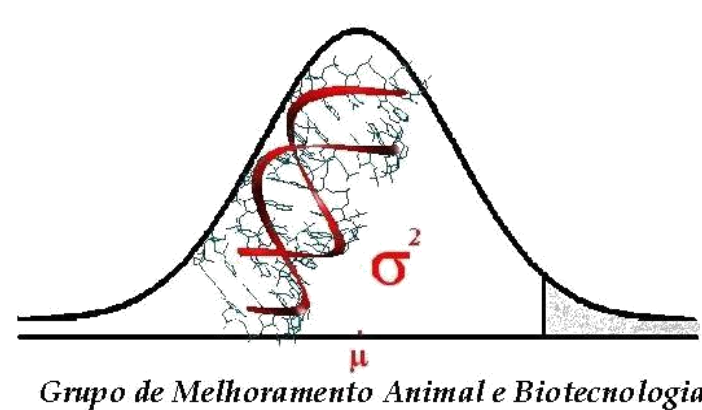




Genetic parameters of growth and beef quality traits in Nelore

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Objectives

Estimate genetic parameters for growth, carcass composition and beef quality traits of Nelore (*Bos indicus*) cattle raised in tropical areas in Brazil.

Introduction

Brazilian beef industry accounts for close to one third of global beef exports and its trades keep it among the three large beef exports, in the last decade. Close to 90% of the Brazilian beef production is based on *Bos indicus* cattle or crosses with that subspecies, especially from Nelore breed. That subspecies is spread among continents and the herds located in Africa, America, Asia and Oceania accounts for roughly 40% of the world's population of cattle. But beef quality of *Bos indicus* is qualified as poor and tough. Therefore, it's necessary to study genetic parameters of carcass and meat traits, besides growth, of *Bos indicus* cattle, especially Nelore, in order to propose strategies for genetic improvement of meat quality, that can bring positive impacts on standardization and quality of *Bos indicus* beef marketed worldwide.

Material and methods

Data from 12,920 Nelore steers and bulls, grown in pastures and feed for finishing, between 90 and 120 days, were analyzed. Individual information on live ultrasound carcass measurements and frame were, also, were collected. From those, 2,048 were slaughtered and carcass, beef quality traits were obtained for estimation of beef quality attributes like color, marbling and pH. Evaluations with Near Infrared Technology (NIRS) were, also, performed to quantify tenderness and lipid in Longissimus muscle. Laboratory analysis of tenderness and total lipids were made to compare with VIA and NIRS data. Variance components, genetic and phenotypic parameters for traits were estimated by mixed models (full animal model), using PEST/VCE 6.0, considering a relationship matrix of 42,028 animals and proper models.

Results

Estimate of heritability of rib-eye area, measured by ultrasound, was $.32 \pm .04$ and the genetic correlations with carcass measure were high. Heritability estimates for ultrasound backfat was estimated in $.46 \pm .05$ and the genetic correlation with rump fat was very high, while only moderate with marbling and fat extracted from meat. Frame had a moderate heritability estimate ($.28 \pm .03$). Heritability estimates and standard errors for the main traits are presented in the following table.

Heritability and standard errors for growth, carcass and meat traits in Nelore cattle

Trait	h ²	s.e.
Ribeye area (ultrasound, cm ²)	.32	.04
Backfat (ultrasound, mm)	.46	.05
Rump fat (ultrasound, mm)	.43	.04
Frame score	.28	.03
Visual score of finishing	.28	.02
Hot carcass weight, kg	.11	.05
Rump width, cm	.24	.05
Rump length, cm	.17	.04
Carcass finishing	.12	.03
Conformation score	.17	.02
Post weaning weight gain, kg	.25	.03
Beef fat content, %	.12	.04
Marbling, 12 th rib	.15	.07
Marbling, 5 th rib	.16	.06
Tenderness, 5 th rib	.13	.06
Tenderness, 12 th rib	.15	.09
Tenderness, 12 th rib, 7 days ageing	.20	.05
Cooking loss, %	.04	.02

Conclusions

This research provides important information to development of auxiliary tools for genetic improvement of growth, carcass and meat quality traits in Nelore herds.