

**COUNTRY:** BRAZIL

**SESSION:** LARGE RUMINANT PRODUCTION

**CARCASS CHARACTERISTICS OF YOUNG BULLS AND STEERS OF FOUR GENETIC GROUPS FINISHED IN FEEDLOT<sup>1</sup>**

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**ABSTRACT**

The objective of this study was to evaluate carcass characteristics of 71 intact or castrated (at weaning) Nellore (NE), Canchim x Nellore (CN), Angus x Nellore (AN) and Simmental x Nellore (SN) male calves, born in 2000 and 2001. Animals were slaughtered when estimated carcass weight was greater than 200 kg for NE and CN or 225 kg for AN and SN and ultrasound backfat over 3 mm. Data were analyzed by the least squares method with a model that included effects of year, sexual condition (SC), genetic group (GG) and SC x GG interaction. Slaughter weights were greater ( $P < 0.05$ ) for bulls than for steers (428.5 versus 390.7 kg) and also greater for AN (423.3 kg) and SN (437.7 kg) than for CN (392.7 kg) and NE (382.7 kg). Age of slaughter of all GG was 419 days with a carcass yield of 57%. However, there was difference in age at slaughter (411 versus 425 days) and in yield of carcass (57.4 versus 56.7%) for bulls and steers. Backfat thickness was higher for steers than for bulls and higher for AN than for CN and SN animals. Rib eye area was greater for bulls than for steers and greater for SN than the other groups. Bulls showed higher percentage of forequarter (38.4 versus 37.0%) than steers. None of the SC x GG interaction was significant ( $P > 0.05$ ). Bulls can be slaughtered at 14 months of age with desired carcass quality. Crossbreeding high grade Nellore cows with Simmental or Angus bulls improved final carcass weight.

**KEYWORDS**

Backfat thickness, beef cattle, yield of carcass, rib eye area, young beef cattle.

**INTRODUCTION**

Farmers have utilized crossbreeding in beef cattle with the objective of increasing final weights and weight gains and to produce carcass of better quality, in order to attend Brazilian and foreign markets. Together with crossbreeding programs, farmers have also routinely castrated males. Castration is conducted to improve management practices and to produce carcasses with better acceptance in the market as compared to carcasses of bulls. The main problem of bull carcass is a

low backfat thickness, which causes a brownish (dark) color in external muscles in the cold room (during refrigeration), reducing commercial value of carcasses (EUCLIDES FILHO et al., 2001). Another aspect that might cause a reduction of commercial value of bull carcass is that steers generally show greater proportion of the hind quarter than bulls (RESTLE et al., 1996). Meat processing industry has a preference for steer carcasses because they show higher backfat thickness than bulls, which helps in the efficiency of the refrigeration process in the cold room (PADUA et al., 2001).

The objective of this study was to evaluate quality of carcasses of bulls and steers of four genetic groups, fed in feedlot from weaning to slaughter.

## MATERIALS AND METHODS

The study was conducted at Embrapa Southeast Cattle Research Center, utilizing 13 Nellore (NE) calves, and 22 crossbred  $\frac{1}{2}$  Canchim +  $\frac{1}{2}$  Nellore (CN), 19 crossbred  $\frac{1}{2}$  Angus +  $\frac{1}{2}$  Nellore (AN) e 17 crossbred  $\frac{1}{2}$  Simmental +  $\frac{1}{2}$  Nellore (SN) calves, the offspring of Nellore or high grade Nellore cows. Thirty three animals were born in 2000 while 38 animals were born in 2001. All calves were weaned at an average of eight months of age and one week later with 252 days of age the feedlot study started with 17 and 18 castrated animals, and 16 and 20 intact animals, in years I and II, respectively. A diet of 68% corn silage plus 32% concentrate was fed from the beginning of the experiment until crossbred AN and SN reached 380-kg live weight. After that point all animals received a diet with 50% corn silage plus 50% concentrates. Live weight of animals was obtained after 16-hour fasting, every 28 days, and before slaughter. The end point of feedlot was 3-mm of backfat thickness, measured by ultra-sound over the 12th rib, and estimated carcass weight greater than 200 kg for NE and CN or 225 kg for AN and SN. Number of days on feedlot was 178 and 157 days in years I and II, respectively. Hot carcass weights and pelvic and kidney fat weights were obtained soon after slaughter, while cold carcass weights were obtained 24 hours later by the sum of the weights of the half carcasses. The right half carcass of all animals was divided at 5 and 6th ribs to obtain weights of hindquarter and forequarter. The left half carcass of all animals was divided at 12 and 13th ribs to obtain the measurement of the rib eye area and the backfat thickness over the rib eye area. Data were analyzed by the least squares method (SAS, 1999) with a model that included effects of year, sexual condition (SC), genetic group (GG) and SC x GG interaction. Means were compared by Student Newman-Keuls (SNK) test.

## RESULTS AND DISCUSSION

Bulls were slaughtered with an average of 13.5 months while steers were slaughtered with 14 months of age. Average hot carcass weights of all animals from feedlot in years I and II were similar ( $P>0.05$ ). Bulls showed greater hot carcass weights ( $P<0.05$ ) than steers (245.9 versus 221.4 kg). Crossbred SN (247.6 kg) and AN (240.2 kg) animals showed similar ( $P>0.05$ ) hot carcass weights, however their weights were greater than those of crossbred CN (226.2 kg) and straightbred NE (219.4 kg). Yield of carcass was higher ( $P<0.05$ ) in year I (57.7%) than in year II (56.3%) as it was higher ( $P<0.05$ ) for bulls (57.4%) than for steers (56.7%). All genetic groups showed similar ( $P>0.05$ ) yields of hot carcass weights. Yields of carcass found in this work were smaller than those found by CRUZ et al. (2001)

and EUCLIDES FILHO et al. (2001), however, they were higher than those found by PADUA et al. (2001) and PEROTTO et al. (2000). Percentage of pelvic and kidney fat (2.4%) was similar ( $P>0.05$ ) for all genetic groups, however, it was higher ( $P<0.05$ ) for steers (2.8%) than for bulls (2.0%). Backfat thickness was lower ( $P<0.05$ ) for bulls (3.6 mm) than for steers (4.7 mm). Crossbred AN showed higher backfat thickness than crossbreds CN and SN but similar to the NE group. Values for backfat over the rib eye were 5.3; 3.3; 3.6 and 4.4 mm for AN, SN, CN and NE, respectively. Results of the backfat were lower than those found by CRUZ et al. (2001) and higher than that reported by PEROTTO et al. (2000). Rib eye area was larger ( $P<0.05$ ) for bulls than for steers (76.0 versus 68.0 cm<sup>2</sup>), and larger ( $P<0.05$ ) for crossbred SN than for all other genetic groups. Values for rib eye area were 71.3; 78.1; 71.9 and 65.7 cm<sup>2</sup> for AN, SN, CN and NE, respectively. Values of the rib eye area expressed in cm<sup>2</sup> found in this study were larger than those reported by PEROTTO et al. (2000). Rib eye area of 31.3 cm<sup>2</sup>/100 kg carcass weight was similar ( $P>0.05$ ) for bulls and steers and similar for all genetic groups. Values of the rib eye area of the present study were larger than those found by VAZ et al. (2001), however, they were similar to those found by CRUZ et al. (2001), who worked with similar genetic groups slaughtered with greater carcass weights at 16 months of age. Percentage of the forequarter of bulls was greater ( $P<0.05$ ) than that of steers (38.4 and 37.0%), what is explained by the sexual dimorphism in bovines, which occurs through enlargement of the forequarter (PADUA et al., 2001). Comparison of percentages of forequarter of genetic groups showed no statistical differences ( $P>0.05$ ), with means of 37.4; 37.8; 37.8 and 37.9% for CN, NE, SN and AN, respectively. Percentage of hindquarter was greater ( $P<0.05$ ) for steers than for bulls (63.0 versus 61.6%). A similar result has been found by RESTLE et al. (1996). Average of percentage of hindquarter was 62.3, a value which was similar for all genetic groups.

## CONCLUSION

Carcass characteristics were altered by sexual condition of animals. Bulls showed greater carcass weights, yields of carcass and rib eye area than steers. Castration of animals caused an increase percentage of hindquarter cut of the cold carcass and in backfat thickness as compared to the intact animals. Crossbred Angus x Nellore animals showed higher backfat thickness than the other groups, when hot carcass weight was according to Brazilian market (above 240 kg). Even though Nellore straightbred animals showed adequate backfat thickness, their hot carcass weights were lower than expected by Brazilian market.

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