

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

COMPARISON OF MODELS FOR HERITABILITY ESTIMATION FOR GROWTH TRAITS IN CROSSBREEDING CATTLE

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The objective of this work was to compare models for estimate the heritability coefficients for birth weight (BW), weaning weight (WW) yearling weight (YW) and weight at 420 (W420) for crossbred beef cattle. Data from 8931 animals, born between 1981 and 2016 from three genetic groups: F1 crossbreds (¼ Angus ¼ Canchim ¼ Charolês ¼ Caracu), F2 and F3 (Purunã) belong to the Experimental Station of the IAPAR in Paraná State were used. After edition dataset presented 1042, 1039, 1039, 1030 animals, respectively, for BW, WW, YW and W420. The models considered as fixed effects the contemporary group (sex, year and season at the moment of the evaluation) and genetic group, and the linear and quadratic effects of animal's age (except for BW) and age of dam as covariates. The heritabilities were estimated by an animal model using program BLUPF90 (Misztal et al; 2014) by 2 models: Model 1: $Y = X\beta + Za + e$ and Model 2: $Y = X\beta + Za + Wp + e$, where: Y is the vector of dependent variables; β fixed effects vector; a The vector of direct additive genetic effects; p vector of maternal permanent environment effects; X, Z and W, are incidence matrices associated with each effect, respectively; and e is the vector of residual effects. The LRT (Likelihood Ratio Test) was used to identify the most appropriate model. For BW the heritability estimates were 0.55 ± 0.08 and 0.51 ± 0.09 for models 1 and 2, respectively, and the LRT test indicated model 2 as the most appropriate. For WW, the heritability coefficients were 0.36 ± 0.08 and 0.29 ± 0.09 for models 1 and 2, respectively, with model 2 was indicated. For YW the heritabilities were 0.16 ± 0.06 and 0.15 ± 0.06 , with model 1 was indicated by LRT. For the W420 were 0.31 ± 0.08 and 0.27 ± 0.08 , indicated model 1 most appropriate. The inclusion of the permanent maternal environmental effect in the models to estimate the coefficients of heritability until weaning growth is necessary.

Keywords: beef cattle, genetic parameters, likelihood ratio test, maternal permanent environment effect

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