

## GENETIC PARAMETERS ESTIMATES OF GROWTH TRAITS OF SANTA INÊS SHEEP USING THE MULTIPLE-TRAIT MODEL

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The Santa Inês sheep are woolless animals that constitute the biggest effective in Brazil, being popular all over the country. They are originally from Brazil's North-east, and used as paternal breed in this region because of their differential weight gain compared to other woolless breeds. However, they have been used as maternal breed in other parts of the country. The evaluation of growth characteristics in meat animals provides subsidies to their genetic improvement, enabling the development of the best selection strategy which makes possible more significant genetic gains. In this evaluation, the knowledge about the genetic parameters is primordial. The use of multiple-trait animal model allows the evaluation of the relationship between different traits, considering their genetic correlations, and also computes the previous selection of those animals, evaluated at different ages. This methodology maximizes the use of information available and makes the flock's evaluation more consistent. The aim of this study was to estimate genetic parameters for Santa Inês sheep's weight during their birth (BW), weaning (WW), slaughter (SW) and at the age of one (W1). The data used in this study come from a flock which belongs to the company Gaasa Alimentos LTDA, located in Inhumás (a town in the Brazilian state of Goiás), and they are part of the Programme of Genetic Improvement of Goats and Sheep (GENECOC) managed by the company Embrapa Goats and Sheep. The parentage matrix used consisted of 13,440 animals. Because they are slaughtered before turning one year old, two multi-trait analyses were carried out, one of them containing BW, WW e SW and the other one with BW, WW and W1. The analyses were carried out through the Derivative Free Restricted Maximum Likelihood method (DFREML), using the MTDFREML software. Both the additive direct genetic random effect and the fixed one relating to a contemporary group (animals born in the same season and year, with the same type of birth and sex, as well as subjected to the same handling) were taken into account for the all traits. The additive maternal genetic random effect as well as the permanent maternal environment and the fixed for class of maternal age in parturition ones were used for BW and SW. The age of weaning ( $55.69 \pm 9.56$  days) and slaughter age ( $141.80 \pm 42.27$  days) co-variables were used for WW and SW, respectively. The means for BW (n = 9,671), WW (n = 7,435), SW (n = 2,592) and W1 (n = 1,348) were respectively  $3.97 \pm 0.90$  kg,  $15.80 \pm 3.84$  kg,  $33.27 \pm 6.4$  kg and  $42.99 \pm 6.60$  kg. The direct heritability for the BW, WW, SW and W1 traits were respectively 0.15, 0.23, 0.16 and 0.30. The maternal heritabilities for BW and SW were 0.17 and 0.10, respectively. The genetic correlations, direct and maternal (m = maternal), were : BW x WW (0.83); BW x SW (0.65); BW x W1 (0.36); WW x W1 (0.71); WW x SW (0.82); SW x BWm (0.04); BWm x WWm (0.79); BWm x P1 (0.07); SWm x W1 (0.16); BW x BWm (-0.51); BW x WWm (-0.58); WW x BWm (-0.47); WW x WWm (-0.66); e SW x WWm (-0.11). The estimative values are within the expected for a commercial population subjected to selection.

**Keywords:** animal model, genetic correlations, heritability, woolless sheep

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