

## QUANTITATIVE CARCASS CHARACTERISTICS OF NELORE X RED ANGUS AND NELORE STEERS MAINTAINED IN BRACHIARIA BRIZANTA PASTURE SUPPLEMENTED WITH DIFFERENT LEVEL OF CONCENTRATE

CASELLI, ANDREA R.<sup>1</sup>; FREADOLLI, FÁBIO LUIZ<sup>2</sup>; RESENDE, KLEBER T. de<sup>3</sup>; FREITAS, DJALMA<sup>4</sup>; REIS, RICARDO A.<sup>3</sup>; RESENDE, FLAVIO D. de<sup>5</sup>; FERREIRA, DANIEL de S.<sup>1</sup>; NAKAGI, SERGIO<sup>6</sup>; BERTIPAGLIA, LIANDRA A.<sup>6</sup>.

<sup>1</sup> Ungraduate Animal Science Students of FCAV/Unesp- Jaboticabal. deacaselli@yahoo.com.br

<sup>2</sup> Graduate Student of Animal Science Program, FCAV/Unesp- Jaboticabal. Supported by CNPq. fabiolff@fcav.unesp.br

<sup>3</sup> Animal Science Professor of FCAV/Unesp- Jaboticabal. Research of CNPq. Kresende@fcav.unesp.br; rareis@fcav.unesp.br

<sup>4</sup> Graduate Student Animal Science Program of FCAV/Unesp- Jaboticabal. Supported by FAPESP. Djalma@fcav.unesp.br

<sup>5</sup> Animal Science Researcher APTA- POLO Regional Alto da Mogiana- Colina- SP

<sup>6</sup> Animal Scientist.

### Background

The beef cattle production using tropical grass pasture is a Brazilian vocation, however, the animal performance can be increased by supplements utilization. This approach is option to intensify the animal production system. The diet quality can be affected the animal performance and carcass characteristics. According to LUCHIARI FILHO (2000), the animal growth, the proportions of the tissue, organs, and carcass portions were a function of the genetic characteristics and nutritional level of the animals in different ages. The marketing value of the carcass is associated to the profit, and quality of the edible portion. The carcass income is associated to quantity and proportions of muscle, bones and fat.

### Objectives

This research was carried out to evaluate the animal performance, carcass characteristics of the Nelore and Nelore x Red Angus steers, maintained in Brachiaria brizantha pasture supplemented with different levels of concentrate.

### Methods

The research was developed in Unesp, campus of Jaboticabal – São Paulo, using 18 castrated animals 14 months old, nine Nelore and nine Nelore x Red Angus, with initial body weight (BW) average  $324 \pm 15.8$  Kg and  $361 \pm 16.8$  Kg, respectively. The animals were maintained in palisadegrass (*Bachiaria brizantha*, cultivate Marandú), in rotational grazing system. It was evaluated the following supplementation levels: 0.2%, 0.6% and 1.0% of BW. The supplements contained 77.0% of total digestible nutrients, 17.0% of crude protein (CP), considering 65.7% of the CP, like low rumen degradable protein. The ingredients of the supplement were: 77.8% of citrus pulp, 9.8% of cottonseeds meal, and 12.3% of corn gluten meal. The experimental was carrying out since January until April 2003, at this time the animals were slaughtered after a 16 hours of fast period. After the slaughter, the carcass was cooled by 24 hours in 0° C, and removed from the cool chamber. After this, the carcass were weighted, and separated in their primary cuts (front, ribs and special hind), which was weighted and calculated the percentage in relation to the whole right cooled carcass weight. The cool carcass weights were adjusted in relation to the slaughter steers weight. It was removed the bones, from the special hind, and the fat excess from the secondary cuts. The muscle, bone, fat excess weight data were expressed like a percentage of special hind weight, to adjust the initial BW. The dressing percentage was calculated considering the hot weight carcass (WHC) in relation to the slaughter weight. The data were analyzed according a completely randomized design, in a factorial schedule (two genetic groups and three supplement levels) with three replications. The results was submitted to a variance analyzed and media compared by Tukey test, 5.0% of probability.

### Results and discussion

The Nelore x Red Angus had higher daily weight gain (0.81 kg/day) compared to Nelore (0.74 kg/day), and the daily weight gains increased ( $P < 0.05$ ) due to the supplementation levels, 0.65, 0.79, and 0.89 kg/day, respectively to 0.2, 0.6, and 1.0% of BW (Table 01). The Nelore x Red Angus steers showed a higher ( $P < 0.05$ ) initial BW (446.4 Kg) than Nelore (401.5 Kg). It was observed a higher ( $P < 0.05$ ) hot carcass weight of the Nelore x Red Angus (239.9Kg) compared to Nelore (212.8 Kg). However, there was not difference ( $P > 0.05$ ) for the dressing percentage, observed 53.0% in average. It's important to consider that animals were maintained in a palisadegrass pasture during the dry season (July until December) receiving protein supplement (0.6% of BW). However, the Nelore x Red Angus showed higher initial body weight than Nelore, and this difference maintained during the experimental periods until the slaughter. The higher initial BW can be justify by the genetic characteristics and precocity. The dressing percentage of carcass value was 53% (Table 01), similar to the values observed by LEME et al. (2000) that evaluated the same genetic groups, however with 22 months, no castrated. On the other hand, MOLETA and RESTLE (1996), observed a higher Nelore carcass dressing percentage (54.6%) than Nelore x Red-Angus (51.0%), finished in feedlot and slaughtered whit 26 months, so the Nelore x Red Angus showed a carcass termination later than Nelore.

The Nelore x Red-Angus showed higher ( $P < 0.05$ ) dressing percentage of special hind and ribs than Nelore, however, the dressing percentage of front was not different between genetic groups. The higher ribs and hind profit observed should be caused by the precocity of crossbreeding animals in relation to the original genetic group (LONG and GREGORY 1975). In relation to the genetic groups, there was not difference between front proportions. The front development is a differential sexual secondary characteristic, occurring at puberty end. The results of this research were the same observed by LEME et al. (2000) using Nelore, Nelore x Red Angus, and RESTLE (1999) that studied Nelore x Hereford finish in a feedlot system.

The analysis of bones removed from the special hind (Table 01) showed that Nelore x Red-Angus had higher ( $P < 0.05$ ) quantity of muscle than Nelore, due to the higher SW. However, the fat and bones quantity from special hind were not different ( $P > 0.05$ ) between genetic groups, because the animals was not in puberty. Although the ADG was higher to Nelore x Red Angus, there was no difference between genetic groups to muscle, fat, and bones percentage in the special hind. It was observed 75.5%, 11.8% and 11.3%, respectively to muscle, fat, and bones percentage, occurring a proportional tissue development in both genetic groups. In relation to the supplement level, the animals that received 1.0% of BW showed higher ( $P < 0.05$ ) SW and hot weight carcass (444.3 Kg and 239.0 Kg) than the animal that received 0.2% and 0.6% of BW (average values of 413.8 Kg and 217.7 Kg, respectively). There was not supplementation effects ( $P > 0.05$ ) on the dressing percentage,

front percentage, ribs and hind dressing percentage, observed the followings values: 53 %, 38.9 %, 12.1 % and 47.9 %, respectively. This data occur due to the average daily gain of the animals supplemented, was uniformly distributed on the carcass, maintained the same proportion.

The special hind of animals that received 1.0 % of BW, when removed the bone, showed more (P <0,05) quantity of muscles and bones (43.5 Kg and 12.3 Kg) comparing to the others supplement levels (40.6 and 10.9 Kg). However, there was not supplementation effect on the special hind fat quantity (6.4 Kg), probably due the high variation coefficient (36.07 %), due to the difficulty to remove fat from the edible cuts. The higher values of the special hind muscle and bone observed on the animals received 1.0 % BW of supplement, probably is related to the animals did not reach the sexual maturity. In this situation, most of energy intake was metabolized to muscle and bone development, a precocity deposition tissue. When the special hind muscle, fat and bone values were expressed like cut weight percentage, there were no supplementation effects. It was observed average values of 75.0 % of muscle, 11.8 % of fat and 20.6 % of bone.

### Conclusions

- The Nelore x Red Angus precocity caused higher weight slaughter, average daily gain, dressing percentage hind and ribs than Nelore.
- The animal's supplementation increased daily gain, but didn't affect the carcass characteristics.

Table 1 – Weight slaughter, average daily gain, quantity aspect of carcass function of genetic group and of levels of supplement and coefficient of variation (CV)

	Genetic Groups			Supplement		CV
	Nelore x Angus	Nelore	0,2%WQ	0,6%PV	1,0% PV	
Weight slaughter (kg)	446,4a	401,5b	411,3b	416,3b	444,3a	1,81
Averagy daily gain (kg)	0,81a	0,74b	0,65c	0,79b	0,89a	7,22
Carcass weight (kg)	233,9a	212,8b	216,2b	219,2b	239,0a	4,15
Dressing percentage (%)	52,4	53,7	52,6	52,7	53,8	3,56
Front (%)	39,0	38,8	40,0	37,1	39,6	5,48
Rib (%)	12,6a	11,5b	12,2	11,8	12,2	4,39
Special hind (%)	48,8a	47,0b	48,8	47,3	47,6	3,45
Hind muscle (kg)	42,4a	40,8b	40,1b	41,1b	43,5a	3,12
Muscle (%)	75,7	75,4	76,0	75,6	75,1	3,00
Hind fat (kg)	6,8	6,0	5,2	6,7	7,4	36,07
Fat (%)	12,8	10,8	10,0	13,8	11,6	38,82
Hind bone (kg)	11,7	11,0	11,0b	10,8b	12,3a	4,65
Bone (%)	20,9	20,4	20,9	19,9	21,2	6,45

Medias after the different letter in the line are different (P<0,05) by test of Tukey

### References

- LEME, P.R. et al. Desempenho em confinamento e características de carcaça de bovinos machos de diferentes cruzamentos abatidos em três faixas de peso. *Revista Brasileira de Zootecnia*, Viçosa, v. 29, n. 6, p. 2347–2353, 2000. (Suplemento 2).
- LUCHIARI FILHO, A. *Pecuária da carne bovina*. São Paul: A. Luchiari Filho, 2000. 134p.
- MOLETTAL, J.; RESTLE, J. Características de carcaça de novilhos de diferentes grupos genéticos terminados em confinamento. *Revista Brasileira de Zootecnia*, Viçosa, v. 25, n. 5, p. 876–888, 1996.
- RESTLE, J. et al. Características de carcaça e da carne de novilhos de diferentes genótipos de Hereford x Nelore. *Revista Brasileira de Zootecnia*, Viçosa, v. 28, n. 6, p. 1245–1251, 1999.
- LONG, C.R.; GREGORY, K.E. Heterosis and management effects in carcass characters of Angus, Hereford and reciprocal cross cattle. *Journal Animal Science*, Savoy, v. 41, n. 6, p. 1578-1580, 1975.