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ASSESSMENT OF WELFARE IN THE DAIRY COW THROUGH THE WELFARE QUALITY SYSTEM

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Abstract: *In this paper, we performed a welfare assessment in dairy farms. Welfare assessment in farms allows the farmer (owner) to integrate into the EU requirements, and to have better economic value when it comes to production services. We used evaluation criteria established for dairy cows by the Welfare Quality System (WQS). Welfare Quality defines four principles for assessing animal welfare: proper feeding, proper housing, good health, and the possibility to express specific behaviour, each of them subdivided into specific criteria. We collected data from five farms, and observations were made with reference to the following criteria: body condition score, lifting behaviour, collision with the equipment in the shelter, lameness, body hygiene, the presence or absence of nasal, ocular and vulvar discharge, and the approach test. The results were analyzed using the software program provided by WQS®. According to the grading system, two out of the five farms were classified as being "GOOD" while the other three were "ACCEPTABLE".*

Keywords: cows, welfare, evaluation, health, farm.

• Introduction

Since the beginning of time, animal welfare has piqued curiosity, and various definitions have been offered before a comprehensive and intricate one was finally obtained [1, 14]. Aspects that convey the physical, mental, and natural status of the animal were commonly used to define animal welfare [5]. An animal's level of **well-being** can be expressed by evaluating its physical and mental health as well as its capacity to respond to its surroundings as naturally as possible. The analysis of variations in various parameters is a multidisciplinary process that is necessary for the welfare of dairy cows. In order to assess an animal's welfare, Welfare Quality identifies four criteria: appropriate feeding, appropriate housing, health, and specific behaviour [1, 5]. The assessment of the welfare of dairy cows gives us a mental picture of how to include the dairy farmer in EU regulations.

• Material and method

The research was carried out in five dairy farms (A, B, C, D, E) in the western part of Romania. In each farm, observations were made with reference to the welfare assessment criteria, as follows:

1. physical condition;
2. lifting behavior;
3. collision with shelter equipment;
4. lameness; lifting behavior;
5. the state of bodily hygiene at the level of the tarsus, the hindquarters and the udder;
6. nasal, ocular and vulvar secretions;
7. animal approach test [5, 17].

At **Farm A**, 38 cows were kept in tied stalls, in a covered structure with natural lighting. **Farm B**'s herd of 150 cows was housed in a closed-off structure with natural lighting. **In Farm C**, 100 cows were kept in a free stall with natural lighting inside a wooden structure. **Farm D** has been registered as having 100 cows where they were housed in free stalls under natural lighting. **Farm E** had a herd of 70 cows that were kept in free stalls in a shelter with natural lighting that was open in the summer and closed in the winter. The body regions are examined to determine the condition of the body, and the cows are then categorized according to the examination of these indicators:

0- good physical condition;
1-very weak, the score is given to cows, which obtained the very weak indicator in at least three body regions;
2 - very fat, given to cows that obtained the very fat indicator in at least three body regions.

The lifting habit of these animals starts with head motions that travel forward and backward before lifting the rear and anterior train. On a scale from 1 to 4, lifting behavior was measured and scored as follows:

1-Normal movement, with a pause of up to 5 seconds on the knees;
2-Normal movements, with a pause longer than 5 seconds in the knees;
3-Long break on the knees with difficulty in lifting (repeated forward and backward movements of the head);
4-Abnormal lifting with total deviation from the normal sequences of lifting behavior (sitting dog position).

Body hygiene for dairy cows involves giving them scores for their udders, acropodium, and hindquarters—three major anatomical locations [5, 16]. Using a scale that reads as follows, these regions are rated:

0- Very good condition
0.5-Some portions are slightly dirty;
1-Some dirty portions, which in total cover more than half of the body area;
1.5- dirty portions, which in total cover more than half of the body area;
2-Entire body area covered with dirt.

For dairy cows, the level of cleanliness is crucial since it might affect mammary gland infection.
Health condition
Lameness is a condition that can affect one or more limbs or the spine. Lameness can be seen while someone is in an orthostatic position, getting up from the floor, moving, or assuming a recumbent position [4, 14, 15]. Direct observation of cows in motion is used to assess lameness, and the results are as follows:

0-no lameness;
1-lame with conditions in the initial stage of development;
2-severe lameness with serious foot ailments.

Nasal discharge is described as a distinct, observable discharge that happens in the nostrils. Stereotypies, vaginal secretions, dyspneic breathing, and ocular conditions were solely assessed based on their presence or absence at the time of the consultation. The secretions' colors range from translucent to yellowish-greenish, and it is noted:

0-absent secretions;
1- present secretions.

Following the animals' standing up, the animal approach test, for fear assessment was carried out at a distance of 2 m in front of the animals that would be put to the test. We approach the animal at a speed of one step per second with the arm extended at a roughly 45° angle after ensuring that it is alert or has become aware of our presence [6, 9, 11]. On a scale from 1 to 5, the behavioral response was rated in accordance with the appraiser's proximity to the cow:

1.- the cow stays in place and allows touching, 2- the cow stays in place, but does not allow touching,
3-the cow remains in place, but takes a step back when the evaluator extends his hand,
4- the cow moves back, before the evaluator stops,
5- the cow avoids the evaluator completely.

• Results and discussions

CRITERIA	DESCRIPTION	FARM A		Farm B	
		Number	%	Number	%
B.C	Normal	32	84	120	80
	Slim	1	2,6	7	4,6
	Overweight	5	13,4	23	15,4
Lifting Beh.	<5 Sec	15	39,47	119	79,33
	> 5 Sec	20	52,63	20	13,33
	Difficult	2	5,26	10	6,66
Hitting	Abnormal	1	2,64	1	0,68
	0	20	52,63	139	92,66
	1	1	2,64	1	0,68
	Can Not Be Seen	17	44,73	10	6,66
Hygine Tarsus	Clean	28	73,68	112	74,66
	Areas Of Dirt (10 Cm Diameter)	10	26,32	38	25,34
Hygine Posterior Area	Clean	29	76,32	75	50
	Areas Of Dirt (10 Cm Diameter)	9	23,68	75	50
Udder Hygine	Clean	30	78,95	75	50
	Areas Of Dirt (10 Cm Diameter)	8	21,05	75	50
Lameness	No Lameness	35	92,1	145	96,66
	Moderate	2	5,2	3	2
	Severe	1	2,7	2	1,34
Nasal Discharge	Absent	37	97,3	137	91,33
	Present	1	2,7	13	8,67
Ocular Discharge	Absent	38	100	149	99,33
	Present	0	0	1	0,67
Vulvar Discharge	Absent	28	73,7	127	84,66
	Present	10	26,3	23	15,34
Human-Animal Rel	No Movement+Touching Is Allowed	10	26,3	10	6,66
	No Movement+ No Touching Allowed	10	26,3	40	26,66
	Movemet Is Made 1	5	13,2	50	33,36
	Movement Is Made	10	26,3	40	26,66
	Flight	3	7,9	10	6,66

CRITERIA	DESCRIPTION	FARM C		FARM D		FARM E	
		Nr.	%	Nr.	%	Nr.	%
B.C	Normal	83	83	91	91	55	78,6
	Slim	8	8	1	8	8	11,4
	Overweight	9	9	8	1	7	10
Lifting Beh.	<5 sec	80	80	97	97	58	82,87
	> 5 sec	10	10	1	1	4	5,71
	Difficult	7	7	1	1	5	7,14
Hitting	Abnormal	3	3	1	1	3	4,28
	0	99	99	99	99	61	87,15
	1	1	1	1	1	4	5,71
	Can not be seen	0	0	0	0	5	7,14
Hygine Tarsus	Clean	78	78	80	80	58	84,28
	Areas of dirt (10 cm diameter)	22	22	20	20	11	15,72
Hygine Posterior Area	Clean	82	82	87	87	49	70
	Areas of dirt (10 cm diameter)	18	18	13	13	21	30
Udder Hygine	Clean	87	87	97	97	58	82,86
	Areas of dirt (10 cm diameter)	13	13	3	3	12	17,14
Lameness	No lameness	96	96	99	99	66	94,28
	moderate	3	3	1	1	2	2,86
	severe	1	1	0	0	2	2,86
Nasal Discharge	Absent	99	99	99	99	69	98,57
	Present	1	1	1	1	1	1,43
Ocular Discharge	Absent	100	100	100	100	70	100
	Present	0	0	0	0	0	0
Vulvar Discharge	Absent	87	87	91	91	59	84,29
	Present	13	13	9	9	11	15,71
Human-Animal Rel.	No Movement+Touching Is Allowed	40	40	42	42	42	60
	No Movement+ No Touching Allowed	40	40	42	42	12	17,14
	Movemet Is Made 1	10	10	11	11	10	14,28
	Movement Is Made	5	5	3	3	4	5,71
	Flight	5	5	2	2	2	2,87

AT FARM A: Body Condition: good; Lifting Behaviour And Interaction With Equipment In The Shelter: well; Body Hygiene: acceptable; Health: acceptable; Human-Animal Relationship: acceptable. The final scoring made, and given for farm A being ACCEPTABLE. **AT FARM B**: Body Condition: well; Lifting Behaviour: acceptable; Body Hygiene: good; Health: good; Human-Animal Relationship: acceptable. The final scoring made, and given for farm B being **ACCEPTABLE. AT FARM C**: Body Condition: good; Lifting Behavior And Interaction With The Equipment In The Shelter: well; Body Hygiene: good; Health: good; Human-Animal Relationship: good. The final scoring made, and given for farm C being **GOOD. AT FARM D:** Body Condition: good; Lifting Behaviour And Interaction With Equipment In The Shelter: well; Body Hygiene: good; Health: good; Human-Animal Relationship: good. The final scoring made, and given for farm D being **GOOD**. **AT THE FARM E**: Body Condition: acceptable; Lifting Behaviour And Interaction With Equipment In The Shelter: acceptable; Body Hygiene: acceptable; Health: acceptable; Human-Animal Relationship: good, the final scoring being **ACCEPTABLE.** Comparing the two farms shown in table 1., we can see a uniformity throughout the analysis, even though the number of individuals placed under observation is significantly different. As shown in Table 2, in farms C, D and E, it can be seen and taken into account the uniformity of the results, given that the management practises are similarly between these three farms. It can be seen a correlation between the practice and the state of being of the animals, more so the Welfare criteria being met in every assessment made over the course of the study. The most important assessment, and the indicator of welfare that is important to be assessed weekly is the health, being that the state of health of one animal can change the behaviour and thus affecting all the other indicators that should be assessed. An overall level of farm animal welfare can facilitate product labelling, encourage producers to improve animal welfare, and, in the future, might become part of export legislation [5, 11]. Various measures are used to assess animal welfare; for example, animal behavior, heart rate, or cortisol levels in blood [13].

• Conclusions

- The farms were classified in two of the four possible welfare categories based on the scores obtained for the four welfare principles: acceptable (nr. 3) and good (nr. 2). This study demonstrated that the welfare of dairy cows is significantly influenced by the housing system, and that the loose system has advantages when it comes to the feeding, housing and behaviour of the dairy cow.