



Genetic correlations between mature cow weight and productive and reproductive traits in Nelore cattle

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ABSTRACT. We investigated genetic associations between mature cow weight (MW) and weaning weight (WW), yearling weight (YW), weight gain from birth to weaning (GBW), weight gain from weaning to yearling (GWY), weaning hip height (WHH), yearling hip height (YHH), scrotal circumference (SC), and age at first calving (AFC). Data from 127,104 Nelore animals born between 1993 and 2006, belonging to Agropecuária Jacarezinho Ltda., were analyzed. (Co)variance components were obtained by the restricted maximum likelihood method, applying an animal model in a multi-traits analysis. The model included direct genetic and residual effects as random effects, the fixed effects of contemporary group, and the linear and quadratic effects of animal age at recording (except for AFC, GBW, and GWY) and age of cow at calving as covariates (except for MW). The numbers of days from birth to weaning and from weaning to yearling were included as covariates for GBW and GWY, respectively. Estimated direct heritabilities were 0.43 ± 0.02 (MW), 0.33 ± 0.01 (WW), 0.36 ± 0.01 (YW), 0.28 ± 0.02 (GBW), 0.31 ± 0.01 (GWY), 0.44 ± 0.02 (WHH), 0.48 ± 0.02 (YHH), 0.44 ± 0.01 (SC), and 0.16 ± 0.03 (AFC). Genetic

correlations between MW and productive traits were positive and of medium to high magnitude (ranging from 0.47 ± 0.03 to 0.71 ± 0.01). A positive and low genetic correlation was observed between MW and SC (0.24 ± 0.04). A negative genetic correlation (-0.19 ± 0.03) was estimated between MW and AFC. Selection to increase weight or weight gains at any age, as well as hip height, will change MW in the same direction. Selection for higher SC may lead to a long-term increase in MW. The AFC can be included in selection indices to improve the reproductive performance of beef cattle without significant changes in MW.

Key words: Age at first calving; Beef cattle; Hip height; Weight gain; Scrotal circumference