RESEARCH ON THE ESTIMATION OF GENETIC PARAMETERS FOR PRODUCTION TRAITS IN THE ROMANIAN SPOTTED CATTLE BREED – SIMMENTAL TYPE

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Abstract

The objective of this study is to estimate the genetic parameters of the production traits in a population of cattle from the Romanian Spotted Cattle breed-Simmental type. Genetic parameters refer to the heritability and genotypic correlations between traits. Knowing them is essential for optimizing cattle breeding programs.

To estimate genetic parameters, the REML methodology was used, applied to a BLUP animal model, for five traits, analyzed simultaneously (milk quantity/fat quantity/protein quantity/fat percentage/protein percentage).

The obtained results revealed an intermediate genetic determinism, with heritability values in the range of 0.18-0.34. Thus, for lactation I, heritability values were 0.253 (milk quantity); 0.226 (amount of fat); 0.177 (amount of protein); 0.258 (fat percentage) and 0.252 (protein percentage). For the second lactation, heritability values were 0.339 (milk quantity); 0.306 (amount of fat); 0.312 (quantity of protein); 0.326 (fat percentage) and 0.262 (protein percentage). For the third lactation, the corresponding values were the following 0.215 (milk quantity); 0.208 (amount of fat); 0.176 (quantity of protein); 0.198 (fat percentage) and 0.213 (protein percentage).

Regarding the genetic correlations between the traits, their values were closely correlated between the amount of milk and the amounts of fat and protein (> 0.70), which shows that the respective traits are controlled by the same genes, in the same direction. Between the quantity of milk and its quality (percentage of fat and protein), the genetic correlations were negative (-.0162/-0.382), which highlights the fact that selection for high milk quantity means counter-selection for milk quality.

Key words: REML, BLUP, variances, heritability, genetic correlations