IMPACTS OF THE CLASSIFIER ON RESULTS OF GENETIC ANALYSIS OF SCORE TRAITS RELATED TO TYPE AND MANAGEMENT IN GYR DAIRY CATTLE

IMPACTOS DO AVALIADOR SOBRE OS RESULTADOS DA ANÁLISE GENÉTICA DE CARACTERÍSTICAS DE SCORE RELACIONADAS A TIPO E MANEJO NA RAÇA GIR LEITEIRO

RAFAEL GUIMARÃES VIZONÁ[1], BRUNO DA COSTA PEREZ[2], ANÍBAL EUGENIO VERCESI FILHO[3], ANDRÉ RABELO FERNANDES[4], RICARDO VIEIRA VENTURA[5], JÚLIO CÉSAR DE CARVALHO BALIEIRO[5].

[1]Universidade de Uberaba, Medicina Veterinária, Uberaba, MG, Brasil;
[2]Faculdade de Zootecnia e Engenharia de Alimentos-FZEA, Universidade de São Paulo, USP/Pirassununga-SP;
[3]Instituto de Zootecnia (IZ), CAPTA Bovinos de Leite, Nova Odessa-SP;
[4]Associação Brasileira dos Criadores de Gir Leiteiro (ABCGIL), Uberaba, MG;
[5]Faculdade de Medicina Veterinária e Zootecnia-FMVZ, Universidade de São Paulo, USP/Pirassununga-SP.
*e-mail: rafaelvizona@hotmail.com

The success of a breeding program invariably depends on the quality of data collected. Visual scores have the advantage of low operating cost for their collection, but they require objectivity, both in definition and in the process of attribution of the phenotype, since they depend on a classifier. In the National breeding program of Gyr dairy cattle (PNMGL), from a total of 18 traits, five are evaluated by visual scores: legs rear view (LRV), legs side view (LSV), fore-udder attachment (FUA), temperament (TP) and milking ease (ME), assuming values between 1 to 9, assigned by a classifier. The objective of the present study was to quantify the percentage of total variation attributed to the effect of classifier for traits evaluated by scores. For this purpose, a univariate animal model using Bayesian approach was implemented. The model proposed for the analyses considered the fixed effects of herd-year of birth of the animal, cow's age (covariate); and random effects of animal, classifier and residual. A Markov chain containing 850.000 samples was created, with a *burn-in* of 250,000 samples and storage of only 100 sample intervals (thinning), resulting in posterior distributions containing 6,000 samples. The posterior means (and confidence interval; 0.05 – 0.95) for the percentages of the total variation explained by the effect of classifier on the traits studied were: LRV =0.42 (0.29/0.52), LSV = 0.43 (0.29/0.56), FUA= 0.05 (0.00/0.30), TP= 0.39 (0.28/0.48), ME= 0.52 (0.44/0.60). The heritability values for the traits were: LRV= 0.01, LSV= 0.18, FUA= 0.03, TP= 0.07, ME= 0.07. The results indicate the influence of the classifier on the phenotypic variation of the evaluated traits. The magnitude of the estimates obtained can be explained both by factors involved in defining the phenotype and in the data collection process. Decreasing the scale of the variable (1 to 5) may help to improve the accuracy for the classifier's assignment of the score of the animal, assuming a theoretical biological model that explains the variation found in these traits. Possibly the current scale makes differentiation of the distinct phenotypes difficult by simple visual analysis. Finally, the efficient training of classifiers could reduce possible bias in the attribution of the phenotype, caused for example by previous knowledge of the parentage of the animal.

Keywords: Bayesian inference, visual scores , zebu.

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