

The effect of housing type on lying behaviour in dairy cows

By Fiona Giblin

Introduction

Intensively farmed dairy cattle are often housed indoors or in small paddocks near the dairy. Housing used for dairy cattle should be constructed in accordance with the five freedoms to ensure the welfare of animals is appropriately considered (Capdeville & Veissier, 2001). The two most common types of loose-housing systems for dairy cows are strawyards and cubicles (Fregonesi & Leaver, 2001). The amount of time cows spend lying down is considered to significantly influence their comfort level (Fisher et al., 2003). Synchronised lying (all cows lying down together) has also been proposed as an indicator of welfare (Fregonesi & Leaver, 2002). The following research papers explore many facets of the effect of housing type. However this essay will focus on the differences in lying behaviour influenced by housing type, and how this influences animal welfare.

Discussion

An experiment by Fregonesi & Leaver (2001) was conducted using three welfare indicators; behaviour, performance and health, to examine the welfare of dairy cows in strawyards compared to cubicles. In experiment one, 32 cows were divided into high and low yield groups that were then randomly allocated into either a strawyard or cubicle for four weeks. Experiment two involved only high yield cows that were allocated to either a strawyard or cubicle for 17 weeks. Maintenance behaviours (lying, synchronised lying, ruminating, standing and feeding), antagonistic behaviours (threats, bunts, pushes and fights), performance indicators (milk yield, composition, liveweight, body condition score and food intake), and health indicators (mastitis monitoring, lameness, cleanliness score, hoof measurements and locomotion scores) were measured. Cows in strawyards showed greater synchronised lying time compared to those in cubicles. Greater lying and synchrony of lying in cows suggests that they were more comfortable, and were able to carry out normal behaviour patterns due to a better social environment, than those in cubicles (Fregonesi & Leaver, 2001).

Fregonesi & Leaver (2002) conducted another experiment to examine the short term influence of space on indicators of welfare including animal behaviour, performance and health, in strawyards and cubicles. Experiment one involved 24 cows in strawyards, split into high and low yield groups, then randomly split again into high and low space allowance. Experiment two involved 32 cows in cubicles, split into high and low yield groups, then randomly given high and low space allowance. Maintenance, antagonistic and performance behaviours were recorded. Low yielding cows had increased lying synchrony in strawyards compared to cubicles, suggesting that they have a higher level of comfort and welfare when housed in strawyards.

A third experiment conducted by Fisher, Stewart, Verkerk, Morrow & Matthews (2003) compared the effects of four surfaces, wood chip pad, concrete yard, gravel-surfaced laneway and small paddock, on cow comfort and welfare by measuring faecal glucocorticoids, bodyweight, cleanliness and locomotion. Thirty-two cows were randomly separated into four groups. One week was spent in each environment. All cows were grazed together for a three hour period at the same time every day. Data on seven variables was collected: i) time spent lying at stand-off; ii) time spent lying at pasture; iii) total time spent lying; iv) duration of each lying bout at stand-off; v) frequency of lying at stand-off, and vii) frequency of lying at pasture. Faecal samples were taken, cows were weighed and scored for cleanliness, and gait length was measured. Cows on the wood chip pad spent a longer period of time lying down and showed the greatest number of lying bouts. Cows on the concrete had longer periods of standing than those on wood chip pads and in small paddocks. Cows in the concrete yard spent significantly longer lying down on

pasture, to the extent where grazing was sacrificed for lying. Increased periods of standing have been known to predispose to lameness, stress and decreased welfare (Fisher et al., 2003).

All three research papers conducted experiments that have been well documented, and are repeatable, an essential characteristic in research. The research could have been enhanced by improving experimental controls. This would make the findings more significant and reliable.

These papers mention some important animal welfare issues that need to be addressed. Fregonesi & Leaver (2002) used less than the space recommended by the Farm Animal Welfare Council for the low space allowance group of cows. The Council recommends that housing systems "should not be overcrowded and there should be sufficient room to allow all animals to lie in comfort at the same time and to move freely". There should be at least one cubicle per cow (FAWC, 1997). It is debatable whether the research findings resulting from these experiments justify denying cows the space required for their comfort and welfare. Insufficient space disrupts normal patterns of lying, especially synchrony of lying. Lack of space also increases antagonistic interactions between cows and may result in dominant cows displacing more subordinate cows if there is not enough space for all cows to lie down at the same time (Fregonesi & Leaver, 2002). The welfare of subordinate cows is likely to be compromised, as they are experiencing fear and distress as well as a lack of normal social interactions.

Fregonesi & Leaver (2001) found that cows housed in strawyards have an increased incidence of mastitis. It is of concern that these findings be considered by future researchers to minimise the chance of increased mastitis occurring again. Cows with mastitis do not have freedom from pain, discomfort or distress. Cows housed in the concrete yard, the laneway or small paddock compromised their grazing time by showing increased lying behaviour at the expense of grazing, resulting in weight loss (Fisher et al., 2003). As a result of this research, future studies should demonstrate awareness of this possibility and ensure that dairy cows are fed sufficiently to prevent weight loss.

Conclusion

These research papers have investigated the effects of different housing environments on behaviour, performance and health, and more specifically, the effect of housing on lying behaviour. Lying behaviour is an indicator of animal welfare and as such, these studies strongly suggest that housing in strawyards rather than cubicles, provides a more comfortable and socially interactive environment that satisfies conditions of a more positive animal experience.

References

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