

STUDY OF ANIMAL WELFARE STATUS IN DAIRY COW HERDS IN HUNGARY

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Abstract: Animal welfare is a hot topic among consumers, producers and researches nowadays. The major welfare problems of dairy cows are mastitis, lameness, and any conditions which lead to impaired reproduction, inability to express normal behaviour, emergency physiological responses or injury. This paper summarizes preliminary results of project taken in 27 Hungarian dairy farms evaluating general animal welfare. The most important areas for improving animals' wellbeing are related to facilities and comfort of resting. Findings include slippery floors, cows struggling laying and standing in cubicles. Other measures include hair loss, hocks, neck rail injuries and number of thin cows (Body Condition Score 1 and 2). Mouldy silage and low quality of other feedstuff was also found. In conclusion, preliminary results confirm strong demand for monitoring farms and discussions with managers and farmers about welfare measures needed to be taken on farms immediately.

Key words: dairy welfare, dairy welfare assessment protocol, welfare standard, multivariable modelling, herd health

Introduction

According to *von Keyserlingk et al.* (2009), there are 3 major concerns related to animal welfare: if the animal is functioning well, feeling well, and if the animal is able to live according to its nature. These arguments are not new, because producers have always been (at least they should be) concerned about the conditions of animals in their care. So far, animal welfare was understood as a lack of hunger, thirst, injuries and illness. Recently, welfare aspects are also focusing on discomfort, distress, fear, pain and normal behaviour, as a result of keeping animals in usually non animal-friendly environments (*Stull, et al.*, 2005).

Companies dealing with dairy products are interested in welfare of animals to give consumers demanded clear and trustworthy information. The attempt was already taken for establishing an European standard for welfare assessment systems in order to facilitate intra-European trade and marketing created by Welfare Quality Project (*Veissier and Evans, 2010*). There are claims that welfare of farm animals has a huge impact on market demands and there is still need for developing science-based on-farm systems to assess the animal welfare status (*Matthews and Wassmann, 2003*). Over the last three decades the number of publications about animal welfare and animal wellbeing has increased significantly. Such an output reflects the economic demand for that information globally.

There are many aspects which lead the science and the experience to the conclusions that welfare of dairy cows might be compromised (*Ostojic-Andrić et al., 2011; Hristov et al., 2011a; Hristov et al., 2011b*). The fact that cows are housed is already limiting factor for their natural needs which they can express on the pasture. Facilities created by humans are not always suitable for cows. Cows are given sometimes not enough resources they demand to produce as much milk as their potential allows. High standards of animal welfare have been and will continue to be important to the dairy industry. It is already proven that for lactating cows the reduction in milk yield is associated with various diseases (EFSA, 2009; *Kossaibat and Esslemont, 1997; Trevisi et al., 2006*). Immune system activation requires metabolic energy when cow is ill. That state results in reduced feed intake. Resources may be limited and may be diverted into immune function rather than milk production, growth, or reproduction.

Cattle are exposed to dirt, because of mud and faeces in the environment they are kept. *Phillips and Morris (2002)* reported that animals, particularly when introduced, are avoiding those areas if possible. Those conditions could be considered as compromising animal welfare. *Schukken et al. (1990)* concluded that hygiene of husbandry system is related to mastitis and digital dermatitis (*Hristov et al., 2011c*). There is also relation between cleanliness and gastrointestinal problems (*Rodriguez-Lainz et al., 1996*). The presence of mud and dirt may be irritant and causing discomfort. The cleanliness of animals demonstrates quality of environment and can be useful indicator of farm animals' welfare.

Materials and methods

The study was performed on 27 Holstein-Friesian dairy farms in Hungary. The selection was firstly created on a principle of searching for as different farms as possible. Chosen farms were farms different in: ownership (private and

cooperative), size (from 56 to 850 dairy cows), husbandry systems (free stall, straw yard), access to the pasture (yes, no), scraping system (automatic, tractor), age of buildings (modern, old ones), number of animals per water troughs (12-120), surface quality (1 – relatively dry, no holes and not slippery; 2 – wet or some holes or slippery; 3 – wet, some holes and slippery). Data collection was created according to already existed assessments (*Whay, et al., 2003*). The project, however, needed the protocol to be established again, as in Hungarian conditions some of the points of the protocol would simply not work (for example – access to the pasture – which is not so popular). Protocol covered animal health, behaviour, hygiene and feedstuff condition of all animals on the farm. Additionally, general production data, facilities, lameness treatment and stockman attitude is measured for dairy cows. Finally, the following characteristics were chosen: dirty flanks, udder, hind limbs with size of dirt splash or plaque more than the size of the palm of a hand. An average flight distance was measured by approaching the animal at a speed of one step per second and a step length of approximately 60 cm with the arm held overhand at an angle of approximately 45° from the body. Dull and obviously sick cows, hollow rumen, bloated rumen, fat animals, hair loss, non-hock injuries, hocks injuries, thin animals, neck rail injuries were noted if any of signs were easily visible. Rising was characterised as either unrestricted (1), mildly restricted (2) when they modified their rising behaviour to stand up comfortably, seriously restricted (3) when they took time to stand up and often hit fittings when rising and when they rose on to their forelimbs before their hind limbs (dog sitting). During the visits cows were assessed regarding their locomotion score and body condition score. Five-point scale locomotion score of dairy cattle was used. The system developed by *Sprecher et al. (1997)* has understandable objective descriptions of posture and gait for scoring. This also includes subdivisions between sound and clinically lame cows. Cows were provided relatively dry, free of obstacles, concrete surface. Cows which were found in the cubicles were given few minutes to recover after standing up, so impact of muscle cramp would not affect cows' locomotion. For evaluating body condition score 5-point scale condition score of dairy cattle published in (*Rodenburg, 2000*) was used. For measuring intra-observer variation notes were made at the beginning of the observation. Cows walking were assessed and results were recorded. Half of the cows were observed for the second time at the end of each visit and results were compared with the first observation. Number of cows observed twice ranged from 5 (during the first visit) up to 60 (during the last visit, if no cow left the farm). In average 83% repeatability of locomotion scores and 91% reputability in body condition scores were estimated. Full animal welfare assessment with checking every dairy cows' locomotion took around 6-7 hours for 500-600 heads herd.

Results and Discussion

Summary preliminary results of the general animal welfare measures taken are shown in Table 1. These findings are similar to those of *Grandin* (2010). On the other hand, this research will be significantly different to others. This research showed that in older animals more welfare problems occur. In the study 27,6% of older calves were found with dirty flanks, what emphasises the lack of proper bedding. Dull and obviously sick and hollow rumen of dry cows (3.9% and 9.7%, respectively) is just slightly different from those of milking cows. That means milking cows are in such a poor condition or dry cows are in such a good state. Heifers, what is natural, are more active and less trustful to humans what explains why flight zone of these animals is the biggest. On the other hand there is a doubt if heifers are in a good state before calving, because 8.7% of them had bloated rumen, 22.5% of them were with Body Condition Score 4 and 5 and 37.8% had dirty udders. Milking cows were found with most of the measures compromising animal welfare. Rising, both in straw yards and in free stalls gave an average of 1.8 (where 1- unrestricted; 2- mildly restricted; 3- seriously restricted). This illustrates that cubicles were not suitable for cows and straw yards which were poorly bedded. The next three conditions – hair loss, non-hock injuries and hocks lesions (16.7%, 20.9% and 22.3%, respectively) were also found only in milking cows and reflect poor cubicles' design. Similar results were found by *Potterton et al.* (2011), however, in that study moderate (25.6%) and severe (14.5%) hair loss was measured. The same authors found only 6.7% cows with moderate hocks and only 2.5% with severe hocks lesions. Those results correspond with *Lombard et al.* (2010) who estimated only 4.1% of cows in average with hocks lesions. However, study of *Rutherford et al.* (2008) highlighted 49.1% of hock lesions. In the current study 25.7% of cows were found with Body Condition Score 1+2 might manifest some energy imbalances. 41.8% of cows with dirty hind limbs are as an effect of lying in dirty areas which in fact were probably the only locations in a straw yard the cows were able to take place. In free stall barns that high percentage of dirty cows might be result of finding muck and manure in the alleys more comfortable than boxes. Unlikely to this study, *Lombard et al.* (2010) evaluated only 8.8% of cows being highly soiled. Lameness is linked to multivariable conditions ranging from 5.7% to 50.9% with an average of 27.9%. Occurrence of lameness was found to be similar to findings of *Haskell et al.* (2006), *Huxley et al.* (2004), and *Rutherford et al.* (2009) with 19.3%, 24%, and 39% of cows found clinically lame respectively. Neck rail injuries found in 61.7% of milking cows are related to wrong positioned feed rail and/or feeding trough.

Table 1. Summary of the general animal welfare measures taken

Welfare measure	Younger calves (0-70 days)	Older calves (70+ days)	Dry cows	Heifers	Milking cows
Dirty flanks (%)	11.6	27.6	18.3	22.6	26.6
Dull/obviously sick (%)	3.2	2.7	3.9	3.0	3.7
Hollow rumen (%)	5.6	5.4	9.7	6.2	9.2
Average flight distance (m)	0.7	0.8	0.9	1.0	0.8
Bloated rumen (%)	2.0	4.7	6.5	8.7	3.7
Fat animals (BCS 4+5) (%)	4.9	4.8	16.0	22.5	16.1
Dirty Udder (Underneath) (%)	9.0	30.5	28.8	37.8	25.5
Rising (1/2/3)	1.1	1.4	1.6	1.7	1.8
Hair loss (%)	1.3	1.8	9.5	5.4	16.7
Nonhock injuries (%)	0.9	1.1	8.6	4.7	20.9
Hocks lesions (%)	0.9	5.3	17.0	7.8	22.3
Thin animals (BCS 1+2) (%)	12.0	5.6	15.1	6.6	25.7
Lameness (%)	0.4	2.5	21.6	6.7	27.9
Dirty hindlimbs (%)	8.8	34.8	28.5	39.7	41.8
Neck rail injuries (%)	1.1	43.9	61.1	39.6	61.7

Conclusion

There is an immediate need to point out farmers the most important welfare problems on the farms. The points highlighted in the preliminary results confirm laying and resting conditions are compromised. Comfort is very important in cows' daily routine, because the animals need a time for relaxing, but that is highly limited. Hungarian dairy enterprises (particularly those in project) lack in good quality, modern barns. Most of them are refurbished old buildings which, in many cases, even some changes were applied, still cannot meet cows' needs. There is an increasing interest of farm managers and farmers about dairy welfare. During visits on farms, when each protocol was in progress or was finished, there has been a short time for discussion with famers. Cows' and farms' conditions become easier to imagine and understand when they are compared with other farms by showing pictures and exact numbers (*Grandin, 2010*). This method of comparing welfare on farms is useful in explaining, for example, neck rail injuries. Although, most of the managers see the problem and they find wrong feeder or rail height, most of them

blame cows that they are pushing the bar too hard to reach the food. As a counter-argument the protocol confirms that positions of the bar and the feeder where only 3-9% of cows are found as a cause of injuries on necks. The same positive perception is achieved when pictures or examples of compromised welfare are shown directly to the person. Welfare was checked before suggestions were given and other independent improvements were made. Next step will be to check the cows after a period of time, if changes helped to increase welfare standards or not.

Studija o statusu dobrobiti životinja u zaptima mlečnih krava u Mađarskoj

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Rezime

Dobrobit životinja je aktuelna tema među potrošačima, proizvođačima i istraživačima. Glavni problemi i pitanja u okviru dobrobiti životinja su mastitis, hromost, kao i svi drugi uslovi koji dovode do poremećaja u reprodukciji, nemogućnosti da životinje izraze svoje normalno ponašanje, i vanredne fiziološke reakcije ili povrede. U ovom radu se daje prikaz preliminarnih rezultata projekta sa 27 farmi mlečnih goveda u Mađarskoj u oceni opšte dobrobiti životinja. Najznačajnije oblasti za poboljšanje dobrobiti životinja se odnose na objekte i udobnost životinja, komfor i mogućnost odmora. Nalazi istraživanja ukazuju na klizave podove, krave koje sa poteškoćama leže odnosno stoje u boksovima, gubitak dlake, povrede, kao i brojna neuhranjena grla (ocena kondicije 1 i 2). Plesniva silaža i loš kvalitet stočne hrane su takođe utvrđeni. Kao zaključak, preliminarni rezultati potvrđuju snažnu potrebu za monitoringom farmi, kao i razgovorima sa upravicima farmi o neophodnim merama koje se odnose na dobrobit životinja koje moraju biti preduzete odmah.

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