

THE ANALYSIS OF DAIRY COWS FARM USING INTEGRATIVE NUMERICAL SYSTEM ANI 35L/2000

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Abstract

In order for dairy cows to manifest their genetic potential and for the farmer to achieve good milk production, it is necessary to respect animal welfare. The welfare of the animal means giving it the chance to manifest its behavior, but at the same time the relationship of the animal caretaker matters a lot. The integrative system ANI 35L/2000 provides a point award to each of the five system-specific criteria to determine where the weaknesses are on the farm and where the strengths are. This study shows with the help of the ANI 35 number system where there are vulnerabilities and where there are not. Also, grazing is a strong point for establishing the welfare of dairy cows.

Key words: ANI 35, animal welfare, dairy cows, pasture, welfare.

INTRODUCTION

The concept of animal welfare means not only animal health that is linked to a good production but also include the emotional state of the animal and expressing behavior.

For the animal to express his specific behavior and to be in a positive emotional state, must be respected welfare conditions that also brings a good health and imply a very good production. Animal welfare is a concept that helps farmers to understand the needs of the animal but from a whole perspective.

Are two systems that manage the concept of animal welfare in farms:

- 1) ANI 35L/2000;
- 2) Welfare Quality® Assessment Protocol.

So, animal welfare can be valued from the known recommendations to be the five freedoms, according to (Szücs & Csiszter, 2010):

- 1) Freedom from hunger and thirst;
- 2) Freedom from discomfort;
- 3) Freedom from pain, injury and illness;
- 4) Freedom to express normal behavior;
- 5) Freedom from fear and danger.

From those two systems, ANI 35L/2000 is in English language and ANI means 'Animal Needs Index', was invented by the researcher (Bartuseek, 1985) but was called Tiergerechtheitsindex (TGI)

(<https://www.tandfonline.com/doi/abs/10.1080/090647001316923036/>).

Coincidentally, ANI 35L includes five criteria like the five freedoms mentioned above but this are husbandry criteria.

Also, the welfare and protection of farm animals are judged differently for each species, with significant differences between EU Member States (Martelli, 2009; Csiszter et al., 2010). This means specific legislation for dairy cows.

According to Mitchell (2001) and Csiszter et al. (2010), are two types of economical motivations for animal welfare legislation:

- 1) When consumers feel that they individually benefit from improved animal welfare;
- 2) When society as a whole can benefit from improved animal welfare.

From what is known so far, it can be stated that animal welfare in dairy cows is necessary.

MATERIALS AND METHODS

The research has been done on July 2023, to observe in general the level of welfare on dairy cows farm situated in South-East region of Romania, almost in the center of the Romanian plain, on Ilfov county. To establish the level of welfare, was used the integrative numerical system ANI 35L/2000. ANI 35 system used

determines if a shelter meets the needs of dairy cows in more than one respect. The principles are that dairy cows need more space for resting, movement inside and outside, more air, clean and non-slip areas, to manifest a productive life. On farm, ANI 35 must consider five criteria with parameters and points are allocated for each parameter and at the end are calculated to make a sum and to obtain the ANI score. The score can have a value between -9 + 45.5. Points given to each parameter show us where are vulnerabilities or poor conditions and where is invulnerability or better conditions. ANI score gives the farmer the occasion to improve the welfare of dairy cows to receive a higher production of milk.

The five criteria of ANI 35L/2000 are:

- 1) Locomotion or movement;
- 2) Social interaction;
- 3) Flooring (type and degree of integrity);
- 4) Microclimate (light, air and noise);
- 5) Human-animal relationship.

94 dairy cows from Romanian Black and white breed were analyzed. Romanian Black and white breed is known as Holstein in Romania and that because to form this breed was used cows from Holstein and seminal material.

The shelter has 100 m with paddock. The floor is from concrete, manure accumulates on both sides of the stable in a channel, evacuated manually by caregivers. Lighting is naturally and artificially. Water is at discretion. Access to the pasture is made in spring and autumn, in the morning, 5 hours. On the criteria „social contact” at parameter ‘calves’ the score will be

zero because only the dairy cows were noticed. Was observed and noticed 21 parameters and 11 sections. The following are known from the farm: all 94 dairy cows are in lactation, the percentage of fecundity is 69, service period is 91 days, percentage of no returns after mating is 75, calving interval is 392 days, calving sex ratio 52 females/48 males and fertility is 82%. It is also known that on the whole year 2022 the milk production was 553224 litres and an average milk production per month of 47470 litres.

In Figure 1 is showed the Romanian Black and white breed in the shelter.



Figure 1. Dairy cows from Romanian Black and white breed

RESULTS AND DISCUSSIONS

As will be shown in the Tables 1-6, using the ANI 35L/2000 numeric system the welfare of dairy cows from Romanian Black and white breed is good.

Table 1. Movement criteria (Bartuseek et al., 2000)

Criteria	Parameters	Section	Number of points min.-max.	Points	Total
1. Movement	Free stabulation housing systems	Space allocation	0.0-3.0	2.5	10.5
		Possibility of lying down, lying and getting up normally	0.0-3.0	3	
	Hitch systems	Shed size and boundaries	0.0-1.0	1	
		Movement of hitch	0.0-1.0	1	
	Outdoor areas	Paddock access	0.0-3.0	3	
		Pasture access	0.0-1.5	0	

At criteria number 1 (movement) on the parameter (outdoor areas) the zero score comes from the section ‘pasture access’ because pasture is done only on spring and autumn seasons.

Table 2. Social contact criteria (Bartuseek et al., 2000)

Criteria	Parameters	Section	Number of points min.-max.	Points	Total	
2. Social contact	Free stabulation housing systems, space allocation		0.0-3.0	3	7.5	
	Herd structure in free stabulation housing and hitch systems		-0.5-2.0	2		
	Management of Calves		-0.5-1.0	0		
	Outdoor areas	Access to paddock		0.0-2.5		2.5
		Access to pasture		0.0-1.5		0

At criteria number 2 (social contact) on the parameter (calves) the zero score comes because was not taken into account. On the parameter (outdoor areas) is also zero at the section 'access to pasture' from the same reason mentioned above.

Table 3. Floor criteria (Bartuseek et al., 2000)

Criteria	Parameters	Section	Number of points min.-max.	Points	Total
3. Floor	Lying area	Soft	-0.5-2.5	0.5	3
		Cleanliness	-0.5-1.0	0.5	
		Non-slip surface	-0.5-1.0	0.5	
	Activity areas, hall ways		-0.5-1.0	0.5	
	Outdoor yards		-0.5-1.5	1	
	Access to pasture		0.0-1.0	0	

At criteria number 3 (floor) on the parameter 'access to pasture' the score is zero showed at the two criteria above.

Table 4. Microclimate criteria (Bartuseek et al., 2000)

Criteria	Parameters	Section	Number of points min.-max.	Points	Total	
4. Microclimate (light, air, noise)	Natural light in the shelter		-0.5-2.0	2	8.5	
	Air quality and air circulation		-0.5-1.5	1		
	Air currents in the lying area		-0.5-1.0	1		
	Noise level		-0.5-1.0	1		
	Outdoor areas	Days/year of access to the paddock		0.0-2.0		2
		Hours/day of access to the paddock		0.0-2.0		1.5

Table 5. Contact with humans criteria (Bartuseek et al., 2000)

Criteria	Parameters	Number of points min.-max.	Points	Total
5. Contact with humans	Cleanliness of playpens, feed and drink areas	-0.5-1.0	1	4.5
	Technical condition of shelter facilities	-0.5-1.0	1	
	Condition of animal skin	-0.5-1.0	0.5	
	Animal hygiene	-0.5-0.5	0	
	Condition of onglons	-0.5-1.5	0.5	
	Technopathies	-0.5-1.5	0.5	
	Health of the animals	-0.5-1.5	1	

At criteria number 5 (contact with humans) on the parameters 'animal hygiene' the score is 0 and is interpreted as medium.

Table 6. Total points of each criteria and ANI score

Criteria	Points	Total
1. Movement	10.5	34
2. Social contact	7.5	
3. Floor	3	
4. Microclimate (light, air, noise)	8.5	
5. Contact with humans	4.5	

As we observe, the final ANI score from all five criteria is 34 and means a good result. The only major issues appear at pasture access because is conditioned.

Interpretation of each score from each parameter and section which was not mentioned under each table, is on the authority of Bartuseek et al. (2000):

In the first criteria (movement) on the parameter: (free stabulation housing systems) at section 'possibility of laying down, lying and getting up normally the score 3 mean comfortable, (hitch systems) at section shed size and boundaries the score 1 mean comfortable, (outdoor areas) at section 'paddock access the score 3 mean more than 270 days/year on paddock.

In the second criteria (social contact) on the parameter: (herd structure in free stabulation housing and hitch systems) the score 2 it's family herd, (outdoor areas) at section 'paddock access' the score 3 it's the same result mentioned above.

The the third criteria (floor) on the parameter: (lying area) at section soft the score 0.5 meaning concrete, metal or plastic grids, cleanliness and non-slip surface the same score meaning medium, (activity areas, hall ways) also the score meaning medium, (outdoor yards) the score 1 meaning natural floor, dry, firm.

On the four criteria (microclimate) on the parameter: (natural light in the shelter) the score 2 stands open fronted housing, (air quality and air circulation) 1 stands good air quality, (air currents in the lying area) 1 stands none, (noise level) 1 stands no noise, (outdoor areas) at section: days/year of access to the paddock 2 stands more than 230 days and 'hours/day of access to the paddock 1.5 stands more than 6 hours.

On the five criteria and the last one (contact with humans) the parameter: (cleanliness of playpens, feed and drink areas) the point 1 equal clean, (technical condition of shelter facilities) 1 equal good, (condition of animal skin), (condition of onglons) and (technopathies) the score 0.5 equal medium, (health of the animals) the 1 equal good.

According to Sakar et al. (2022), in a study evaluating Anatolian Black cattle, after using ANI 35L, they made the statement that possibility for cows to go on the courtyard and pasture has positive benefactions to animal welfare.

CONCLUSIONS

As was presented a short introduction on the animal welfare concept and the importance of the 'five freedoms' and five husbandry criteria from the structure of ANI 35L/2000 indicator, can be stated that welfare on dairy cows farms is required.

The score zero from criteria 1, 2, 3 and 5 which involves pasture and animal hygiene is understandable because of the farm management but ANI 35L system on practice indicate the contrary.

The lowest score 3 is at criteria (floor) because of concrete and leads to affects the onglons of dairy cows and also lead to technopathies.

To be mentioned that ANI 35 is not utilize to impose new welfare regulations but seek to be respected the standards at minimum. In this study case, grazing is allowed on two seasons and satisfies the criterion of animal welfare.

The total points of 34 which means ANI score attributed to farm show us a heightened attention for raising dairy cows from Romanian Black and white breed, which is reflected in animal welfare.

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