DAIRY COW WELFARE ASSESSMENT IN EXTENSIVE BREEDING SYSTEMS

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Summary

The present study's aim was the extensively reared dairy cow's welfare assessment, based on certain animal-linked parameters: body condition (BCS), body hygiene (cleanliness), lameness, skin injuries, vaginal discharge, fur condition, general condition, and flight distance, respectively. The study was ruled in 32 small herds (3 – 15 cows) in Bistrita-Nasaud County. In the months of March and April 2008, 242 dairy cows kept in tie-stall system were assessed, using several indicators determined through specific methods. Within the assessed 242 cows: 117 (48.35%) had BCS between 1.5 and 2, considered as thin cows; 19 (7.85%) presented skin lesions on various body regions; 35 (14.46%) had vaginal discharge; 82 (33.89%) had dull hair on their back; 12 (4.96%) were moderately lame; 37 (15.29%) showed fear at the observer’s approach. The proportion of 3 and 4 scores (on a five point scale) was 8% in the udder, 10% in the lower legs, and 17% in the region of the flank and upper legs, respectively. The general condition was good for all the assessed cows. The obtained results showed minimal deviations of the indicators used in dairy cow welfare assessment in extensive breeding systems, except BCS, indicating significant deflections from normality, with negative implications on dairy cows' health and welfare. The welfare degree of investigated cows is below expectations regarding extensive breeding conditions.

Key words: dairy cows, extensive systems, welfare assessment

The dairy cow’s welfare represents a permanent concern in majority of the countries due to its impact on animal health and production and on public health, as well. Because of dairy cows’ welfare becoming more and more integrant part of milk quality, its monitoring represents an additional guarantee for the consumers that the bought products originate from healthy, well-kept animals, housed and raised in conformity with the guidelines of good practice in farming (4). From the economic point of view, animal welfare assessment is important, identifying the shortcomings as a first step and allowing their remediation in the second step. Farm animals' welfare is provided mainly through adequate housing systems, in conformity with the animal needs regarding health and behavioral patterns but also by proper practices of breeding and rearing (2, 13). The cows’ welfare assessment can be done based on several indicators (behavioral, physiological, psychopathological parameters or using the productive performance) (3, 4),
indicator systems (injuries, diseases, behavior, production, housing conditions etc.)
(2, 14, 19, 20) or by numerical evaluation systems (TGI 35, TGI 200) (1).

This study's objective was the extensively breed dairy cow's welfare assessment, based on animal-linked indicators.

Materials and methods

The study was ruled in 32 small farms (3 -15 cows) in Bistrita-Nasaud county in the period of March – April 2008. The welfare was assessed based on several animal-linked parameters: body condition (BCS), body cleanliness, lameness, skin lesions, vaginal discharges, fur condition, general condition, flight distance. We evaluated 242 dairy cows housed in tie-stall system.

Lameness was assessed based on the scoring system elaborated by Sprecher et al. (15). The body condition score (BCS) was evaluated in conformity with the scoring system of Edmunson et al. (6) modified after Ferguson et al. (7) and Thomsen and Baadsgaard (16). It was considered a fat cow the one with BCS>=4, normal body condition with 2.25<=BCS<=3.75, a thin cow 1.5<=BCS<=2 and emaciated cow with BCS<=1.25, respectively.

The skin lesions in any body zone were appreciated through the method proposed by Leeb et al. (11). The vaginal discharges were appreciated only being present or absent. The fur condition was assessed based on the aspect of the hair of the dorsal region of the cows' back: shiny hair; dull hair with little dust on the back; very dull hair with much dust on the back – through the method proposed by Thomsen and Baadsgaard (16). For the appreciation of cows’ body hygiene we used the scoring system elaborated by Cook et al (5). The general condition was established using the method proposed by Thomsen and Baadsgaard (16) as unaltered, slightly modified or severely modified. Flight distance was appreciated through observation.

Results and discussions

The obtained results after the evaluation of the 242 dairy cows are presented in Figures 1 and 2.

The figure 1 shows that 117 cows i.e. 48.35% had a BCS between 1.5 – 2 cows considered as thin. Skin lesions in different body regions were recorded in 19 cows representing 7.85%, vaginal discharges were observed in 35 cows, i.e. in 14, 46% of the evaluated cows. The skin condition was modified in 82 cows, representing 33.89% from the total. Referring to lameness, 12 cows, i.e. 4.96% were recorded as moderately lame. Only 37 cows, meaning 15.29% showed fear at the approach of the examiner. The general condition was good in all the assessed cows.
Fig. 1. Distribution of assessed indicators in the 242 dairy cows, except body hygiene scores.

The percentage of the 3+4 scores in the three body regions assessed for the 242 cows is distributed as follows: flank and upper legs 17%, lower legs 10% and udder 8%. These results are presented in Figure 2.

Fig. 2. Distribution of 3 and 4 hygiene scores in different body zones of the assessed dairy cows.
We determined that the greatest and more frequent deviation from normality was within BCS, 117 cows of 242 (48.35%) were thin. The explanation could be in the insufficient and improper forage in this period of the year. Thin cows often fail showing clinical estrus or became unfertile (prolonged post-partum anoestrus) at least until they begin to regain weight or maintain body weight. In these animals’ alimentation care must be taken to maintain their productions and increase body reserves in the same time (6, 7).

The scoring system for BCS establishment used in this study was the one modified by Thomsen and Baadsgaard (16), because it is considered that only extreme deviations from the ideal body condition are relevant for the health and welfare of the cow (13, 20) and because of the inconvenient that scoring with the original system needs double time for the assessment.

Recording body condition score is a non-invasive assessment method assigning the fattened or debilitated dairy cows, using a five point scale, form 1 to 5. Body condition affects productivity, reproduction, health and longevity of dairy cows. A BCS too low or too increased can indicate nutritional deficiencies, health problems or farm level management difficulties (19). Body condition scoring at regulate time intervals in lactating cows and in dry ones as well, provides an excellent tool, helping a more efficient management of the herd and reducing the incidence of metabolic disorders at calving.

The next indicator modified relative to normality was the fur condition (82 cows presented dull hair with dust on the back). The aim of this parameter was to appreciate if the cow is able or not to maintain her skin clean (2, 16). The absence of self-grooming has the meaning of illness, poor general condition, inability of certain movements. Our study’s result could be facilitated by the tie-stall housing, the majority of tie-stall systems were improper, limiting the movement possibilities of the animals.

Vaginal discharges were present in 35 cows. The relevance of this indicator is lower, because it does not consider the cause or the aspect of these discharges which can be physiologically normal (e.g. vaginal discharges in the estrus period). In addition, their presence could be omitted in case of intermittent discharges, vanishing at some movements of the cow (16).

Skin lesions had a reduced proportion in our study, probable due to the simplicity (rusticity) of the cattle-shelters, sparing equipments and straw bedding used. The injuries and swellings of the skin reflect the environment’s impact upon the animal’s body (11). These lesions can be caused by the contact with various housing elements: rough flooring surfaces, parts of the tie-stall system, watering and feeding troughs.

Body hygiene was appreciated through the percentage of cows with 3 and 4 scores (on a five point scale) in three body zones: lower legs, upper legs and flank and udder. The obtained results indicated a medium level of animal cleanliness. Body hygiene assessment can give certain information about cow comfort and about the stockmen’s attitude and attention regarding the animals. In
dairy cows the fur dirtying with manure, soil, and mud can reduce the thermoregulatory properties of the skin, can decrease its protective capacity against microorganisms and can cause skin infections (20).

Regarding lameness, it had a reduced proportion, only 12 cows of 242 (4.96%) showed moderate lameness. This result is surprisingly low comparing with the results of other studies. Thus, several authors showed that lack of exercise and pasture lead to increasing feet-problems (8, 10, 13). Lameness represents a major welfare problem in dairy cows, inducing pain and long-term discomfort. There are many causal factors: unbalanced nutrition, improper flooring quality, social behavior etc.

In the majority of investigated farms the animal – human relationship could be considered as good, taking into account that only 37 in the assessed 242 cows showed fear at the approach of the examiner. Flight distance is reckoned as an indicator of the stockmanship quality (9, 18). It was defined as the distance measured between the observer and the animal at the point at the animal moves laterally, forward or draws back when the observer approaches with one step per second (18). It was stated that the nature of the animal-stockman relationship influences the behavior, milk production and welfare of dairy cows (3, 17). Hemsworth et al. (9) established a correlation between the cattle-person’s attitude and the dairy cow’s fear and milk production, indicating a possible way to decrease the fear and increase the productivity through revision of the stockperson’s attitude and behavior. In extensive breeding systems for dairy cows stockmanship is better, comparative to intensive breeding because of the smaller number of animals and due to their frequent contact with humans at feeding, watering, milking, cleaning the shelter, all this processes being done by manpower (12).

Conclusions

The obtained results showed minor deviations from normality of the indicators used in dairy cow welfare assessment in extensive breeding, except BCS presenting important divergence from normal condition, with negative impact upon dairy cows’ health and welfare. The assessed cows’ welfare is poorer than expectances relative to welfare level in extensive breeding systems. It is without any doubt that for a correct appraisal of welfare one must take account of other indicators as well, such as behavioral, physiological, psychopathological, productive parameters and housing conditions.
References


