

COMPARATIVE STUDY OF THE MILK PRODUCTION AND MECHANICAL MILKING APTITUDE OF THE HOLSTEIN, ESTONIAN RED AND BLACK AND WHITE OF MOLDAVIAN TYPE BREEDS OF CATTLE

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Abstract

It was studied productivity and quality of milk from cows from Technological Experimental Station Maximovca, Institute of Scientific and Practical Biotechnology in Animal Husbandry and Veterinary Medicine in the first 90 days of first lactation. In Republic of Moldova it was created a new type of Black and White breed, Red Estonian breed is reared for about 35 years and Holstein breed was imported from the Netherlands in 2011. It was determined that there were no significant differences between breeds in milk production during the period, which amounted to respective 1120 , 1185 and 1906 kg at the fat content in milk and milking speed. Holstein breed cows had a better form of udder.

Key words: cattle, breeds, productivity, milking

INTRODUCTION

Along with the development of scientific progress in all areas, including animal husbandry, by building up complexes of intensive livestock farming and continuous flow production, new requirements that arise for these animals must be met. Regarding the breeding of dairy cattle, these animals must meet such operational requirements as: high milk production, high quality milk, efficient use of food and good aptitude for mechanical milking.

Of great importance in organizing complexes as well as private farms of dairy cattle breeding is the choice of cattle breed. Taking into consideration all the above mentioned aspects it would be advisable to make a study of the approved and imported cattle breeds raised in the Republic of Moldova, especially at the TES "Maximovca" within the Scientific-Practical Institute of Biotechnology in Animal Husbandry and Veterinary Medicine, Anenii Noi district.

Morpho-productive qualities and, especially, the quality of cow milk produced by these cattle breeds have not been enough studied in the Republic of Moldova.

MATERIAL AND METHOD

As research material we used 3 groups of cattle raised at the farm TES "Maximovca" which were formed depending on the breed. The first group included cows of Holstein breed, the second - dairy cows of Black Spotted breed of Moldavian type and the third group included dairy cows of Estonian Red breed.

It was studied the milk production of all the investigated cows during the first 90 days of lactation because the cows of Holstein breed didn't reach full lactation. Cattle growth and development has got increasingly an industrial character, using the mechanical and even automated work, modern feeding and breeding technologies, while using a more valuable biological material [1], [3].

Some authors consider that we can obtain the maximum level of milk production per lactation from the cows raised in intensive farms and from an economic point of view

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the goal is to achieve the maximum production at a younger age and maintain this level for a longer period of time.

All investigated animals were in similar feeding and maintenance conditions. There were studied the following indices: milk production - by making control milking, fat percentage - determined in the laboratory of animal product quality within the Special Animal Husbandry Department of State Agrarian University of Moldova using the ultrasonic analyzer „Lactoscan” bought in Bulgaria.

The speed of milking was determined in the milking parlor of „BRADULET” type using a timer to set the length of time then the milk volume was divided by the fixed time. Udder measurements have been done according to classical animal breeding methods – using a grading ruler or a measuring tape.

RESULTS AND DISCUSSIONS

The obtained results were processed by the biometric method using Excel software and are presented in the tables below.

Table 1 Milk production during the first three months of lactation from different cattle breeds

Nr.	Breed	n	$\bar{X} \pm s_{\bar{X}}$, kg	Cv
1	Holstein	24	1905,950±67,743	15,895
2	Black Spotted of Moldavian type	10	1120,300±45,656	12,887
3	Estonian Red	18	1185,765±40,575	14,109

Based on table 1, we can mention that the highest volume of milk was obtained in the first 90 days of lactation from the cows of Holstein breed amounting 1905,9 kg. The production of Red Estonian cows was of 1185,7 kg, and the lowest milk production was of 1120,3 kg in the case of Black Spotted breed of Moldavian type [1], [4]. Gh.

Georgescu [3] mentioned that the milk production in different months of lactation expressed in relation to the production of whole lactation for Brown Swiss breed of cows (taken as example) can be presented as follows: in the Ist month 11,5%, in the IInd 13%, in the IIIrd 12,7% as far as to decline to 4,5% by the Xth month).

Table 2 Fat percentage in the milk obtained after three months of lactation from different cattle breeds

Nr.	Breed	n	$\bar{X} \pm s_{\bar{X}}$, %	Cv
1	Holstein	24	3,943±0,032	3,658
2	Black Spotted of Moldavian type	10	3,912±0,041	3,302
3	Estonian Red	18	3,926±0,027	2,847

Based on the data presented in Table 2, we can mention that the milk of Holstein cows had the highest percentage of fat - 3,94, being followed by Red Estonian cows with 3,92, and the cows of Black Spotted breed of Moldavian type which recorded the lowest percentage of milk fat - 3,91.

The data presented in table 3 elucidate the speed of milking and udder shapes of three cow breeds raised at the farm TES “Maximovca”.

The highest speed of milking was recorded at Holstein breed - 1,83 kg/min,

with 100% for bowl shaped udder, followed by Estonian Red breed - 1,80 kg/min with 44,4% for bowl shaped udder and 55,5% for cup shaped udder.

Black Spotted breed of Moldavian type recorded the lowest milking speed of 1,75 kg/min, with a percentage of 46,1 for bowl shaped udder and 53,8 for cup shaped udder. Dorel Dranca [2] mentions about the most appropriate udder shapes that have a positive correlation on the milk production. The experience of farmers has shown that only

the cows having a certain size and shape of udder and nipples, as well as of their limbs have greater productive longevity. According to data presented by M. Pojoghina [5] there is

a positive relationship between udder shape and milk production and she found that the highest milk production was obtained from cows with cup shaped udder.

Table 3 Cows aptitude for mechanical milking

Cattle breeds	nr	Speed of milking kg/min		Udder shapes					
		$\bar{X} \pm s_{\bar{x}}$	Cv	Bowl shaped		Cup shaped		Round shaped	
				n	%	n	%	n	%
Holstein	24	1,836±0,027	6,307	24	100	-	-	-	-
Black Spotted of Moldavian type	13	1,751±0,039	7,665	6	46,1	7	53,8	-	-
Estonian Red	18	1,809±0,021	4,360	8	44,4	10	55,5	-	-

CONCLUSIONS

As a result of researches accomplished on the cattle raised at the farm TES “Maximovca” we concluded that still there are productive differences between the examined cow breeds in terms of milk production, fat percentage, milking speed and udder aptitude for mechanical milking.

The differences between the mentioned cow breeds were exposed after each table where reliable data are obtained from researches according to certain indices.

Holstein breed of cows imported from Netherlands showed a good acclimation capacity being the leading milk production breed even in the conditions of the Republic of Moldova. It would be advisable to use

Holstein breed of cows to improve the cattle breeds in the Republic of Moldova.

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