Carcass characteristics of Purunã *vs.* ½ Canchim cattle slaughtered at 16 or 22 months with three different concentrate levels

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Abstract— The aim of this work was to evaluate cattle performance ½ Purunã *vs.* ½ Canchim super early or early, supplemented with three different concentrate levels. 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. 97 male non castrated ½ Purunã *vs.* ½ Canchim were used. Cattle were allocated according to the finishing system (Super early – SUP – 16 months old or Early – EAR – 22 months old) on three different concentrate supplementation levels (0,8; 1,2 e 1,6% regarding to live weight). Hot carcass weight (HCW) were similar (P>0,05) between both finishing systems. The hot carcass dressing (HCD) for SUP (55,14%) regarding to EAR (53,78%). Carcass length (CLE), marbling and bone percentage were lower (P>0,05) (128,88 cm, 5,03 points e 14,66%) for SUP cattle regarding to EAR (132,10 cm, 5,88 points e 15,27%). However, *Longissimus* area (LA) was higher (P<0,05) (72,03 cm^2) for SUP cattle regarding to EAR cattle (68,30 cm^2). The leg length (LLE), cushion thickness (CTH), fat thickness (FAT), conformation (CON), color (COL), texture (TEX), muscle percent and fat percent were similar (P>0,05) between the two finishing systems. HCD was similar (P>0,05) for the three concentrate levels. The same way, the concentrate levels had no effect (P>0,05) over carcass characteristics. Due the higher weight gain of steers finished in SUP system and FBW not different between both systems, so the shorter confinement allows that there are less food-related expenses due the shorter termination.

Keywords— **canchim, feedlot, purunã**

I. INTRODUCTION

The productivity levels of Brazilian beef production should be improved to reduce cattle slaughter age and get better carcass quality [1]. According to [2] is necessary to establish quality standards in beef, aimed at retaining and regain the space lost of per capita consumption over the years for products considered healthier. For this, it is necessary termination of young animals, which can be achieved with good food levels, thereby resulting in a better beef quality [2]. Among the animals termination alternatives at young age, the confinement, which has large adoption among farmers who were using this technology due to the large volume of information provided by research centers [3]. Thus, it is possible to kill animals aged 14 to 18 months and get standardized carcass quality. The adjustment of the quantity and quality of feed based on the requirements of the animals it is necessary for there to be optimization of the livestock system. The voluntary intake is crucial for balancing diets and to establish feeding strategies that will accelerate cattle performance [4].

The aim of this work was to evaluate cattle performance ½ Purunã *vs.* ½ Canchim super early or early, supplemented with three different concentrate levels.

II. MATERIAL AND METHODS

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

Were used 97 intact males Purunã ½. vs ½ Canchim. The animals were divided according to the termination system (super early - 16 months and early - 22 months) and level of supplied concentrate (0.8, 1.2 or 1.6% over weight). For the super-early system 13 animals received 0.8% concentrate in relation to

body weight, 25 animals received 1.2% concentrate and 17 animals received 1.6% concentrate .For the early system,15 animals received 0.8% concentrate in relation to body weight, 12 animals received 1.2% and 15 animals received 1.6% concentrate.

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 carcass traits.

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 HCW was greater (P <0.05) for animals that received 1.2 (265.30 ± 4.01 kg) and1.6% (261.87 ± 4.04 kg) of concentrate. However, the HCW was similar between cattle fed 1.2 and 1.6% of concentrate. (5) found no effect of concentrate level on HCW. On the other hand, the HCW was similar (P>0.05)between levels 0.8 (54.36 ± 0.41%),1.2 (54.64 ± 0.38%) and 1.6% (54.38 ± 0.39%). The concentrate diet levels had no effect(P>0.05) on carcass traits, except for the highest percentage for cattle fed concentrate, 0.8% in relation to body weight (table 1.). (6) found that the diet concentrate level of crossbred cattle does not change the color, texture, marbling and carcass physical composition. However, in this study no difference was observed for percentage of fat in three different energy levels.(6) found no difference in the carcass fat percentage of crossbred cattle fed three levels of concentrate. The increment of concentrate in the diet was not enough for there to be significant changes in the carcasses characteristics (7). In this work, only the energy density was evaluated, however, was not sufficient to increase the amount of fat in the carcass.

Table 1. Carcass traits of bovine ½ Purunã *vs.* ½ Canchim finished at two systems with three concentrate levels

		Concentrate levels, kg/live weight			
Variables	System	0,80	1,20	1,60	Média
n		28	37	32	
CL[1], cm	SUP	129,85± 1,23	128,76± 0,89	129,03± 1,08	128,88± 0,62B
	PRE	131,67± 1,15	130,83± 1,29	133,80± 0,15	132,10± 0,69A
	Average	130,26± 0,84	129,80± 0,78	131,41± 0,79	
LL[2], cm	SUP	67,46± 0,74	66,94± 0,53	66,21± 0,64	66,87± 0,37B
	PRE	69,50± 0,69	68,58± 0,77	71,17± 0,69	69,75± 0,41A
	Average	68,48± 0,50	67,76± 0,47	68,69± 0,47	
CT[3], cm	SUP	25,04± 0,42	26,64± 0,30	26,11± 0,37	25,93± 0,21
	PRE	25,97± 0,39	25,79± 0,44	27,23± 0,39	26,33± 0,24
	Average	25,50± 0,29b	26,22± 0,27a	26,67± 0,27a	
CON[4], points	SUP	14,00± 0,55	14,36± 0,39	14,47± 0,48	14,28± 0,28
	PRE	13,33± 0,51	14,00± 0,57	13,80± 0,51	13,71± 0,31
	Average	13,67± 0,37	14,18± 0,35	14,14± 0,35	
LA[5], cm^2	SUP	67,85± 2,51	74,48± 1,81	73,76± 2,19	72,03± 1,26A
	PRE	69,20± 2,33	68,83± 2,61	66,87± 2,33	68,30± 1,40B
	Average	68,52± 1,71	71,66± 1,58	70,32± 1,60	
LA[6], cm^2	SUP	26,39± 0,76	27,76± 0,55	27,63± 0,67	27,26± 0,39
	PRE	27,60± 0,71	26,45± 0,79	25,93± 0,71	26,66± 0,43
	Average	26,99±	27,11±	26,79±	

		0,52	0,48	0,49	
FAT[7], mm	SUP	4,46± 0,37	4,26± 0,27	4,21± 0,33	4,31± 0,19
	PRE	3,77± 0,35	4,25± 0,39	4,13± 0,35	4,05± 0,21
	Average	4,11± 0,25	4,26± 0,24	4,17± 0,24	
MAR[8], points	SUP	4,92± 0,52	5,00± 0,37	5,18± 0,45	5,03± 0,26B
COR[9], points	SUP	3,54± 0,22	4,16± 0,16	3,88± 0,19	3,86± 0,11
	PRE	3,80± 0,21	3,83± 0,23	3,47± 0,21	3,70± 0,12
	Average	3,67± 0,15	4,00± 0,14	3,67± 0,14	
TEX[10], points	SUP	5,31± 0,31	4,56± 0,22	4,82± 0,27	4,90± 0,16
	PRE	4,20± 0,29	4,58± 0,33	4,60± 0,29	4,46± 0,17
	Average	4,75± 0,21	4,57± 0,20	4,71± 0,20	
MUS[11], %	SUP	59,41± 2,69	62,87± 1,94	59,92± 2,35	60,73± 1,35
	PRE	62,30± 2,50	62,48± 2,80	62,39± 2,50	62,39± 1,50
	Average	60,85± 1,83	62,67± 1,70	62,16± 1,72	
FAT[12], %	SUP	26,62± 2,66	23,06± 1,92	26,90± 2,33	25,53± 1,34
	PRE	21,82± 2,48	23,84± 2,77	23,28± 2,48	22,96± 1,49
	Average	24,22± 1,82	23,45± 1,69	25,09± 1,70	
BON[13], %	SUP	14,84± 0,42	14,87± 0,30	14,27± 0,37	14,66± 0,21B
	PRE	16,14± 0,39	14,60± 0,44	15,06± 0,39	15,27± 0,24A
	Average	15,49± 0,29a	14,74± 0,27b	14,66± 0,27b	

[1]Carcass length, [2]Leg length, [3]Cushion Thickness, [4]Carcass Conformation, [5]*longissimus* area, [6] *longissimus* area, [7]Fat thickness, [8]Marbling, [9]Color, [10]Texture, [11]Muscle percentage, [12]Fat percentage, [13]Bone percentage.

IV. CONCLUSIONS

Due to the cattle higher weight gain of finished in the system SUP and final body weight not different between the two finishing systems, shorter confinement allows lower expenses related to food. However, it is not easy to determine which system would be more interesting for the cattle termination, since there is an alternation in the desirable characteristics of the carcass, so the system should be adopted to meet desirable marketing requirements.

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