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Genetic analysis of average annual productivity of Nellore breeding cows (COWPROD)

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ABSTRACT. With the aim of estimating the coefficient of heritability of average annual productivity of Nellore cows (COWPROD), a data set from 24,855 animals with known pedigree was analyzed. COWPROD is defined as the amount (in kilograms) of weaned calves produced yearly by one cow during her remaining time in herd ignoring a fixed period of 365 days. COWPROD was calculated regarding three standards: a) based on the post-weaning weight from the calves ignoring any kind of adjustment (COWPROD_NAJ), b) adjusted weight for the fixed effects (COWPROD_AJFIX) and c) adjusted weight for the fixed effects and for the genetic merit of the sire (COWPROD_AJFIN). The obtained heritabilities were 0.15, 0.15 and 0.16 for COWPROD_NAJ, COWPROD_AJFIX and COWPROD_AJFIN, respectively. A complete set composed of 105,158 COWPROD records on 130,740 animals in pedigree was also analyzed for predicting the genetic merit of all animals in the data set and for the calculation of the genetic, phenotypic and residual trends. Ranking correlation was high for the adjusted and non-adjusted data, yet, for some of the animals, the difference among the genetic values was large. This would be an indication that it would be better to work always with the adjusted weaning weights. The genetic trend was positive, but was of small magnitude (0.26% of the trait average) and the residual trend was negative as a consequence of the large intensification of the production system, which has been occurring in the last years in the farms studied. The phenotypic trend was also negative and intermediate between the genetic and the residual ones.

Key words: Beef cattle; Productive efficiency; Heritability; Selection; Genetic trend

