

Genetic associations between carcass traits measured by real-time ultrasound and scrotal circumference and growth traits in Nelore cattle

M. J. Yokoo^{*,**}, R. B. Lobo^{***,§}, F. R. C. Araujo^{**}, L. A. F. Bezerra^{***}, R. D. Sainz[#], and L. G. Albuquerque^{*}

^{*} Department of Animal Science, São Paulo State University, Jaboticabal, São Paulo, Brazil, CEP: 14.884-900; and ^{**} Aval Serviços Tecnológicos S/S, Uberaba, Minas Gerais, Brazil; and ^{***} Department of Genetic, University of São Paulo, Ribeirão Preto, São Paulo, Brazil; and [§] National Association of Breeders and Researchers of Ribeirão Preto, São Paulo (ANCP), Brazil; and [#] Department of Animal Science, University of California, Davis 95616

Abstract :

The aim of the present study was to evaluate the genetic correlations among real-time ultrasound carcass, BW, and scrotal circumference (SC) traits in Nelore cattle. Carcass traits, measured by real-time ultrasound of the live animal, were recorded from 2002 to 2004 on 10 farms across 6 Brazilian states on 2,590 males and females ranging in age from 450 to 599 d. Ultrasound records of LM area (LMA) and backfat thickness (BF) were obtained from cross-sectional images between the 12th and 13th ribs, and rump fat thickness (RF) was measured between the hook and pin bones over the junction between gluteus medius and biceps femoris muscles. Also, BW (n = 22,778) and SC (n = 5,695) were recorded on animals born between 1998 and 2003. The BW traits were 120, 210, 365, 450, and 550-d standardized BW (W120, W210, W365, W450, and W550), plus BW (WS) and hip height (HH) on the ultrasound scanning date. The SC traits were 365-, 450-, and 550-d standardized SC (SC365, SC450, and SC550). For the BW and SC traits, the database used was from the Nelore Breeding Program—Nelore Brazil. The genetic parameters were estimated with multivariate animal models and REML. Estimated genetic correlations between LMA and other traits were 0.06 (BF), -0.04 (RF), 0.05 (HH), 0.58 (WS), 0.53 (W120), 0.62 (W210), 0.67 (W365), 0.64 (W450 and W550), 0.28 (SC365), 0.24 (SC450), and 0.00 (SC550). Estimated genetic correlations between BF and with other traits were 0.74 (RF), -0.32 (HH), 0.19 (WS), -0.03 (W120), -0.10 (W210), 0.04 (W365), 0.01 (W450), 0.06 (W550), 0.17 (SC365 and SC450), and -0.19 (SC550). Estimated genetic correlations between RF and other traits were -0.41 (HH), -0.09 (WS), -0.13 (W120), -0.09 (W210), -0.01 (W365), 0.02 (W450), 0.03 (W550), 0.05 (SC365), 0.11 (SC450), and -0.18 (SC550). These estimates indicate that selection for carcass traits measured by real-time ultrasound should not cause antagonism in the genetic improvement of SC and BW traits. Also, selection to increase HH might decrease subcutaneous fat as correlated response. Therefore, to obtain animals suited to specific tropical production systems, carcass, BW, and SC traits should be considered in selection programs.

Key Word :

Bos indicus, genetic correlation, genetic parameter, hip height, longissimus muscle area, rump fat thickness