

## WELFARE ASSESSMENT IN DAIRY COWS IN A FARM FROM PRAHOVA COUNTY

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### **Abstract**

*Assuring a good animal welfare level is not only a mean of increasing livestock production, but also a moral duty of human society. As a major concern, of general interest, animal welfare is covered by numerous governmental or nongovernmental organizations and bodies: Food and Agriculture Organization of the United Nation, World Trade Organization, European Council, European Union, Intergroup on the Welfare and Conservation of Animals, Eurogroup for Animals, World Organization for Animal Health, Codex Alimentarius, World Veterinary Association, World Society for the Protection of Animals.*

*The present paper aims to assess the welfare level in a farm from Prahova County, respectively in 2 houses for dairy cows with capacities of 520 and 480 animals, reared in collective pens. Because our country hasn't an official welfare assessment system, we used an integrative numerical system from Austria organic farming: Animal Needs Index 35. This system consists in the study of welfare indicators included in 5 areas of influence: locomotion, social interaction, flooring, light and air, stockmanship, for each parameter points being awarded. The sum of all scores gives the overall ANI score. The research was based on metric measurements, data from health records, body hygiene score, gait score or were done by using specific equipment (Dräger MiniWarn portable gas analyzer, LM8010 multifunction device, SL4012 sound level meter, Hill catathermometer).*

*The overall ANI score was 24 for the first house and 23.5 points for the second - with a weighted average of 23.76 points. As critical issues stand out: lack of outdoor access, draughts' high velocity, poor hygiene of pens, feeding and drinking areas, as well as poor body hygiene of animals (soiled animals).*

*Based on obtained scores, the welfare of dairy cows in the farm can be rated as average.*

**Key words:** dairy cows, score, welfare.

### **INTRODUCTION**

Donald Broom defines the welfare of an animal as "its physical and psychological state as regards its attempts to cope with its environment". According to this definition, animal welfare could largely vary from very poor to very good and, most important, can be measured (Broom, 1996).

Assuring a good animal welfare level is not only a mean of increasing livestock production, but also a moral duty of human society. As a major

concern, of general interest, animal welfare is covered by numerous governmental or nongovernmental organizations and bodies: Food and Agriculture Organization of the United Nation, World Trade Organization, European Council, European Union, Intergroup on the Welfare and Conservation of Animals, Eurogroup for Animals, World Organization for Animal Health, Codex Alimentarius, World Veterinary Association, World Society for the Protection of Animals (Teusdea, 2005).

## **MATERIALS AND METHODS**

The present paper aims to assess the welfare level in a farm from Prahova County, respectively in 2 houses for dairy cows with capacities of 520 and respectively 480 animals.

Cows are reared in open fronted houses with 200 m length, 50 m width and pitched roofs. The lighting and natural ventilation are assured by 2 openings in the longitudinal walls limited by tarpaulins of equal length with the walls and adjustable height (60 -150 cm), as well as by a shed of 40 cm width. For completing the natural light, it was used artificial lighting: 12 light bulbs of 450 W and 12 of 250 W.

The houses' inner space division consists in 4 collective pens of 97,5 m/21,5 m with deep litter bedding, each pen for a group of maximum 130 cows. The milk is collected in a dairy hall linked with both houses by covered passage ways.

Due to the fact that our country hasn't an official welfare assessment system, we used an integrative numerical system from Austria organic farming: Animal Needs Index 35 (Bartussek et al., 2000). This system consists in the study of welfare indicators included in 5 areas of influence: locomotion, social interaction, flooring, light and air, stockmanship, for each indicator points being awarded. The sum of all scores gives the overall ANI score.

The research was based on metric measurements, data from health records, body hygiene score, gait score and specific equipment (Dräger MiniWarn portable gas analyzer, LM8010 multifunction device, SL4012 sound level meter, Hill katathermometer).

## **RESULTS AND DISCUSSIONS**

For the first area of influence – locomotion – there were assessed 2 indicators: floor area (space allowance) and resting area comfort (lying down, lying and rising possibilities) respectively.

The indicators regarding outdoor access could not be taken into account, because the animals did not have access to paddocks or pasture.

Regarding *space allowance* (obtained by dividing the total surface of the four collective pens by the value of animal weight unit (500 Kg), the results were 11.16 sqm for the first house and 12.09 sqm for the second, much higher than the reference optimum value for dehorned dairy cows which is 8 sqm. Therefore, for this indicator it was awarded a maximum score of 3

points.

The *resting area* is comfortable – the surface is large, the floor is covered with deep bedding (figure 1) and the pen walls didn't restrict any animal behavior (there were not noticed abnormal lying down/rising behaviors, repetitive head swinging etc.), so for this indicator the score was also the maximum one: 3 points.

The general score for the first area of influence was 6 points.



Figure 1. Different aspects from one of the studied houses for dairy cows  
Left: deep bedding area, Right: walking, feeding and manure collection area

For the second area of influence – social interactions – there were assessed 2 indicators: space allowance and herd structure.

Similar to the indicator from the first area of influence, *space allowance* received a maximum score of 3 points.

Regarding *herd structure*, it was practiced stock division in production groups and not in family herds, the last being known for better promoting animal behavioral manifestations. Therefore, it was awarded 1 point for this indicator.

The general score for social interaction was 4 points.

For the third area of interest – flooring – the following four indicators were assessed:

*Softness of the lying area*: because it was used straw bedding with more than 60 mm thickness and the floor was continuous, with first layer of concrete, this indicator was scored with 2.5 points.

*Cleanliness of the lying area*: it was rated as medium and scored with 0.5 points.

*Slipperiness in the lying area*: the floor had a proper grip, preventing cows' sliding or falling, the given score being 1 point.

*The type and characteristics of activity areas* (passage ways, feeding and drinking areas, manure collecting areas): The activity areas are quite clean, with low risks of slipping; the incidence of lameness is also reduced. The score was 0.5 points.

The general score for flooring was 4.5 points.

For the fourth area of influence – light and air – there were assessed four indicators: light, air quality, draughts in lying area and noise.

Because the houses were open, the *light* (both the intensity and uniformity) was optimum and was awarded with 2 points (percentage of transparent openings relative to floor area being 16% and artificial light intensity of 1.68 W/sqm). The light intensity, measured with LM 8010 light sensor, varies between 167 and 368 Lx, the coefficient of light uniformity having the value of 0.454 (higher than 0.3, the reference minimum value for an even light).

*Air quality* was very good, the ammonia level reaching maximum 1 ppm in the first house and 2 ppm in the second. However, it can be noticed that the temperatures often recorded values outside the thermal comfort interval for cows (10-14 °C). The score was 1.5 points.

Regarding *draughts in the resting area*, the scores were 1 point for the first house (which had a better wind protection) and 0.5 points in house 2. For the second house, the maximum air draught velocity was 1.15 m/s measured at 1 meter distance from longitudinal wall and 0.3 m/s in the center of the house (reference values being 0.5 m/s).

*Noise* was awarded with 0.5 points, corresponding to some noise. In fact, the noise level is reduced, but it becomes much higher (even 86 dB) when manure are collected by the tractor blade.

The general scores for light and air were 4.5 points for the first house and 4 points for the second.

In the last area of influence – stockmanship – all indicators could be approached.

*The hygiene of resting and activities areas* was rated as insufficient, so the given score was 0 points.

*The technical condition of equipment* was good, being awarded with 1 point.

*The condition of integument* was rated as medium and scored with 0.5 points. There were observed minor lesions in 12% from total number of cows.

*The cleanliness of animals* was poor and had received 0 points. For an increased objectivity, it was used body hygiene score (Cook and Reinemann 2007).

*Condition of hooves* was rated as good and received 1 point. Lameness affected 9% of the stock, with mild symptoms. There was applied gait score in a batch of 50 cows, resulting 2 animals with 2 points, 1 animal with 3 points, the others being scored with 1 – normal (Cook, 2005).

*The technopaties incidence* (mastitis, osteoarticular disorders, abnormal behaviors) was very low (1%), this indicator being scored with 1.5 points.

On the basis of farm records, the *health status* was rated as good and received 1 point. The bronchopneumonia had an incidence of 1-2 cases/year, placental retention an incidence of 2-3%, endometritis of 10%, abomasal displacement of 0.1-0.5%.

The general score for stockmanship was 5 points.

The general scores obtained for the five areas of influences in the two studied houses for dairy cows are shown in figure 2.

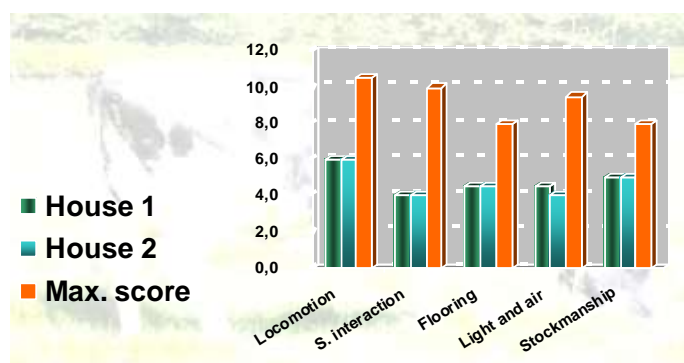


Figure 2. General scores for ANI 35 areas of influences in the studied houses of dairy cows

The overall ANI score was 24 for the first house and 23.5 for the second, with a weighted average of 23.76 points.

## CONCLUSIONS

Based on obtained scores, the welfare of dairy cows in the farm can be rated as average.

As critical issues, stand out the lack of outdoor access, the draughts' high velocity, the poor hygiene of pens, feeding and drinking areas, as well as a poor body hygiene (soiled animals).

## REFERENCES

- Bartussek H., Leeb Ch., Held S., 2000. Animal needs index for cattle (ANI 35L/2000 - cattle). Federal Research Institute for Agriculture in Alpine Regions BAL Gumpenstein, Austria
- Broom D. M., 1996. Animal welfare defined in term of attempts to cope with the environment. *Acta Agric. Scand, Sect. A, Animal Sci. Supplementum*, no. 27/1996: 22-28
- Cook N.B., Reinemann D.J., 2007. A toolbox for assessing cow, udder and teat hygiene, In: *Proc. Natl. Mastitis Counc. Annu. Mtg. Natl. Mastitis Counc. Inc.*, Verona, WI, 31-43
- Teusdea V., 2005. *Bunastarea si protectia animalelor*, Editura Omega Print, Bucuresti
- \*\*\* [vetmed.wisc.edu/dms/fapm/fapmtools/6lame/New5point\\_locomotionscoreguide.pdf](http://vetmed.wisc.edu/dms/fapm/fapmtools/6lame/New5point_locomotionscoreguide.pdf) (Cook, N.B., 2005)