

Carcass characteristics of different genetic groups bulls finished in feedlot

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Abstract— This work was carried out to evaluate carcass characteristics of different genetic groups bulls finished in feedlot. The experiment was conducted at model farm on experimental station of Instituto Agrônomo do Paraná – Iapar, located at Ponta Grossa city at Paraná estate in Brazil. Sixty five bulls were used and allocated according to each genetic group: 1. Canchim – CAN (16 bulls); 2. ½ Purunã vs. ½ Canchim – PCA (36 bulls) and 3. ¾ Purunã vs. ¼ Canchim – PUC (13 bulls). Hot carcass weight was similar ($P>0.05$) among the genetic groups. Hot carcass dressing was higher ($P<0.05$) to CAN (58.41%) genetic group in comparison with PCA (53.55%) and PUC (52.91%). The best ($P<0.05$) carcass conformation and cushion thickness were observed to CAN; PUC was the intermediate and the lower to PCA genetic group. Carcass length and leg length were lower ($P<0.05$) to CAN. However, the lower ($P<0.05$) fat thickness was observed to CAN. There was no observed difference ($P>0.05$) to color and marbling among the genetic groups. The higher ($P<0.05$) muscle percentage was observed to CAN. Moreover, the lower ($P<0.05$) fat percentage was observed to CAN. Yet, bone percentage was similar ($P>0.05$) among the genetic groups. Canchim genetic group (5 / 8 Charolais vs. 3 / 8 Nelore) had more desirable carcass traits to marketing meat requirements, presenting higher values for carcass and conformation. These factors closely linked to increased deposition of muscle from Charolais and Nelore ensuring greater value for carcass sold.

Keywords— canchim, feedlot, purunã

I. INTRODUCTION

Currently, Brazil is considered in the international market de largest beef exporter, due the size of

commercial herd, large grazing areas, high grain production and their co-products by increasing productivity of 2.5% per year in the last decade [2].

Although there are likely to increase, Brazilian beef market is restricted due to the lack of quality, characterized mainly by sparse marbling, porr finishing and and little tenderness [5]. These problems tend stem from genetic factors (breeds and crosses) and environmental (diet, slaughter age and handling) [5].

The aim of this study was to evaluate carcass characteristics of non castrated cattle from different genetic groups (Canchim, ½ Purunã vs. ½ Canchim, ¾ Purunã vs. ¼ Canchim) finished in feedlot.

II. MATERIAL AND METHODS

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

Were used 65 non castrated cattle form three different genetic groups: 1. Canchim – CAN (n = 16); 2. ½ Purunã vs. ½ Canchim – PCA (n = 36) and 3. ¾ Purunã vs. ¼ Canchim – PUC (n = 13)

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].

Initial live weight on feedlot were: 200.56 ± 6.97 kg; 271.33 ± 4.64 kg and 256.62 ± 7.74 kg for CAN, PCA and PUC genetic groups respectively.

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 evaluate

carcass weight and hot carcass yield. As a result, carcasses were kept in cold storage for a 24 hours period at 4°C.

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

III. RESULTS AND DISCUSSION

There was no difference ($P>0.05$) for hot carcass weight (HCW), marbling (MAR) and bone percentage (BON) among the genetic groups (table 1.). HCY was higher ($P<0.01$) for CAN ($58.41 \pm 0.44\%$) compared to PCA (53.35 ± 0.29) and PUC ($52.91 \pm 0.49\%$), the observed values for is close to values from crossbred cattle (*Bos taurus* vs. *Bos Indicus*) fed with diets based on silage and concentrate high energy and finished in feedlot [1]. In other hand, HCY observed from CAN can be considered high for this animal breed. Overall, HCY for crossbred cattle finished in feedlot is between 50 and 54% [5].

Carcass conformation (CON) was better ($P<0.01$) for CAN (15.63 ± 0.42 points), PUC had intermediate values (14.69 ± 0.47 points) and PCA had worst CON (13.00 ± 0.28 points). The best CON for CAN is related to increased muscularity of the housing. Thus, with better CON and higher muscularity, CAN presents higher carcass yield.

Fat thickness (FAT) was higher ($P<0.01$) for PCA ($3.82 \pm 0.16\text{mm}$) and PUC ($3.88 \pm 0.27\text{mm}$) compared to CAN (2.

Table 1. Carcass characteristics of cattle from three genetic groups

Parameters	Genetic groups		
	CAN ¹	PCA ²	PUC ³
n	16	36	13
Hot carcass weight, kg	255,44 ± 5,43	245,03 ± 3,62	247,15 ± 6,02
Carcass yield, %	58,41 ± 0,44a	53,35 ± 0,29b	52,91 ± 0,49b
Conformation, points	15,63 ± 0,42a	13,00 ± 0,28c	14,69 ± 0,47b
Carcass length, cm	123,19 ± 1,22b	130,64 ± 0,82a	130,08 ± 1,36a
Leg length, cm	66,09 ± 0,68b	69,33 ± 0,45a	66,88 ± 0,75b
Cushion thickness, cm	27,19 ± 0,33a	26,53 ± 0,22b	25,65 ± 0,36c
Color, points	4,19 ± 0,19	3,89 ± 0,12	3,77 ± 0,21
Marbling, points	4,81 ± 0,43	5,86 ± 0,29	5,15 ± 0,48
Muscle, %	66,38 ± 1,66a	60,77 ± 1,10b	61,80 ± 1,84b

Fat, %	19,93 ± 1,42b	24,20 ± 0,95a	24,08 ± 1,58a
Bone, %	14,56 ± 0,43	15,57 ± 0,29	14,92 ± 0,47

¹Canchim, ²½ Purunã vs. ½ Canchim, ³¾ Purunã vs. ¼ Canchim

IV. CONCLUSIONS

Carcass traits are influenced by genetic group. Among genetic groups studied, Canchim presented the best housing characteristics, therefore, a genetic group suitable for Brazilian beef production. However, groups presenting Purunã genes had better fat thickness.

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