

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

PHENOTYPIC PLASTICITY OF A SELECTION EXPERIMENT FOR GROWTH WITH NELORE CATTLE

Anielly de Paula FREITAS¹, Gabriele Voltareli da SILVA^{2*}, Mário Luiz Santana JUNIOR³,
Maria Eugênia Zerlotti MERCADANTE², Joslaine Noely dos S. Gonçalves CYRILLO²,
Claudia Cristina Paro de PAZ^{1,2}

*corresponding author: gabi_voltareli@hotmail.com

¹Universidade de São Paulo, Ribeirão Preto, São Paulo, Brasil.

²Instituto de Zootecnia, Centro APTA de Bovinos de Corte, Sertãozinho, São Paulo, Brasil.

³Universidade Federal de Mato Grosso, Rondonópolis, Mato Grosso, Brasil.

A genetic selection experiment for growth with Nelore cattle were carried out to determine the presence of genotype by environment interaction and to characterize the phenotypic plasticity for yearling weight (YW). The experiment was started in 1976 and in 1980 three lines of Nelore cattle were established: control (NeC) selected for mean YW; selection (NeS) and traditional (NeT), both selected for higher YW. The NeT was an open line that eventually received bulls from other herds. A total of 8208 measurements of weight of male and female, born between the years of 1981 and 2015 were used. The herds belonged to the Beef Cattle Research Center of Instituto de Zootecnia of Sertãozinho, SP, Brazil. The reaction norm model was adopted using as environmental descriptor the contemporary group solutions. The genotypes of the individuals was classified according to the absolute value of its genetic component of slope (b_j). Three categories of plasticity were defined according to the standard deviation of the slopes of the animals for each trait and herd: robust genotype ($|b_j| < \sigma_b$), plastic genotype ($\sigma_b \leq |b_j| < 2\sigma_b$) and extremely plastic genotype ($|b_j| \geq 2\sigma_b$). The observed frequencies of robust, plastic, and extremely plastic genotypes were 66.0%; 26.4% and 7.6% of animals NeC; 48.1%; 31.9% and 20.0% of animals NeS and 53.0%; 33.5% and 13.5% of animals NeT, indicating genetic variability in phenotypic plasticity. These results indicate that the herds selected for greater YW tend to be more plastic, i.e., more sensitive to environmental variations, being that an ideal production system would be one in which the genotypes presented high performance with slope close to zero. The sensitivity of the animal should be included in the selection indices to select more robust animals or select plastic animals respond better to environmental improvements.

Keywords: environmental sensitivity, component of slope, reaction norm

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