Genotype-environment interaction for eighteen month weight of Canchim cattle in São Paulo State, Brazil

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Genotype-environment interaction (GEI) in beef cattle can be characterized by the change of the set of genes which express a trait in function of the environment production. Genetic correlation between the trait studied in different environments measures the extent in which this change occurs. The aim of this study was to evaluate the existence of GEI on eighteen month weight (EMW) in Canchim cattle, through genetic correlations obtained by bayesian inference. Three different clusters of cities in the State of São Paulo, homogeneous with respect to environment variables, were considered as the environments. The statistical model included the fixed effects of contemporary group and age at weighing (covariate), and additive and residual random effects. The heritability estimates of EMW were low to moderate in magnitude [0.20-0.35] for the three clusters. The genetic correlations between EMW in the three clusters varied from 0.13 to 0.34, suggesting the existence of GEI. The results showed that phenotypic expression of EMW depended on the environment in which it was measured.