychological aspects of health are major concerns in current intensive cattle production systems. Production diseases, such as lameness, mastitis, and hock lesions, occur frequently in confinement systems, including free-stall housing systems. A comparative study conducted in the US. Showed that the rate of clinical mastitis in Holstein cows confined in free-stall housing was approximately 1.6 times higher than that in grazing Holstein cows.

In terms of animal-based health parameters, cows with access to pasture proved to fare better than those housed continuously indoors. Previous studies have shown less lameness in systems with grazing, a reduced number of hock lesions, and a decreased incidence of mastitis compared to indoor housing. Additionally, mortality was found to be lower in herds with pasture access than in those without. Other studies focused on different benefits of pasture access beyond strictly health advantages. Pasture-based systems offer increased freedom for cows to express their full behavioural repertoire. When on pasture, they display better herd synchronization, spend more time lying, and show less agonistic behaviour compared to confined animals. Grazing occasionally impairs cattle health depending on the management practices. For example, grazing cattle are directly exposed to heat and cold stress, occasionally leading to the suppression of immune functions and a reduction in reproduction and milk production. Gastrointestinal parasitism is another major concern in grazing systems because it induces a reduction in both milk yield and body weight and causes clinical diseases.

Pasture grazing is beneficial for cattle health as:

- Behaviour
- Lameness
- Mastitis
- Uterine infection
- Hock lesion
- Endoparasite
- Milk composition

Natural behaviour and freedom of movement

The impact of production systems on behaviour is an important component of welfare assessment, comprising one of the 'five freedoms', namely 'freedom to express normal behaviour.

The five freedoms are:

1) Freedom from hunger and thirst
2) Freedom from discomfort
3) Freedom from pain, injury, or disease
4) Freedom to express normal behaviour
5) Freedom from fear and distress

Cattle are grazing animals by nature. When allowed access to pasture, they can express natural behaviours such as walking, lying down in soft ground, chewing cud in peace, and forming social bonds. In confined environments like feedlots or zero-grazing barns, these behaviours are often limited or suppressed. Studies show that cattle with regular access to pasture are more active, have better muscle tone, and spend more time engaged in positive behaviours. This improves both their physical health and psychological well-being.

In addition, grazing cattle are free to express normal behaviours. Basic behaviours such as eating, resting, and ruminating together account for approximately 90% of the daily behaviour of grazing cattle.

The effect of grazing on locomotion

Locomotion also increases at pasture. During grazing, cows spend more time walking than when they are feeding indoors, and walking is considered a "behavioural need." Walking also has physical benefits, especially for cows' legs, feet, and hooves. It has been suggested that exercise improves the condition of joints, tendons, and ligaments in dairy cows, easing transitions up and down. Regular walking on a treadmill reduced gestating cows' working heart rate and plasma lactate concentrations, indicating reduced metabolic stress (Nakajima & Yayota, 2002). Various gait variables have been studied when cows walk on pasture. Optimal locomotion comfort on pasture is characterized by a shorter gait cycle duration, longer stance-phase duration, shorter swing-phase duration, higher walking speed, longer stride length, and higher peaks of foot load and toe-off, compared with indoor walking conditions (Alsaaod *et al*., 2017).

The effect of grazing on nutritional status

Factors inducing a nutritional shortage and imbalance by grazing

Grazing can occasionally impair the nutritional condition of cattle due to seasonal changes, high stocking rates, or poor-quality grassland. These factors may result in nutritional deficiencies or imbalances. During dry or cold seasons, pasture availability and quality often decline, leading to reduced energy, protein, and mineral intake. Overgrazing and degraded grasslands further compromise the nutritional value of the diet. These issues can negatively impact milk production, reproduction, and immunity. Therefore, pasture-based systems require careful management, including forage quality monitoring and supplemental feeding, to ensure optimal cattle nutrition (Smid *et al*., 2019; Mohammad *et al*., 2019).

The effect of grazing on mastitis

Arnott *et al.* (2017) conducted a study comparing the prevalence of mastitis in continuously housed versus pasture-based systems, and the available evidence suggests a higher incidence of mastitis in continuously housed cows. It has been suggested that the lower levels of mastitis in pastured cows are because they are exposed to fewer environmental pathogens compared with confined cows. Consistent with this suggestion, an increased risk of high somatic cell count (SCC) and intramammary infections has been associated with cows having dirty udders and legs. The general beneficial effects of pasture access, the risk of so-called 'summer mastitis' is likely to be a greater problem within pasture-based systems. Summer mastitis is a severe acute clinical mastitis that occurs in non-lactating cattle at pasture during the summer.

The impact on milk composition

Mohammad et al. (2019) conducted research on how pasture feeding systems used on dairy farms influence milk composition and quality. Their study found that environmental factors such as climate, land availability, and cow energy requirements play a key role in the success of pasture-based systems. In regions with favourable conditions, pasture feeding is common and tends to

produce milk with higher fat, protein, and beneficial nutrient levels compared to milk from cows fed Total Mixed Ration (TMR). In contrast, TMR systems may increase saturated fat content in milk. Feeding methods also influence milk's sensory, functional, and textural properties. Ongoing research is identifying biomarkers for pasture-fed milk, which supports the expanding market for verified "grass-fed" dairy products.

CONCLUSION

This paper conclude that dairy cow welfare is generally higher in pasture-based systems compared to continuous confinement housing. Even when grazing was restricted to daylight hours during the warm season and both farm types utilized free-stall housing, the benefits of outdoor access remained evident. Cows on pasture exhibited more synchronous lying behaviour, characterized by fewer but longer lying bouts and reduced frequency of transitions between lying and standing. Furthermore, lower levels of lameness, hoof pathologies, and hock lesions were observed in pasture-based systems compared to continuously housed systems. While challenges persist in maintaining high-quality pasture and effective herd management, grazing-based systems offer a more humane and sustainable approach to dairy farming.

REFERENCES

Arnott, G., Ferris, C. P., & O'Connell, N. E. (2017). Welfare of dairy cows in continuously housed and pasture-based production systems. *Animal*, 11(2), 261–273. https://doi.org/10.1017/S1751731116001336

Alsaaod, M., Huber, S., Beer, G., Kohler, P., Schüpbach-Regula, G., & Steiner, A. (2017). Locomotion characteristics of dairy cows walking on pasture and the effect of artificial flooring systems on locomotion comfort. *Journal of Dairy Science*, 100(10), 8330–8337. https://doi.org/10.3168/jds.2017-12890

Mohammad, A., Sean, A., Hennessy, D., Dillon, P., Kiernan, N., O'Donovan, M., Tobin, J., Fenelon, M. A., & O'Callaghan, T. F. (2019). The "grass-fed" milk story: Understanding the impact of pasture feeding on the composition and quality of bovine milk. *Foods*, 8(8), 350. https://doi.org/10.3390/foods8080350

Nakajima, N., & Yayota, M. (2002). Effects of treadmill exercise on heart rate and metabolic responses in gestating cows. *Animal Science Journal*, 73(5), 479–484. https://doi.org/10.2508/chikusan.73.479

Smid, A. M. C., Weary, D. M., & Von Keyserlingk, M. A. G. (2019). Pasture access affects behavioural indicators of wellbeing in dairy cows. *Animals*, 9(11), 902. https://doi.org/10.3390/ani9110902