

## STUDYING THE GENETIC CHARACTERISTICS OF REPRODUCTIVE FUNCTION IN THE CATTLE POPULATION OF BLACK SPOTTED BREED MOLDAVIAN TYPE

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### Abstract

Previous studies have shown that the scientific organization of livestock reproduction is an important way to increase the profitability of livestock breeding. Organizing livestock reproduction, as an economic process, involves knowing the reproductive function and how it is influenced by animal production. Reproductive indices offer objective information about these complex biological features. Through the selection work it is necessary to specify the content and the scientific basis of the relationship between milk production and reproductive indices. The research has been carried out on a 500 cows, and as a result we can mention that the milk output is closely related to the indices of reproduction.

**Keywords:** Black Spotted Breed, cattle population, reproductive indices, productive indices, correlation, heritability.

### Introduction

Cattle reproduction is an important part of their breeding technology, their maintenance, obtaining products from them. It determines the efficiency, profitability and productivity of livestock animals. Thus, the further improvement of the productive and breeding qualities and of the profitability of dairy cattle is still relevant, regardless of the forms of ownership, ranging from large breeding farms to small farms and even rural households.

From the wide range of indices used in specialty literature the group of reproductive indices is of particular interest and one of the essential characteristics of this index group is that it does not measure the potential capacity of the reproductive function but the degree of its manifestation in the Black Spotted Breed Moldavian type in the specific conditions of animal growing and maintenance. We have thus proposed a comparative characterization of milk production with reproductive indices. The following reproductive indices have been studied: calving interval, duration of service-period, mammary gland rest, gestation, fecundity and prolificity in relation to the productive capacity of cows.

### Materials and methods

The investigations were carried out in the breeding farm Bălți on 500 cows herd of the Black Spotted Breed Moldavian type. The examined productive indices were milk production on normal and total lactation using the traditional method (control milking), the average percentage of fat in the milk, the amount of produced milk fat during lactation.

The reproductive indices were: fecundity, service-period according to the primary zoo technical records. The statistical data processing was computerized by the methods of variation statistics.

## Results and discussion

From the data included in the chart showing the productive and reproductive indices of the cow herd in the breeding farm bălți, we can state that the milk production on normal lactation is  $4225.34 \pm 48.5$  kg with an average percentage of fat  $3.68 \pm 0.03$  with a not too high coefficient of variation (cv % = 2.81 and 2.44).

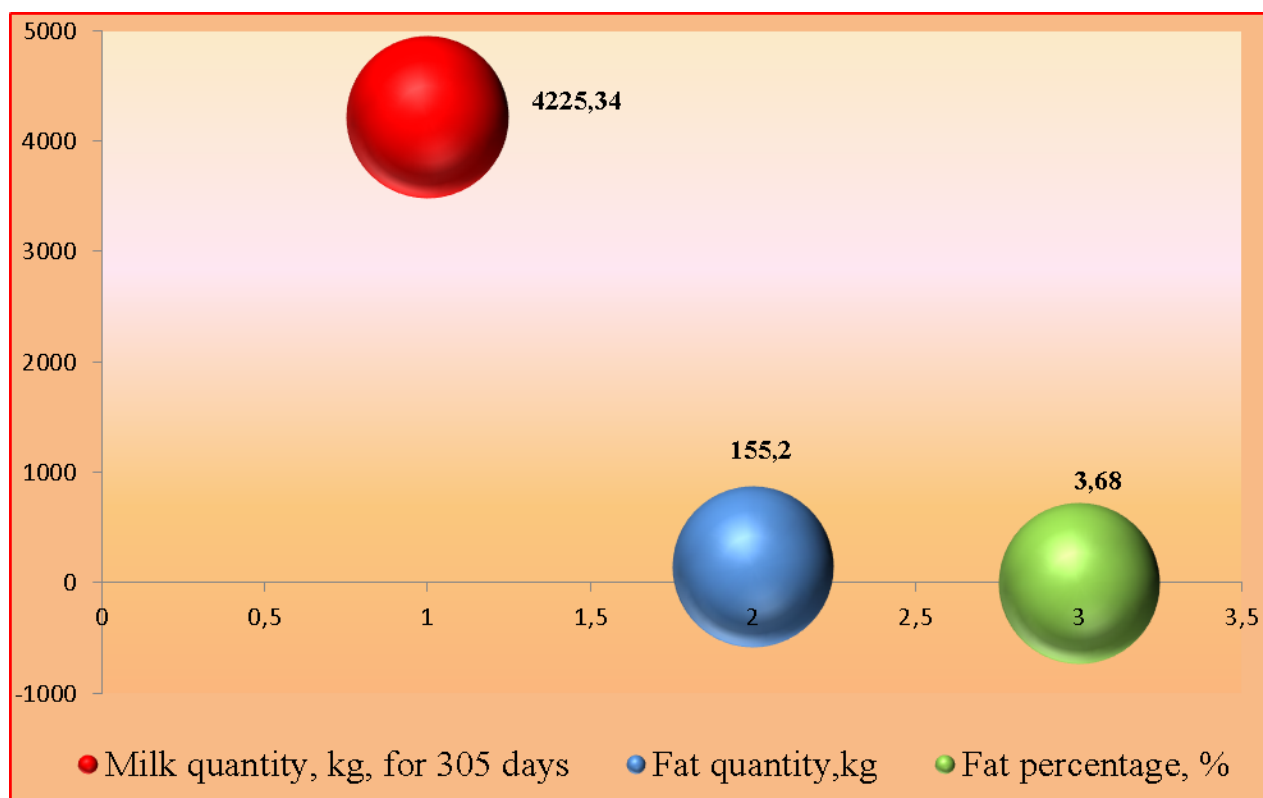


Figure 1. Productive indices in the Black Spotted Breed Moldavian type

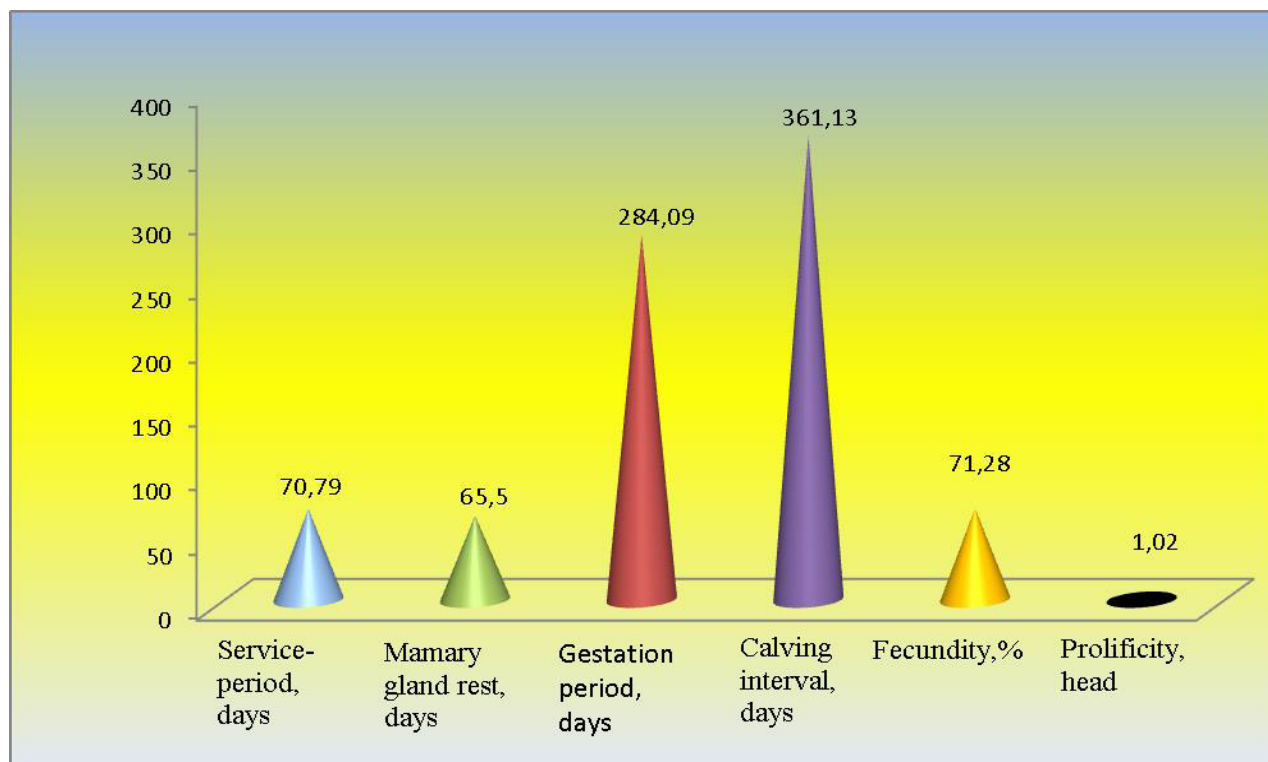


Figure 2. Reproductive indices in the Black Spotted Breed Moldavian type

Analysis of reproduction indices was done based on the calving interval and fertility indices, taking into account duration of gestation, service-period, mammary gland rest and cow prolificity. Calving interval constituted  $361.13 \pm 2.09$  with a variation coefficient 0.53 %. Cows' fecundity from the first insemination equals to  $71.28 \pm 5.13$ , and prolificity is of  $1.02 \pm 0.01$  calves. The most variable reproductive characters are: fecundity, service-period duration and mammary gland rest; the least variable characters are: calving interval, gestation period and prolificity.

The status of the adult animal organism and its production are the result of the interaction between the hereditary base and the living conditions in which the animal grew and developed. The estimation of correlations implies the application of appropriate experimental and statistical methods leading to the obtaining of information for two or more characters from the same animal and from numerous animals in the population and their calculation possibilities. The study of the correlation ( $r$ ) between milk production and reproductive indices is shown in Table 1.

Table 1. The correlation between milk productivity and reproductive indices

Indices correlating with milk production, kg	tr
Calving interval, days	0.241
Fecundity, %	0.116
Service-period, days	0.188
Mammary gland rest, days	0.12
Gestation period, days	-0.690
Prolificity, head	-0.05

The data from Table 1 show a correlation between milk production and gestation period. There is a weak correlation between other reproductive indices and milk production.

The value of the heritability coefficient allows us to deduce the genotype participation rate in the formation of the phenotype and is of great importance for the practice of improving/amelioration cattle. The heritability of reproductive indices in this company is presented in Table 2.

Table 2. The heritability of reproductive indices in the Black Spotted Breed Moldavian type.

Specifications	$h^2$
Gestation period, days	0.48
Service-period, days	0.44
Calving interval, days	0.36
Mammary gland rest, days	0.28
Fecundity, %	0.1
Prolificity, head	0.04
Number of inseminations	-0.008

The most heritable are: service-period and gestation period. Medium heritable are: calving interval, mammary gland rest. And the least heritable are: prolificity, fecundity, number of inseminations.

Based on this research concerning the study productive and reproduction indices in cattle, the following conclusions can be drawn:

## Conclusions

1. The carried out researches were an objective necessity meant to meet the current requirements regarding the efficiency and the economicity of the cattle breeding in the Republic of Moldova.
2. Based on the obtained results, we consider that milk production in cows of the Black Spotted Breed Moldavian type is closely correlated with reproductive indices.
3. Negative correlation of milk production with reproductive indices, and especially with service-period duration, fecundity, reveals the need for more intensive breeding of the Black Spotted Breed Moldavian type.

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