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RESEARCH ON LONGEVITY AND CAUSE OF REDUCTION OF HERD LIFE IN HOLSTEIN COWS

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Abstract

Through this research we intend to analyze the Holstein herds in farms of various sizes from Teleorman County to highlight the productive performance of the breed and to emphasize the similarities, respective the differences that were found in the studied farms and furthermore, another goal of the study was to show that the breed is very valuable.The Holstein cows studied for this paper are from various origins (Germain, France, Netherlands). The material studied is represented by the dairy cows that were send to slaughterhouse from 5 farms, representing 1200 heads.The lifetime of the animal is defined by two aspects, namely, the biological longevity and the productive longevity.We can observed, from the data processed and interpreted by us, that the greatest biological longevity was registered in farm 1 (6.27 years), where the productive longevity was 3 years old.The highest frequency of reproductive disturbances was registered in the farm No.4 (58.33%) and farm No. 3 (55%).The data held by us from the 5 farms that were analyzed shows higher rates of reproductive disorders comparative to that established by Curelariu of 43.66% et al (1980) and Vidu of 28,52%(2002).The herds analyzed are characterized by a mean of 5.71 years for the biological longevity with a variability between 5.10 years and 7.24 years, which is consistent with the literature.

Key words: *milk, biological longevity, reproductive longevity, dairy cow.*

INTRODUCTION

A particularly very important indicator for animal welfare is the longevity, as a result of the health welfare. The lifetime of the animal consist of two parts, namely the biological longevity and the productive longevity. Both components of the animal life are influenced by the following factors: the degree of genetic improvement, the direction of exploatation, the applied technology and health.

The biological longevity can be defined as beeing the time elapsed from birth until the death, as a result of natural causes. Normally, lifespan of the cattle is between 15 and 18 years, being influenced by the physiological and environmental factors.

The reproductive longevity or the exploitation period is between the first calving and the final lactation of the cow.It can be expressed by the number of lactations or years of exploitation. High productive longevity is reflected by high yields of milk and by a larger number of calves per cow, which leads to increased economic efficiency (Georgescu, 1990; Vidu, 2002).

From an economic perspective, it is desirable for productive cows to achieve the production peak at an early age, to keep production constant for as long as possible and to obtain at first the lactation a milk production as close to the maximum level.

MATERIALS AND METHODS

The present study aimed to analyze Holstein herds in farms of various sizes in Teleorman County.The material studied is represented by the dairy cows that were send to slaughterhouse from 5 farms, representing 1200 heads.In the analyzed farms, the exploitation technology is playpen, semi-open or closed shelters with cows resting in bunks.The feeding technology is stock feeding and, in some of the studied farms, the distribution of the feed is made with the technological trailer.The milking is done in specially designed for this purpose houses, type tree or Side by side.The working method was based on technical data collection directly from the farms, or from the database of ANARZ.

The data obtained were statistically analyzed, then were compared with the scientific data from the literature and then summarized in this paper.

In order to establish the differences between the studied farms, we applied the Student test.

RESULTS AND DISCUSSIONS

The longevity of dairy cows varies by race.Thus the research conducted over the years have demonstrated a productive longevity between 3,5 years and 4 years in Holstein-Friesian, 4.3 years in Romanian Brown Swis and 4.8 years for Romanian Spotted.

For the breeds reared in Austria, in 2000, the highest productive longevity was recorded for the next breeds: Grauvieh (7.38 years), followed Braunvieh (6.89 years), Pinzgauer (6.74 years), Fleckvieh (6.61 years) and finally Holstein, with the lowest productive period (6.21 years) (Vidu, 2002).

Table 1. Comparative analysis of biological and productive longevity in the studied farms

Farm	Biological longevity				Productive longevity			
	n	$X \pm S_X$	S	V%	n	$X \pm S_X$	S	V%
Farm 1	524	2288±56,01	1350,01	59	524	1066±22,11	550	51,59
Farm2	301	2030±33,11	611	30	301	1590±25,00	460	28,93
Farm3	87	2222±56,15	624,10	28,08	87	1450±42,01	451	31,10
Farm4	71	1816±59,16	544	29,95	71	1248±44,11	390	31,25
Farm5	61	2078±75,6	590	28,39	61	1246±39,11	320	25,68

From the data we statistically processed and interpreted, the greatest biological longevity was observed in farm 1 and was registered in January (6.27 years), where productive longevity was 3 years old. It also can be observed a high variability on the productive and biological longevity (Table 1). Curelariu Niculina et al. (1980), from the analysis of 284 Friesian cows from an elite farm that were send to the slaughter house, founds that biological longevity was 5.6 years and the productive longevity of 2.74 years, which has led to the conclusion that the exploitation technology was ineffective from a zootechnic and economically point of view.

Table 2. Comparison of the biological longevity registered in the analyzed farms

Farm	X	Farm				
		Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
Farm 1	2288	-	3.05 **	1.90 NS	0.53 NS	1.22 NS
Farm 2	2030	3.05 **	-	0.81 NS	2.25 *	0.36 NS
Farm 3	2222	1.90 NS	0.81 NS	-	2.45 *	0.96 NS
Farm 4	1816	0.53 NS	2.25 *	2.45 *	-	1.33 NS
Farm 5	2078	1.22 NS	0.36 NS	0.96 NS	1.33 NS	-

Analyzing the causes of the outputs, it can be grouped into involuntary causes (mortality and slaughter of necessity) and voluntary causes (selective reform).In countries with high achievements in dairy farming, the main cause of exits from the herd is the selective refroma of the cows (Vidu et al. 2005.2014).

Gheorghe Georgescu and co. highlights that, for the Romanian Black Spotted cattle, the reform is made for the next reasons: reproductive disorders (35.6%), circulatory disorders (10.5%), digestive disorders (9.65%) disorders of the rumen (7.45%) mamary gland disorders (5.1%), nutritional and metabolic diseases (4.5%), musculoskeletal disorders (4.3%), leukosis and tuberculosis (1,1%) and other causes (21.9%) (Georgescu et al, 1987).

In Table 2, we have grouped the main causes of reforms in the analyzed farms so that, it can be highlighted the highest procent recorded. From the synthesis in table 2 it can seen that that the most important motif of reform is because of reproductive disorders, followed by limb disorders.The causes of reform are presented in Table 3.

Reproductive disorders. Of all the health disorders that caused the exits of the cows from the herd, for the Holstein cows, we observed the highest frequency for the reproductive disorders (average 43.66%). The highest frequency of reproductive disorders was registered in farms No.4 (58.33%) and No. 3 (55%).In fact, these two farms have livestocks with highest milk production.

Figure 1. Cows from one of the studied farms

Table 3. Causes reform in the analyzed farms

Nr. crt.	The couse	Analized farm									
		Farm 1		Farm 2		Farm 3		Farm 4		Farm 5	
		heads	%	heads	%	heads	%	heads	%	heads	%
1	Agalactia	54	9.37	40	10.81	2	2.5	1	1.58	-	-
2	Pericarditis	131	22.74	15	4.05	10	12.5	2	3.17	-	-
3	Reticulum and foreign bodies	14	2,43	5	1,35	9	11,25	5	7,93	5	12,19
4	Endometritis	3	0,52	2	0,54	2	2,5	7	11,11	2	4,87
5	Womb disorders	20	3,47	1	0,25	7	8,75	8	12,69	7	17,07
6	Ovarian disease	220	38,19	151	40,81	14	17,5	12	19,04	9	21,95
7	Diseases of the udder	15	2,62	42	11,35	19	23,75	14	22,22	7	17,07
8	Limb disorders	48	8,33	56	15,13	10	12.5	6	9.52	9	21.95
9	Repeated abortions. dystocia	1	0.17	9	2.43	2	2.5	2	3.17	1	2.43
10	Nutrition and metabolism diseases	10	1.74	47	12.70	3	3.75	4	6.34	-	-
11	Accidents	60	10.42	2	0.54	2	2.5	2	3.17	1	2.43
	Total	576	100	370	100	80	100	63	100	41	100

Reproductive disorders have origins and different percentages in the farms that were studied, as follows:

- Ovarian disorders have the highest rate of 23.82% of the total reproductive disorders, and, in the analyzed farms, in the farm no. 2 the percentage was 40.91%;
- Udder's disorders ranks second in terms of incidence, with 11.24%; the lowest incidence of Udder's disorders was registered in farm No. 1 (2.62%) and the highest in farm No. 3 (24%) and farm no. 4 (22%);
- Uterine disorders ranks third with a percentage of 7.24%, and the variability of these conditions in relation to the farm are lower (0.25% in farm No. 2 and 12.69% in farm No. 4);
- Endometritis recorded the lowest incidence, averaging 2.52%.

Data held by us regarding the incidence of reproductive disorders in the 5 farms studied shows higher rates comparative to that established by Curelariu et al (1980) and Vidu (2002), respectively 43.66%, against 28.52%.

Pericarditis. This is inflammation of the pericardium and is found in cows mostly in traumatic forme and less as primary pericarditis or in presepticemia form.In the analyzed farms, pericarditis ranks second after the reproduction disorders, in terms of frequency.Thus, this inflammation has an incidence of 11.16%, noting that the farm No. 5 there has been no case, which demonstrates special care in managing the feeding of cows.

Limb disorders. This is manifested most often by inflammation of the hooves.The number of cows examined showed an average incidence of podal disease of 14%.The most intensive care of the hooves was registered farm No. 2 where the frequency was very low.On the contrary, negligence in cleaning and adjustment of the hooves was recorded in the farm No. 5,

were it was recorded a frequency of about 22% for the podal disorders.The data obtained by us are close to those encountered in the literature (14% vs. 13%). (Andronie, 2004).

The accidents. It are random and unexpected events that cause injury, death or reform and are often caused by negligent exploitation in dairy cows.In the analyzed farms, the frequency of accidents was averaged at about 6.13%.Se observă că există o pondere foarte scăzută a accidentelor în ferma nr.2 (0,54%), ca urmare a managementului foarte bun.

Traumatic reticulitis. It is an inflammation of the cow's reticulum caused by trauma of the reticulum wall, produced by a metallic foreign body (nail, wire, etc.) that was swallowed once with the feed.The frequency in the 5 herds studied, had an average of 6%.This value indicates a great deal of carelessness and even negligence in feeding dairy cows, when, for the feeding, bales bound with wire are used.There is also a large frequency for traumatic reticulitis based farm (farm No. 5 12.15%).

Agalactia. The absence of milk in the mammary gland of the Holsetin cows from analyzed farms, was almost 5%.The absence of the secretory disorders is noticeable in some farms analyzed (farm No. 5) and, for the other farms, the frequency is very high (farm No. 2 above 10%, farm No. 19.4%).The nutritional and metabolic diseases. They are the result of a concentrated and unbalanced feedings technologies of the animals.In the analyzed farms, the disease incidence is relatively low (about 3%), due to the fact that, the feeding technology involves the use of the ratios that are optimised relating to the standard requirements of Holstein cattle.However, this kind of disorders are present and the incidence variates from one farm to an other.Thus, in the farm No. 5 does not have been registered such problems, while in the farm No. 2, where milk production performances are the highest, incidence of nutritional and metabolic disorders is very high (12.7%), so, we can conclude that the feeding technology should be assisted by a nutritional sofware.In general, the frequency of this disturbance is four times lower in comparation with the data from literature.Overall, the digestive disorders (pericarditis, traumatic reticulitis, nutritional and metabolic disorders) are ranking second, accounting for 20% of the total disorders, after reproduction disorders, in the analyzed farms.

CONCLUSIONS

The productive longevity and,especialy the reproductive one, have an important significance for both genetic improvement and the economics of dairy farming.

The analyzed herds are characterized by a biological longevity of 5.71 years, with a variability between 5.10 years and 7.24 years,beeing within the literature limits.

The average length of exploitation of Holstein cows is 3.61 years, with variability between 2.73 years and 4.74 years, which proves different housing conditions.

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