

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

PERFORMANCE AND MORPHOLOGICAL CHARACTERIZATION OF MORADA NOVA SHEEP DIFFERING IN RESIDUAL FEED INTAKE

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Residual feed intake (RFI) is a measurement of feed efficiency potentially useful in ruminant breeding programs because it is independent of phenotypic performance. No breeding programs for sheep in Brazil, however, have included RFI in selection indexes. The objective of this study was to evaluate performance and morphological characteristics of 2 groups of sheep differing in RFI. All characteristics evaluated make up the current animal selection index of the Morada Nova Breeding Program developed by Embrapa Caprinos e Ovinos. Thirty seven Morada Nova ram lambs (Initial average body weight = 22.4 ± 3.71 kg) were included in a performance trial to measure dry matter intake (DMI) and average daily gain (ADG) by using the GrowSafe™ System. Animals were fed *ad libitum* for 74 days with a pelleted diet composed of Tifton-85 hay, ground corn, soybean meal, and mineral premix. At the end of the performance test, *Longissimus* muscle area (LMA) and backfat thickness (BFT) were measured by using an ultrasound apparatus, while scrotal circumference (SC) was determined with a measuring tape. The RFI was estimated as the difference between observed and estimated DMI, where estimated DMI, $\text{g day}^{-1} = 80.89 (\pm 12.11) \times \text{BW, kg}^{0.75} + 1.488 (\pm 0.727) \times \text{ADG, g day}^{-1}$. Fourteen animals were then classified into 2 groups based on their RFI: Low-RFI (Average RFI = -233 ± 73 g day^{-1}) and high-RFI (RFI = 201 ± 47 g day^{-1}). As expected, ADG did not differ ($P = 0.84$) between groups (ADG = 225 ± 26 g day^{-1}), but DMI was significantly lower ($P < 0.01$) for the animals of the low-RFI group ($1,112 \pm 102$ g day^{-1} vs. $1,455 \pm 57$ g day^{-1}). There were no significant differences between RFI groups for *Longissimus* muscle area ($P = 0.30$; LMA = 10.2 ± 1.13 cm^2), and for backfat thickness ($P = 0.29$; BFT = 2.8 ± 0.52 mm). Interestingly, the animals of the low-RFI group presented a 6.14% greater SC ($P = 0.02$) in comparison to those of the high-RFI group (SC = 31.1 ± 0.92 cm vs. 29.3 ± 1.01 cm). This result suggests a relationship between feed efficiency and testosterone production in growing male sheep. Moreover, the correlation found between RFI and SC ($r = -0.69$; $P < 0.01$) indicates that an indirect selection for low-RFI animals in the Morada Nova Breeding Program could be achieved, since scrotal circumference has a weight of 10% in its selection index.

Keywords: feed efficiency, scrotal circumference, sheep breeding program

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