P-06-19

## Carcass traits of feedlot nelore and Rubia gallega x nelore cattle (#392)

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### Introduction

In the last decades, the use of *Bos taurus* x *Bos indicus* crossbred animals has increased in beef production systems in Brazil to produce better carcass and meat quality. Besides that, the crossbreeding promotes the use of beef brands in retail chains.

Rubia Gallega breed (*Bos Taurus*) is known for its high growth rate and low fat deposition (MONSERRAT & SÁNCHEZ, 2000) producing highly muscular carcasses that allow a higher cut yield (OLIETE et al., 2006). In addition, Rubia Gallega may present mutations in myostatin gene (*MSTN*). The mutation results in inactivation of myostatin protein and, consequently, increase of muscle mass, providing the double-muscled phenotype (DM). This phenomenon changes the pattern of muscle growth and development, resulting in upper carcasses, due to higher meat production, higher proportion of noble cuts and better tenderness (GERRARD et al, 1991; XAVIER, 2014). According to Oliete et al. (2006), carcasses of Rubia Gallega shows a higher yield of commercial cuts, with larger quantities of pieces with superior quality and favorable composition of meat.

Additionally, DM animals present lower feed intake and better feed conversion (ARTHUR, 1995). Their carcasses presents lower fat, both subcutaneous and intramuscular, a higher percentage of noble cuts, about 30% more in muscle:bone ratio (ARTHUR, 1995), lower percentage of bones, higher dressing percentage and ribeye area, and consequently, can generate greater profitability. For these reasons, animals with DM carcasses are classified as superior and excellent for the European Community, being an important export market.

Thus, the goal of this study was to evaluate the carcass traits of feedlot Nelore and Rubia Gallega x Nelore crossbreed cattle.

### Methods

Were used thirty-two bulls, divided into two groups: 16 Nelore (N) and 16 Rubia Gallega x Nelore crossbred (RGN). The initial mean weight of the cattle was 280 kg ± 15 kg and 11 months of age ± 2. Bulls were fed with the same diet during the experimental period: 1)70:30 concentrate:forage ratio (50 days); and 2)85:15 ratio, containing cottonseed at 20% of DM (70 days). The animals were humanely slaughtered, and hot carcass weight and dressing percentage were determined for each animal. Carcass were cooled at 0-2ºC and after 24h, the *Longissimus* muscle were sampled between 12$^{th}$ and 13$^{th}$ ribs to measure pH, ribeye area (REA, cm$^2$), and backfat thickness (BFT, mm).

The statistical analyses were performed by the proc MIXED SAS$^{Ò}$ (version 9.3). The experimental design was completely randomized, with 16 replicates per treatment, being each animal considered an experimental unit.

### Results

The value of pH 24h of *Longissimus* muscle from N and RGN groups was 5.63 and 5.68, respectively (Table 1). These values were in the normal range for beef exports by Brazilian meat companies (ROÇA & BONASSI, 1983).

Genetic groups showed differences for hot carcass weight and dressing percentage ($P<0.05$). For both carcass traits, animals from the RGN group had heavier and higher yielding carcasses than the N group. The was difference between genetic groups for the ribeye area and backfat thickness traits ($P<0.05$; Table 1).

### Conclusion

The use of Rubia Gallega x Nelore crossbred cattle indicates its potential application to provide higher carcass yield and the improvement of the production of cuts of higher commercial value. The HCW of the N cattle was 275.27 kg, around 15 kg less than the RGN (291.61 kg). The value for dressing percentage for RGN was higher (57.45%) than N (56.13%). These values are directly related to the greater weight of the RGN genetic group. According to Oliete et al. (2006), Rubia Gallega has late maturity with higher growth rate and low adipose tissue content, presenting high yield of commercial cuts carcasses, with larger quantities of meat cuts with superior quality.

Rubia Gallega and Nelore crossbred showed superior carcass traits when compared to Nelore cattle. Bulls RGN showed higher REA (90.19 cm$^2$) when compared to N (76.44 cm$^2$). However, the BFT was higher for N group (5.85 mm) than RGN (3.07 mm). This was already expected, since Rubia Gallega animals present low fat deposition (OLIETE et al., 2006). Silva (2011) evaluating the same crossing (Rubia Gallega x Nelore) at 24 months of age, obtained BFT of 1.59 mm. It is worth to mentioning that an BFT of at least 3 mm is required to protect the carcass against cold (LUCHIARI FILHO, 2000), avoiding losses in meat quality. Greater REA and smaller backfat thickness (BFT) are indicative of higher muscle yield, greater proportion of usable meat cuts and lower proportion of body fat in the carcass (LUCHIARI FILHO, 2000; MCINTYRE, 1994).

Notes

The higher productivity presented by the RGN animals can be explained by the double musculature, due to mutations in the myostatin gene. So, it can be affirmed that carcasses with the hypertrophic phenotype of the double musculature, ensure a greater production of meat (GERRARD et al, 1991; XAVIER, 2014).

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| Variable | N | RGN | SEM | *P value* |
|---|---|---|---|---|
| pH 24h | 5.63 | 5.68 | 0.038 | 0.4003 |
| Hot Carcass Weight (kg) | 275.27 | 291.61 | 3.489 | 0.0024 |
| Dressing (%) | 56.13 | 57.45 | 0.366 | 0.0163 |
| Ribeye Area (cm²) | 76.43 | 90.18 | 2.689 | 0.0011 |
| Backfat Thickness (mm) | 5.85 | 3.07 | 0.455 | 0.0002 |

**Table 1. Carcass traits of Nelore and Rubia Gallega x Nelore cattle**
N: Nelore RGN: Rubia Gallega x Nelore SEM: standard error of the mean.

Notes