

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## INTERACTION BETWEEN GENOTYPE AND DIFERENTS CLIMATES FOR PROTEIN MILK YIELD IN BRAZILIAN HOLSTEIN CATTLE

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The genotype by environment interaction is an effect that causes changes in the behavior of the expression of genes in the characteristics, leading to changes in the genetic value of the animals. Factors such as differences in temperature, relative humidity and rainfall may be preponderant to cause such an effect. The breakthrough in reproductive biotechnologies, such as artificial insemination, has favored the distribution of genotypes across various regions of the world. Since the state of Parana has three distinct climatic regions, protein production can be affected. Thus, data of 57,979 primiparous cows, with lactation information from 1990 to 2015 and relationship matrix of 106,848 animals, was used to estimate the correlation for the mentioned trait between three different environments. The dataset utilized belongs to the Associação Paranaense de Criadores de Bovinos da Raça Holandesa – APCBRH and was divided according to three climatic classification of the Paraná state, being R1) mesothermic climate moist and super humid, R2) mesothermic climate without dry season, R3) mesothermic climate with dry season. The effects included in the model were the fixed effects of contemporary group (herd and birth year), calving age as linear covariate and the additive genetic random effect. It was considered the animal model, using the REML method, to estimate the genetic correlation, applying the software VCE 6.0. The highest mean for milk protein yield was obtained by R1, with a value of 270.76 kg ( $\pm$  61.19), followed by R2 with a value of 261.01 kg ( $\pm$  60.16) and R3 with a value of 220.37 kg ( $\pm$  59.11 kg ). The correlations for the characteristics between the regions were 0.91 for R1xR2, 0.99 for R1xR3 and 0.93 for R2xR3. Since the existence of genotype x environment interaction is considered when the genetic correlation between two environments is minor than 0.80, it can be affirmed that no significant interaction was identified between the studied regions. In this way, the genetic value predicted in one region can be used in another, without bias in its progress.

**Keywords:** breeding value, gene plasticity, genetic parameters, milk quality, subtropical climate

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