

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

HETEROGENEITY OF VARIANCE AND GENETIC PARAMETERS FOR MILK PRODUCTION UP TO 305 DAYS IN GIROLANDO CATTLE BY BAYESIAN INFERENCE

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The objective of this study was to verify the effect of heterogeneity of variance (HV) on milk production until 305-days lactation (L305) of Girolando cows and on genetic evaluation of Girolando bulls. Records of 3,235 animals sired by 73 bulls, calving between 2000 and 2014 were obtained from the Girolando Breed Genetic Improvement Program coordinated by the Dairy Cattle National Research Center (EMBRAPA). The model included contemporary groups (comprised by herd, year and calving season) as fixed effect, cow's age at calving (linear and quadratic effects) and heterozygosity (linear effect) as covariates, and direct additive genetic, residual and permanent environment as random effects. Each herd was classified in Low and High standard deviation (SD) of milk production according to the standardized L305 means for herd and year of calving. The class of Low SD was comprised of herds with SD equal to or less than zero and the class of High with values of positive SD. Animals without birth and/or calving date and pedigree information were excluded. Only cows with lactation length between 90 to 450 days were used and data from sires that did not have at least two daughters in each SD class were excluded. The analyzes were performed in two scenarios: *S_i*) single-trait animal model with the L305 records and, *S_{ii}*) two-trait animal model considering the standardized Low and High SD target phenotypes based on L305. The (co)variance components estimates and breeding values were obtained separately for each scenario and trait by using Bayesian inference via Gibbs sampling. Posterior means of heritability estimates were 0.18 (L305, *S_i*), 0.13 (Low SD) and 0.27 (High SD). The genetic correlation between Low and High DP was 0.90 and the Spearman's rank coefficients were greater than 0.87. This result indicates that the genetic improvement of low and high SD herds will not be negatively affected by sire selection based on genetic merit for L305. The presence of HV verified in this study being mainly of a genetic nature did not affect the genetic evaluation of Girolando sires.

Keywords: lactation, homoscedasticity, sire

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