



# Genetic parameter estimates and response to selection for weight and testicular traits in Nelore cattle

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**ABSTRACT.** We estimated genetic parameters for various phases of body and testicular growth until 550 days of age in Nelore cattle, using Bayesian inference, including correlation values and error estimates. Weight and scrotal records of 54,182 Nelore animals originating from 18 farms participating in the Brazilian Nelore Breeding Program (PMGRN) were included. The following traits were measured: weight at standard ages of 120 (W120), 210 (W210), 365 (W365), 450 (W450), and 550 (W550) days; weight gain between 120/210 (WG1), 210/365 (WG2), 365/450 (WG3), 450/550 (WG4), 120/365 (WG5), 120/450 (WG6), 120/550 (WG7), 210/450 (WG8), 210/550 (WG9), and 365/550 (WG10)

days of age; scrotal circumference at 365 (SC365), 450 (SC450) and 550 (SC550) days of age, and testicular growth between 365/450 (TG1), 450/550 (TG2) and 365/550 (TG3) days of age. The model included contemporary group (current farm, year and two-month period of birth, sex, and management group) and age of dam at calving, divided into classes as fixed effects. The model also included random effects for direct additive, maternal additive and maternal permanent environmental, and residual effects. The direct heritability estimates ranged from 0.23 to 0.39, 0.13 to 0.39 and 0.32 to 0.56 for weights at standard ages, weight gains and testicular measures, respectively. The genetic correlations between weights (0.69 to 0.94) and scrotal circumferences (0.91 to 0.97) measured at standard ages were higher than those between weight gain and testicular growth (0.18 to 0.97 and 0.36 to 0.77, respectively). The weights at standard ages responded more effectively to selection, and also gave strong correlations with the other traits.

**Key words:** Beef cattle; Gibbs samples; Growth; Reproductive traits