

Behaviour of Dairy Cows, Useful Indicator in Assessing Animal Welfare

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Abstract

The purpose of this research was to establish the manner in which the flooring type may influence the welfare levels in dairy cows by assessment of laminitis incidence and animals' behaviour. 42 dairy cows were grouped based on the shelter floor surface: concrete with straw bedding, asphalted concrete with straw bedding and concrete plus shavings. The behaviour was assessed through direct observation and laminitis incidence was established by numerical assessment of locomotion prior or following milking.

The results have indicated an increase of laminitis incidence by 15-25 % in B and C lot and was absent in A lot. The large number of diseases was recorded on concrete floors with shavings bedding (53%). The behavioural displays of the cows suffering from laminitis were different from the healthy ones, as their resting behaviour outside the stalls was more prevalent (17.6% compared to 8.8%) while the feeding behaviour was less present (10.1% compared to 14.7%). Likewise, the socializing behaviour was more active in these animals, compared to the healthy cows. **Keywords:** dairy cows, behaviour, welfare

1. Introduction

Special attention is paid today in commercial farms to the welfare of dairy cows raised in free stabulation systems, which give them the opportunity to express their natural behaviour – including the social one. [1, 2]

The welfare represents the way by means of which the production system caters for the physiological and behavioural needs of the animals as well as their health condition. The selection of welfare indicators and the assessment methods reflect the fundamentals of the approach to the welfare of farm animals. A physical activity frequently observed in dairy cows is the standing up and lying down behaviour. This can be assessed based on the time period and the manner of achievement, and associated to discomfort, especially in cows suffering from laminitis. Display of resting behaviours on other premises than their stalls may indicate the fact that they consider them uncomfortable. Flooring type may increase the

risk of lesions and injuries, and at the same time restricts certain behavioural displays. Laminitis cases are the manifestation of pain behaviour in dairy cows which negatively impacts the health and productivity of animals affected. [1, 5, 7, 10]. Good practices for cows with laminitis, should ensure an appropriate resting surface, sufficient and adequate fodder while they should not be separated from the rest of the animals, as it might negatively affect them. [3, 4, 9]

2. Materials and methods

The study was carried out during one year, in three dairy cow farms in the southern part of the country. 42 cows were monitored (Holstein) multiparous, and the animals were raised in free stabulation systems, consisting in shelters organised in two and four rows of stalls respectively.

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The area destined to animal movement was the same with the waste disposal one. The shelter facilities were identical. The cows were grouped based on the flooring area resting in: A lot, cows (n: 16) housed in stalls with concrete floor and straw bedding; B lot, cows (n: 14) housed in stalls with asphalted concrete floor and straw bedding and C lot, cows (n: 12) housed in stalls with concrete floor and shavings bedding.

Laminitis incidence was established prior to or following milking, while moving or standing still, by numerical evaluation of locomotion and scoring points from 1 (normal walk) to 5 (severe lameness) were assigned, with special emphasis on their walking stance. [8] The observations were carried out on a flat surface (walking lane), which was safe for animals to move on.

The behaviour was assessed by direct observation ruminating, feeding, resting and sleeping activities; body position (standing, lying/standing, and walking) for each animal over the course of 15 minutes once a week at different times during the first four weeks of the lactation period.

The data obtained was statistically processed using the t test in order to compare the three lots monitored in the study.

3. Results and discussion

The study was aimed at highlighting the effects of laminitis on social and individual behaviour in dairy cows.

The results showed the fact that laminitis incidence (Table 1) varied between 15-25 % in B and C lots, and was absent in A lot.

Table 1. Laminitis incidence from farm records

% of cows with laminitis		
A Lot	B Lot	C Lot
75	41	33
15	29	20
9	15	22
1	8	17
0	7	8

The severe lameness cases were recorded in the shelters where the flooring type in the movement area, although appropriate in terms of hygiene, generated a high incidence of the disease as a

result of increased humidity. This was due to the permanent malfunctioning of waste disposal system (B lot) and errors in floor construction (C lot) where the waste could not be completely ejected from.

The increased number of cases (Figure 1) was recorded on concrete floors with shavings bedding and amounted to 53%.

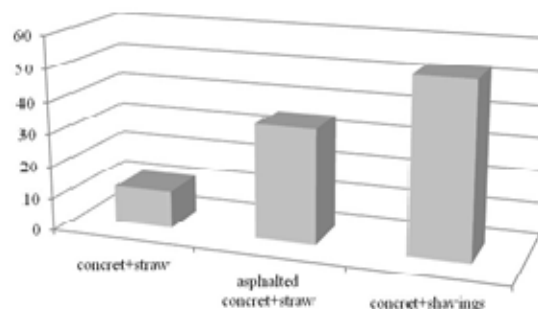


Figure 1. Incidence of laminitis on different flooring types

This percentage is the result of interdigital dermatitis caused by excessive humidity in the movement area as well as due to the shavings from the resting area which generated the interdigital lesions in a large number of cows. It is worthwhile mentioning that only one out of the three entities investigated had in place a plan to monitor health condition of the cloven hoofs.

The behavioural displays of cows diagnosed with laminitis (Table 2) were different from the healthy ones, with a more prevalent resting behaviour outside the stalls (17.6% compared to 8.8%) and feeding behaviour less displayed (10.1% compared to 14.7%). Likewise, these animals showed a more active socialising behaviour, compared to healthy cows.

Table 2. Percentage of some behaviour displayed in the monitored cows

Behavioural displays	Healthy cows	Laminitis cases
	Average %	Average %
Resting in stalls	28.4	41
Resting outside stalls	8.8	17.6
Feeding behaviour	14.7	10.1
Walking	16.8	15
Socialising behaviour	1.2/0.3	1.8/1.1
Abnormal behaviour	1.2	3.7
Others	28.9	10.8

The comfort of dairy cows means ensuring the conditions that would answer their needs and necessities. Permanent supply of fodder and water, a good microclimate, flooring type in the movement area and comfort in the resting area have a 25% influence in production performance. Placing cows in the movement area reduces the resting time and increases the incidence of mastitis and cloven hoof diseases. If cows are placed in a movement area that is dirty and humid, total resting time is cut short with negative consequences on the cloven hoof health condition. Inappropriate hygiene of the udder constitutes an increased risk factor for mastitis. Moreover there is the danger that the animals that are lying down would be injured by the moving ones.

The cows must be able to lie down without difficulty, using all their four legs. Discomfort due to the stall as such and particularly to the floor leads in most cases to decubital lesions or to the fact that animals will no longer lie down in their stalls but choose to do so on the walking lanes. Extended resting time is very important for the productivity of dairy cows because vascularization of udder in decubitus improves by 30%, while ruminating is 70% more intense. This means also that the cloven hoofs will be less exposed mechanically, chemically and from the infectious perspective, thus meeting one of the first conditions to have healthy, productive animals.

4. Conclusions

The results of the study have shown the effects of laminitis on the social and individual behaviour of dairy cows.

Laminitis cases are the manifestation of pain behaviour which negatively impacts the health and productivity of animals affected. Prevention of laminitis must be a priority for farmers, which implies a monitoring programme that has to be included in the farm management system.

Cows diagnosed with laminitis must be housed on an appropriate resting surface, have sufficient and adequate fodder and must not be separated from the rest of the animals as this might negatively impact them.

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