

HERITABILITY ESTIMATE OF YEARLING AND POST-YEARLING MUSCLE INDEX IN NELLORE CATTLE

ESTIMATIVA DE HERDABILIDADE DO ÍNDICE DE MUSCULOSIDADE DE BOVINOS NELORE AO ANO E SOBREANO

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The objective of this study was to estimate heritability of carcass muscle index (MI) in yearling (MI_y) and post-yearling (MI_p) Nellore cattle. MI is the measure of *longissimus* muscle area (LMA) expressed in relation to body weight ($MI=100 \times LMA/BW$), being an indicative of animal muscularity. The records of LMA, obtained by ultrasound, and body weight (BW) were from the three Nellore herds reared at Centro APTA Bovinos de Corte, Instituto de Zootecnia, Sertãozinho-SP, born between 1999 to 2011, excepting 1998, 2000 and 2003. The measures were collected when the animals were on average 372 ± 26 days (yearling) and 562 ± 33 days (post-yearling) of age. The animals are progeny of 163 bulls and relationship matrix included 3436 animals. Variance components were estimated by REML in two single-trait analyses. The model included the fixed effects of contemporary group (herd-year-sex, $i=1, \dots, 48$), month of birth ($j=1, \dots, 3$) and dam age (linear and quadratic effects) and animal age at measurement (linear effect), and random effects of animal and residual. The average of LMA and BW were: 48.4 ± 10.7 cm² and 287 ± 59 kg; 50.5 ± 9.2 cm² and 339 ± 64 kg, respectively for yearling and post-yearling. Despite the differences between yearling and post-yearling LMA and BW (plus 2.2 cm² and 52 kg at post-yearling than yearling), the same was not observed for MI. BW has increased from yearling to post-yearling, LMA has not increased proportionally, and MI_p was smaller than MI_y. The heritability estimates for IM_y and IM_p were medium to high magnitude (Table 1) indicating that part of the variation in these traits are attributable to genes of additive effects. In previous studies, the heritability of LMA at yearling was also higher than heritability of LMA at post-yearling, however, heritability of yearling weight was lower than heritability of post-yearling weight. More studies are required to estimate genetic correlations of MI_y and MI_p and weight and percentage of retail product of carcass before indicating them as selection criteria to increase muscularity in Nellore cattle.

Table 1. Descriptive statistics and heritability estimates for muscle index

Trait	Number of records	Mean	Additive genetic variance	Heritability
IM _y	1765	16.96 ± 2.29	1.34	0.49 ± 0.061
IM _p	1137	15.02 ± 1.86	0.65	0.30 ± 0.070

Keywords: *Bos indicus*, carcass traits, genetic parameter.

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