Carcass characteristics of ½ Purunã *vs.* ½ Canchim bulls finished with 16 or 22 months of age with three different weights

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Abstract— This work was carried out to evaluate carcass characteristics of ½ Purunã *vs.* ½ Canchim bulls finished in feedlot and slaughtered with three different weights (light, medium or weighty). The experiment was conducted at model farm on experimental station of Instituto Agronômico do Paraná – Iapar, located at Ponta Grossa city at Paraná estate in Brazil. 113 ½ Purunã *vs.* ½ Canchim bulls were used. The animals were allocated according to the finishing system (super early (SUP) – 16 months old or early (EAR) – 22 months old) and according to the slaughter weight (light – 420.00 kg; medium – 470.00 kg and weighty – 550.00 kg). There was not interaction (P>0.05) between the system of finishing and the slaughter weight. There was difference (P<0.05) to hot carcass weight between the systems of finishing. SUP bulls presented higher hot carcass weight (259.74 kg) in comparison with EAR bulls (251.72 kg). This difference was influenced by hot carcass dressing. This characteristic was higher (P<0.05) to SUP bulls (55.00%) in comparison to EAR bulls (53.74%). The greater use of carcass, SUP bulls presented higher (P<0.05) hot carcass weight. SUP bulls (1.60 kg) presented higher (P<0.05) average daily gain in comparison with EAR bulls (1.19 kg). Bulls slaughtered weighty (64.98%) presented higher (P<0.05) muscle percentage in comparison to animals slaughtered light (58.92%) and medium (59.95%). This can be due the higher capacity of muscle deposition that these bulls present due their frame. Younger bulls present higher hot carcass dressing and higher hot carcass weight.

Keywords— **canchim, feedlot, purunã**

I. INTRODUCTION

The study of carcass traits is important when the goal is to evaluate the quality of a final product of a given system [1]. When slaughtering animals with heavier weight, changes may accour in housing characteristics [2]. There are strategies that allow the animal gain weight at 16 or 22 months old. To obtain an average daily gain of around 1.20 kg, the confinement is an alternative, although expensive in Brazil, but brings the expected results, around 1.30kg [4]. Crossbred animals presents the best potential for weight gain in feedlot [4].

The objective of this study was to evaluate carcass characteristics of crossbred bulls 113 ½ Purunã *vs.* ½ Canchim super early or early, finished in feedlot and slaughtered at three different weights (light 422 kg; medium 470 kg and heavy 520 kg).

II. MATERIAL AND METHODS

The experiment was conducted at Model Farm of Instituto Agronômico do Paraná.

Were used 113 bulls ½ Purunã *vs.* ½ Canchim. The animals were divided according to finishing system (super early - 16 months and early - 22 months) and slaughter weight (light - 422 kg; medium - 470 kg; weighty - 520 kg). For the super early system 22 animals were slaughtered at light final live weight (FLW), 20 at medium and 20 at weighty. For the early system, 18 animals were slaughtered at light FLW, 16 at medium and 17 at weighty.

The animals recieved a diet containing 12% of crude protein and 72% of total digestible nutrients. The forage supplied was corn silage and the concentrate was composed of 25% soybean meal, 73% corn grain and 2% mineral salt. The forage:concentrate was 58:42. The formulated diet and amount provided a day were to reach a live weight gain of 1.20 kg [3].

At the end of experimental period animals were weighted after solid fasting (16 hours) and slaughtered

at a commercial slaughterhouse. After slaughter carcasses were identified and weighted to determine conformation (CON), *longissimus area* (LA), fat thickness (FAT), marbling (MAR), color (COLOR), texture (TEX), muscle percentage (MUS), fat percentage (FATP) and bone percentage (BON).

Data were subjected to variance analyses (ANOVA) of SAS Institute [6]. When the averages were significantly different were compared by Tukey test.

III. RESULTS AND DISCUSSION

The AOL and CON were higher (P <0.05) for early animals (14.12 points and 71.57 cm^2) compared to super early (13.54 points and 67.68 cm2) (Table 1.) due to the higher slaughter weight of super early animals. Likewise, MAR and BON of super early (5.05 points and 14.76%) were lower (P <0.05) compared to early animals (5.90 cm and 15.38%) . The higher marbling and bone percentage in cattle are explained by the early age of the animals and the same finishing degree. Older animals have a higher amount of bone and higher percentage of fat in the carcass [5].However, the termination system had no effect (P> 0.05) on FAT, COLOR, TEX and muscle and fat percentages. In general, cattle slaughtered between 420 and 550 kg live weight show small variations in housing [5]. CON, CL and LL were higher (P <0.05) for heavy cattle (15.11 points, 132.03 cm and 68.83 cm) respectively, intermediate for cattle (average 13.90 points, 130.14 cm and 68.52 cm) respectively and lower for light cattle (12.48 points, 127.52 cm and 66.49 cm) respectively (Table 1.). Conformation is better explained by the cattle slaughter weight, since there is a positive correlation between slaughter weight and weight of the housing physical components. LA represents the carcass muscle content. In this way, LA is positively correlated with the weight of slaughter. Cattle slaughtered heavier have higher values for LA. Fat thickness, TEX and COLOR were similar (P> 0.05) for cattle slaughtered at lighter weights, medium and heavy. The MUS was higher (P <0.05) for cattle slaughtered with 550 kg of BW. Still, there was no difference (P> 0.05) in MUS for cattle slaughtered at 422 and 470 kg respectively. The fat percentage was similar (P> 0.05) for cattle slaughtered at 422 and 470 kg of BW and increased (P <0.05) compared to cattle slaughtered at 550 kg BW.

Table 1.Carcass traits of ½ Purunã *vs.* ½ Canchim bulls finished in two systems with three different weights

		Slaughter weight		
Variables	System	light	Medium	weighty
n		40	36	37
CON[1], points	SUP	12,41 ± 0,37	14,55 ± 0,38	15,40 ± 0,38
	PRE	12,56 ± 0,40	13,25 ± 0,43	14,82 ± 0,42
	Average	12,48 ± 0,27c	13,90 ± 0,29b	15,11 ± 0,28a
LA[2], cm^2	SUP	66,95 ± 1,82	69,15 ± 1,91	78,60 ± 1,91
	PRE	64,50 ± 2,01	66,32 ± 2,14	72,24 ± 2,07
	Average	65,73 ± 1,36b	67,73 ± 1,43b	75,42 ± 1,41a
FAT[3], mm	SUP	3,75 ± 0,29	4,23 ± 0,31	4,45 ± 0,31
	PRE	4,08 ± 0,32	3,53 ± 0,34	4,44 ± 0,33
	Average	3,92 ± 0,22	3,88 ± 0,23	4,45 ± 0,26
MAR[4], points	SUP	5,36 ± 0,40	4,95 ± 0,42	4,85 ± 0,42
	PRE	5,94 ± 0,44	5,81 ± 0,47	5,94 ± 0,46

[1]Carcass conformation, [2]*longissimus* area, [3]Fat thickness, [4]Marbling.

IV. CONCLUSIONS

Carcasses of animals slaughtered heavier presents better access than the others. However, fat thickness is lower in these animals, suggesting this group is later to termination. Animals slaughtered aged have more marbling on their beef, though without changing fat thickness

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