

## THE MAIN WELFARE ISSUES OF DAIRY COWS IN SMALL FARMS FROM ROMANIA

### PRINCIPALELE PROBLEME DE BUNĂSTARE ALE VACILOR DE LAPTE ÎN FERME MICI DIN ROMÂNIA

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#### ABSTRACT | REZUMAT

This study aimed to highlight major welfare problems in dairy cows kept in small farms in Romania. One thousand eighty dairy cows housed in tie-stalls (10-25 cows/farm) were evaluated based on parameters regarding the cows' health (body condition score, fur condition, body cleanliness, skin lesions, and lameness), behaviour (flight distance), and management (watering). The parameter scores for each cow were summed and the animals were classified in categories according to their individual scores. The "acceptable" category had the highest number of cows, followed by the "proper" category, and the "unacceptable" and "excellent" categories had the fewest animals. Considering the welfare parameters assessed, more than half (693, 64.17%) of the cows were thin; 411 (38.06%) had dull hair on their back; 181 (16.76%) showed skin lesions in different body zones; 118 (10.93%) were moderately lame, 48 (4.44%) were lame, and 36 (3.33%) were severely lame; 707 (65.46%) were dirty and 198 (18.33%) showed fear at the observer's approach. The cows were watered either once a day (346 cows) or twice daily (734 cows). Thus, the major welfare problems in the assessed small dairy farms are inappropriate feeding and watering and also poor body hygiene of the cows. Due to the inappropriate fulfilment of the animals' basic needs, these problems can lead to a complex impairment of their overall health and welfare. The only way to avoid such an effect lies in the farmers' understanding and action to urgently and constantly address these problems.

**Keywords:** body cleanliness, lameness, skin lesions, watering

Scopul acestui studiu a fost să evidențieze problemele majore de bunăstare ale vacilor cu lapte din ferme mici din România. O mie optzeci de vaci întreținute în ferme mici (10-25 vaci/fermă), în stabulație legată, s-au evaluat pe baza parametrilor de sănătate (scorul condiției corporale, condiția robei, igiena corporală, leziunile pielii și șchiopătura), comportament (distanța de evitare) și management (adăpare). Scorurile parametrilor s-au însumat pentru fiecare vacă și animalele au fost clasificate în categorii pe baza acestor scoruri individuale. Cele mai multe vaci s-au încadrat în categoria "acceptabil", urmată de categoria "corespunzător", iar categoriile "neacceptabil" și "excelent" au avut cele mai puține animale. Conform parametrilor evaluați, peste jumătate (693, 64.17%) din vaci erau slabe; 411 (38.06%) aveau părul mat pe spate; 181 (16.76%) au prezentat leziuni ale pielii în diferite regiuni corporale; 118 (10.93%) erau moderat șchioape, 48 (4.44%) erau șchioape și 36 (3.33%) șchiopătau sever; 707 (65.46%) erau murdare și 198 (18.33%) manifestau frică la apropierea observatorului. Vacile erau adăpate fie o dată pe zi (346 vaci), fie de două ori pe zi (734 vaci). Rezultatele arată că problemele majore de bunăstare în fermele mici evaluate erau furajarea și adăparea necorespunzătoare precum și igiena corporală precară a vacilor. Din cauza neadresării nevoilor bazale ale animalelor, aceste probleme pot duce la deteriorarea complexă a sănătății și bunăstării lor. Singura modalitate de a evita astfel de efecte constă în înțelegerea acestor aspecte de către fermieri și implicarea lor activă în adresarea urgentă și continuă a acestor probleme.

**Cuvinte cheie:** igienă corporală, șchiopătură, leziunile pielii, adăpare

The welfare of dairy cattle represents an issue of increasing interest and concern for consumers worldwide. Although welfare is an attribute of the individual animal, whole groups of cattle kept on the same farm are impacted by the same conditions. To avoid and

prevent welfare problems, the breeding systems have to be adequate to the health and behavioural needs of the animals, and each farm has to implement good animal keeping and rearing practices (17). More than just having an informative role in the problems faced by each animal, analysing the results of individual welfare assessments allows the identification of farm-level issues. Once such an issue is solved, the welfare degree of several (or even all) animals can be increased simultaneously.

Besides the large, industrial farms, Romania still uses extensive breeding systems, in small farms with tie stalls for dairy cows. It is assumed that the welfare

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of these animals is better than that of those kept in intensive breeding systems. The natural and species-specific conditions are essential for the welfare of the animals and these can be provided only in small-scale family farms (21). However, some of our research showed that the housing and management of the small farms have several deficiencies with negative effects on the dairy cows' health and welfare (8, 16). Larger herds are associated with increased stock per labour unit, increased stocking density, and less (if any) access to pasture (5). Thus, increases in farm size can have positive effects in the economic and labour management sense but they create welfare risks for the animals (18). Moreover, concerning farm capacity, herd size is considered by numerous studies as an influencing factor for animal welfare issues (2, 15). Contrary to these, in a recent study Lindena and Hess (2022) (11) prove that herd size has little, if any, effect on farm-specific animal welfare levels. Another study concludes that the characteristics of the housing conditions and the quality of the management practices seem to have a more significant effect on animal welfare than the number of dairy cows per farm (5).

In the attempt to gain a better insight into how the cattle perceive their living conditions and how they cope with the challenges posed by their immediate environment, several welfare assessment protocols were devised, using different welfare indicators (9, 16, 20, 28, 29). Some of these provide quantifiable scores, while others produce qualitative results. Because of the unequal practical value of the different welfare parameters (some welfare problems have a more negative impact on the animal than others), the calculation of individual welfare scores and inclusion of the animals in welfare categories is not usual. Yet, this type of data processing is important, to allow the comparison between animals, farms, or repeated assessments on the same farm. (to investigate the changes in dynamics). Thus, with the provision that the individual welfare scores show the general welfare degree for statistical processing, without indicating the necessary intervention domains, this type of classification is justified.

The aim of this study was to highlight the major welfare problems of dairy cows in small Romanian farms, both to have a general classification of the dairy cows' welfare degree and to identify the areas where welfare-improving interventions are needed.

## MATERIALS AND METHODS

The study was conducted in 91 small farms (10-25 cows/farm) in Romania. The predominant breed was the Romanian Spotted Cattle (in 70 farms), followed by Holstein cattle (21 farms). The cows were housed in simple barns with tie-stalls, without endowments, mostly unsuitable from a hygienic point of view. Throughout the winter, the cows were kept inside the barns all the time, and in summer they were on the pasture during the day and housed for the night.

The cows' welfare was assessed based on several

animal-related indicators: body condition score (BCS), body cleanliness, lameness, skin lesions, fur condition, avoidance distance, and by one management indicator, the frequency of their access to water. A total of 1080 dairy cows were assessed, before the beginning of the grazing season (April-October). Each cow was evaluated by two experimented researchers. For the assessment of some parameters (lameness, avoidance distance), the cows were untied and moved outside the barn. The body condition score (BCS) was assigned according to the method devised by Thomsen et al. (23). Thus, a fat cow is one with  $BCS \geq 4$ ; a cow with normal body condition is one with  $2.25 \leq BCS \leq 3.75$ ; a thin cow is one with  $1.5 \leq BCS \leq 2$ , and an emaciated cow is one with  $BCS \leq 1.25$ .

The cows' body cleanliness was based on the observation of the corporal regions to record the presence (or absence) of manure soiling.

The skin lesions were assessed in all body areas (neck, shoulder and withers, knee, ribs, back/spine, tailbone, hipbone, point of hock, inside of the hock and stifle), using the method proposed by Leeb et al. (2004) (10). The presence and severity of lameness in the cows were evaluated based on the system elaborated by Sprecher et al. (1997) (22). To score the fur condition, the aspect of the hair on the dorsal region of the cow's back was verified according to the method proposed by Thomsen et al. (2007) (23): shiny hair or dull hair with little dust on the back or very dull hair with much dust on the back. The avoidance distance was recorded by measuring the distance (in meters) to how close the assessor can approach the cow before this withdraws, using the method described by Popescu et al. (2010) (16).

**Table 1**  
**The welfare parameters assessed and their assigned scores**

| Parameter                    | Score | Explanation                               |
|------------------------------|-------|-------------------------------------------|
| Body condition score         | 0     | Fat or emaciated                          |
|                              | 1     | Thin                                      |
|                              | 2     | Normal                                    |
| Skin condition               | 0     | Dull skin, dust on the back of the cow    |
|                              | 1     | Shiny skin, little or no dust on the back |
| Body cleanliness             | 0     | Dirty                                     |
|                              | 1     | Clean                                     |
| Skin lesions                 | 0     | Lesions                                   |
|                              | 1     | No lesions                                |
| Lameness                     | 0     | Severely lame                             |
|                              | 1     | Lame                                      |
|                              | 2     | Normal                                    |
| Human-animal relationship    | 0     | Fear of the assessor's approach           |
|                              | 1     | No fear of the assessor's approach        |
| Frequency of access to water | 0     | Once a day                                |
|                              | 1     | Twice a day                               |
|                              | 2     | Unlimited access                          |

Some farm management data were provided by the farmer. Each welfare parameter assessed was scored, assigning the lowest score (0) to the worst result for the given parameter and the highest score for the best result (Table 1).

The results of the assessed welfare parameters were expressed as percentages. The parameter scores were summed to obtain an individual welfare score for each cow, which ranged from 0 to 10. According to their individual welfare scores, the cows were included in four welfare categories: unacceptable (scores from 0 to 2), acceptable (scores from 3 to 5), proper (scores from 6 to 8) and excellent (scores from 9 to 10).

## RESULTS AND DISCUSSIONS

The results obtained for the animal-based parameters through the welfare assessment of the 1080 cows were recorded in tabular form (Table 2), and the prevalence of each parameter score was calculated.

Among the animal-based parameters, the most deviated from normality was the body condition score (BCS), with more than half of the assessed cows being evaluated as thin ( $1.5 \leq \text{BCS} \leq 2$ ). The high percentage of thin animals may be due to insufficient feeding during the cold season (when the animals were not grazing) or to improper feed quality. The nutrition of dairy cows should provide energy for their milk production and, at the same time, support the maintenance of their weight. After periods of energy deficit, when the weight loss is more significant than the decrease in

their production, feeding not only has to fuel maintenance but to ensure body weight gain, back to a normal BCS. Thus, the periodic evaluation of the BCS is a valuable tool in monitoring the dairy cows' nutritional management (19), enabling the farmer to make timely adjustments. Moreover, the BCS is an important part of most welfare assessment protocols as a valuable indicator of the dairy cows' welfare (28). The fat or thin state of cows can be a sign of nutritional and metabolic disorders, other health problems or it can indicate poor management at the farm level (29).

Another indicator showing changes was the skin condition. The assessment of this parameter was done to determine if the cow is able or not to keep her skin clean (23). The absence of self-grooming can indicate illness, poor general condition, or inability to perform certain movements. In this study, the result could be influenced by the length of the tethering chains, limiting the movement possibilities of the animals.

A high percentage of cows showed manure soiling of their bodies. Similar results were reported by other studies as well (8, 14). The cows' body can become dirty due to the decubital resting in the manure deposits in the stalls (4), in poorly maintained stalls having manure on the division elements, or by spillage from the dirty tails moved around the animals' hind quarters (30). Thus, the body hygiene assessment can provide more information about the cows' comfort and the care of the stockperson for the animal.

The skin lesions had a lower percentage than that reported by other researchers (23), but comparable to

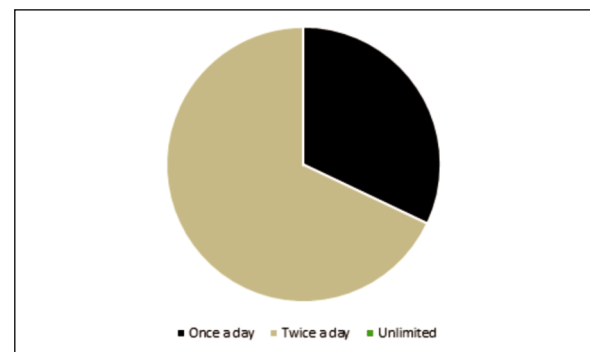
**Table 2**  
**Results of the animal-based parameters assessed in 1080 dairy cows**

| Indicator                                               | Number of cows | Percentage (%) |
|---------------------------------------------------------|----------------|----------------|
| <b>Body condition score (BCS)</b>                       |                |                |
| Fat: $\text{BCS} \geq 4$ .                              | 9              | 0.83           |
| Normal: $2.25 \leq \text{BCS} \leq 3.75$                | 378            | 35.0           |
| Thin: $1.5 \leq \text{BCS} \leq 2$ .                    | 693            | 64.17          |
| Emaciated: $\text{BCS} \leq 1.25$                       | 0              | 0              |
| <b>Skin condition</b>                                   |                |                |
| Shiny skin, little or no dust on the back               | 669            | 61.94          |
| Dull skin, dust on the back of the cow                  | 411            | 38.06          |
| <b>Body cleanliness</b>                                 |                |                |
| Clean                                                   | 373            | 34.54          |
| Dirty                                                   | 707            | 65.46          |
| <b>Skin lesions (only the most severe lesion found)</b> |                |                |
| No lesions                                              | 899            | 83.24          |
| Lesions                                                 | 181            | 16.76          |
| <b>Lameness</b>                                         |                |                |
| Normal                                                  | 878            | 81.30          |
| Mildly lame                                             | 0              | 0              |
| Moderately lame                                         | 118            | 10.93          |
| Lame                                                    | 48             | 4.44           |
| Severely lame                                           | 36             | 3.33           |
| <b>Human-animal relationship</b>                        |                |                |
| Fear of the assessor's approach                         | 198            | 18.33          |
| No fear of the assessor's approach                      | 882            | 81.67          |

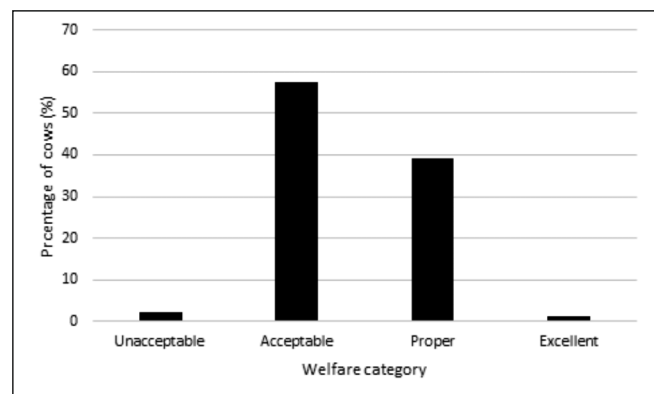
the results of other studies conducted in Romania (14, 16). This finding is probably due to the characteristics of the housing and management. The skin lesions reflect the impact of the nearest environment on the animals' bodies (10). In the studied farms, the barns were simple, with only sparse equipment and divisions, lowering the risks of hitting. The straw bedding used offered padding while the cows were resting, lying down, and rising up. In small farms, the productive process is less expeditious, and the cows are less rushed than in a large farm. In several farms the milking was manual, in the stalls, thus the cows were not led to a milking parlour. Part of the skin lesions found (hair loss, small wounds), especially in the neck region, were possibly caused by the tethering chains. The skin lesions, generally, not only cause pain but can also indicate welfare and production problems. Therefore, the lesser their prevalence is, the better for the cows' welfare. Surprisingly, a small number of cows showed lameness of varying degrees of severity. We expected a higher prevalence of lameness because the cows' access to free movement was restricted during the whole cold season. Several authors showed that lack of exercise and pasturing lead to increasing foot problems (7, 17). Our finding is in line with those reported in other studies on small farms (8, 16). Lameness is one of the most severe and common problems encountered in commercial dairy farms around the world, with a strong negative impact on animal welfare and production (29). It lowers the milk production (29), progressively worsens the animals' body condition, and ultimately it shortens dramatically their productive lifespan (1).

In our study, a low percentage of cows showed fear at the approach of the assessor. This result expresses a good human-animal relationship in the majority of investigated farms. Similar findings were reported by Popescu et al. (2010) (16) in a previous study. The stockmanship is more friendly and considerate in extensive breeding systems for dairy cows than in intensive breeding. This is due to a smaller number of animals, which have regular contact (several times a day) with the workers. The human-cow interactions occur during feeding, watering, milking, cleaning the barn, and cleaning the animals, because all these works are performed manually. The animal's reaction to humans is assessed by a well-established method, the measurement of the flight distance (6, 25). The distance at which the animal withdraws shows the extent of that animal's "safety zone". The more comfortable and safer the animal feels around people, based on previous interaction experiences, the more indicative the test is for qualitatively and quantitatively proper animal handling by the workers. Yet, various elements can affect the outcomes of the assessment besides the experiences and disposition of the animal (lameness, the social environment of the testing, if the assessor is known or unknown for the animal, and even individual mental traits of the animal). If the assessor can approach within a close distance without the withdrawal of the cow, it means that the animal is not fearful. As a

consequence, all daily procedures involving humans around will be less stressful for the animals. It has been established that the behaviour, milk production, and welfare of dairy cows are affected by the nature of the animal-stockman interactions (6, 25). Hemsworth et al. (2003) (25) demonstrate a correlation between workers' behaviour and a reduction in the animals' fear of humans and milk yield. The study suggests that the stockpersons' behaviour determines in the animal the level of fear of humans, which, in turn, can influence milk production. Most cows in the studied farms (67.96%, 734 cows) had twice-a-day access to water and a lower percentage (32.04%, 346 cows) only once a day (Fig. 1).



**Fig. 1.** The frequency of access to drinking water in the assessed cows



**Fig. 2.** The distribution of the assessed dairy cows in the four welfare categories according to their individual welfare scores

Restricting the water intake of cows by 50% results in 74% lower milk yield and more aggressive behaviour (12). Unlimited access of the cows to drinking water in adequate quantity is important for their health and production (12, 13, 28). Despite the attention paid to other nutrients, the quantity and quality of water are often overlooked by farmers. Prolonged thirst has a more severe impact on the animals' welfare than prolonged hunger, especially in milking cows, whose organism uses high quantities of water in order to produce milk. Cardot et al. (2008) (3) showed that lactating cows drink on average more than three times their mean daily milk yield, and other research

chers reported that each kilogramme of milk produced requires from 1.24 to 1.30 litres of drinking water (13). Based on the individual welfare scores, the highest number of cows was in the "acceptable" welfare category, followed by the "proper" category. The "unacceptable" welfare category included only 2.22% of the cows, and even less (1.11%) were classified as being in the "excellent" category (Fig. 2).

This kind of classification is very useful to provide a quick view of the overall situation of a farm or of the whole or a segment of population assessed. The proportion of the cows in a given category is indicative for the improvement measures needed and for the degree of intervention urgency.

### CONCLUSIONS

The major welfare problems of dairy cows in Romanian small farms are inappropriate feeding and watering and also the poor body hygiene of many cows. Taking into consideration that these problems impair the basic needs of the assessed animals, the situation can be considered severe and needs urgent improvement. The inappropriate fulfilment of vital necessities (such as eating and drinking according to their physiological and productive energetic demands) can cause overall health and welfare impairment through several interconnected mechanisms. Besides the direct negative impact, the more subtle but equally important body functions of the cows can suffer, such as their immune system. Thus, the understanding and active involvement of the farmers is paramount for these issues to be urgently and continuously addressed.

Despite the low percentage of cows displaying fear of humans, which was considered a positive effect of frequent handling of tethered cows, the tied housing system was concluded to harm the welfare of dairy cows. The improvement of this parameter (provision of regular access to free movement) could be more difficult to achieve due to lack of space and workforce in small farm settings, but it would bring considerable benefits for the health and welfare of dairy cattle.

However, the positive results of this study (such as the low prevalence of lameness in the assessed cows and the good human-animal relationship) are important, as these can build the basis of a positive dialogue with the farmers to increase their understanding and willingness to address the problems found for the better welfare of their animals.

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