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STUDY REGARDING THE INFLUENCE OF PARITY ON MILK PRODUCTION TRAITS IN ROMANIAN BLACK AND WHITE COWS

STUDIU PRIVIND INFLUENȚA ORDINII LACTAȚIEI ASUPRA INDICILOR PRODUCTIVI DE LAPTE LA VACILE DIN RASA BĂLȚATĂ CU NEGRU ROMÂNEASCĂ

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The aim of this paper was to establish the way parity had an influence on the milk production and lactation length in Romanian Black and White cows from the Didactical Farm Timişoara. The influence of the parity on the milk production and lactation length was studied on 125 lactations (37 first lactations, 23 second lactations, 29 third lactations, 14 fourth lactations, and 22 fifth and over lactations). The longest lactation was found in the second parity (397.9 days) and the shortest in the 5+ parity (353.3 days). The maximum milk yield per total lactation was attained in the third lactation (5705.4 kg) and the minimum milk yield in the first lactation (4652.6 kg). Variability for this trait was higher in second lactation (20.74%). The lowest variability coefficient was found in the third lactation (v%=15.36%)
Key words: parity, lactation length, Romanian Black and White

Introduction

Understanding the factors that have an influence on the production and quality of the raw milk is a condition for high milk productions having a high biological and hygienic value.

Quantitative and qualitative milk production is influenced by several factors that act directly and indirectly on animal organism. These factors influence both on milk yield and milk quality. Some factors affect more the milk yield while other factors had a higher influence on the milk quality.

One of the main factors that influence the individual milk production is parity, which is correlated with the age of cows; milk production during the productive life is not the same from lactation to another. The lowest milk yield is obtained in the first lactation, after that is increasing up to the fourth lactation and then start to decrease.

Causes that determine variation of the milk yield from lactation to another are multiple. The most important causes are production potential, metabolism

intensity, udder volume and structure, digestive tract capacity, health, body condition of cows, feeding regimen between and after calving.

Maximum milk yield is attained in different lactations according to the breed precocity and level of genetic improvement.

Romanian Black and White breed is a dairy breed (60% for milk and 40% for beef) with a maximum production in lactations 3-4.

From the economical point of view we are interested that cows should attain the maximum productive level at a younger age and to maintain this level a longer period of time and in the first lactation to produce a milk yield close to the maximum level.

Materials and Methods

The study was carried out in the Didactical Farm Timişoara on Romanian Black and White cows. The influence of parity on total lactation length and milk production per total lactation was studied on 125 lactations, divided as follows: 37 in first lactation, 23 in the second lactation, 29 in third lactation, 14 in fourth lactation and in fifth and over fifth lactation.

Data was collected and statistically processed using ANOVA/MANOVA, calculating averages and dispersion indices.

Results and Discussions

Table 1 presents the averages and dispersion indices for lactation length according to the parity in Romanian Black and White cows. The longest lactation was found in the second parity (397.9 days) and the shortest in the fifth and over fifth lactation (353.5 days). On average the lactation length in Romanian Black and White cows from the Didactical Farm Timişoara was 367.5 days that means one year and two days. Lactation length decreased after the second lactation toward the fifth lactation.

Table 1

Averages and dispersion indices for the total lactation length according to the parity in the Romanian Black and White cows from Didactical Farm Timişoara

Parity	**n**	**X±SEM (days)**	**SD**	**v (%)**	**Min.**	**Max.**
1	37	379.5±12.61	76.71	20.2	255	546
2	23	397.9±20.85	99.97	25.1	224	540
3	29	343.5±11.87	63.91	18.6	190	500
4	14	357.6±13.49	50.48	14.1	285	439
5 and over	22	353.5±20.02	93.92	26.6	201	504
Total	**125**	**367.5±7.24±**	**80.99**	**22.0**	**190**	**546**

Table 2 shows the averages and dispersion indices for mil yield on total lactation according to the parity. The average production level for the studied population was a good one, 5125 kg milk. The maximum milk yield per total lactation was attained in the third parity (5705.4 kg). The milk yield increased gradually from first parity up to the third parity, after that started to decrease. On the first lactation the milk yield was 4652.6 kg, representing 81.5% from the maximum lactation.

Variability of this trait was higher in the second lactation (20.74%). The lowest variability was found in the third lactation (15.36%).

Table 2

Averages and dispersion indices for milk yield per total lactation according to the parity in Romanian Black and White cows from the Didactical Farm Timişoara

Parity	n	Total Lactation		
		X±S\EM (kg)	SD	v%
1	37	4652.6±130.03	790.95	17.00
2	23	5055.4±218.69	1048.79	20.74
3	29	5705.4±162.81	876.74	15.36
4	14	5437.9±257.50	963.47	17.71
5 and over	22	5028.2±199.32	934.88	18.59
Total	125	5125.0±87.39	977.08	19.06

Statistical significance between parities regarding the milk yield is shown in Table 3. The only statistically significant differences were found between the third parity on one hand and first and second parities on the other hand. First calving cows produced 1052.8 kg less ($p<0.001$) per total lactation that cows in the third parity. Also, cows in the second lactation produced 650 kg less ($p<0.005$) than those in the third lactation.

Table 3

Differences and statistical significance for milk yield according to the parity

Parity	**Total lactation**			
	5 and over	4	3	2
1	-375.6^{ns}	-785.3^{ns}	-1052.8***	-402.8^{ns}
2	27.2^{ns}	-382.5^{ns}	-650*	-
3	677.2^{ns}	267.5^{ns}		-
4	409.7^{ns}			-

ns – p>0,05; * - p<0,05; ** - p<0,01; *** - p<0,001

Even though the differences among the other parities were rather high they did not reached the statistical significance, probably because of the high variability within groups.

Conclusions

♦ The milk yield in the first lactation was 81.5% from the maximum production attained in the third lactation, results being in accordance with those from the literature.

♦ Parity had an influence on the lactation length, which increase up to the second lactation and then decrease slightly from third to fifth lactation.

♦ Milk yield is influenced by the parity, increasing from the first lactation (4652.6 kg) up to the third lactation (5705.4 kg) and then decresing upto the fifth lactation (5028.2 kg).

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