

## Use of body measurements and ultrasound to predict carcass yield in Nelore cattle

L.M Nieto<sup>1</sup>, R.A.A. Torres Junior<sup>2</sup>, L.O.C. Silva<sup>2</sup>, P.R.C. Nobre<sup>1</sup> and N.R. Pereira<sup>3</sup>

<sup>1</sup>Geneplus Livestock Consulting Ltd., Avenida Radio Maia, 830, Zona Rural, CEP 79.106-550, Campo Grande, MS, Brazil

<sup>2</sup>Embrapa Beef Cattle, Campo Grande, MS, Brazil

<sup>3</sup>Cachoeirao Farm, Bandeirantes, MS, Brazil

The objective of this work was to identify which variables are related to the carcass yield, using path analysis., 120 nelore steers were put in a feedlot system until reaching the average weight of 570 kg. At the end of the feeding test the animals were weighed and there were obtained the biometric measurements: height at withers (HW), height at the rump (HR), thoracic perimeter (TP) and body length (BL) and were obtained longissimus muscle area (LMA), subcutaneous fat thickness (FT). After slaughter, information on hot carcass weight and carcass yield (CY) were recorded. The data were analysed by path analysis with the CALIS procedure of SAS (SAS Inst. 9.4). The results showed that LMA is the main variable responsible for the CY variation. The body measurements and FT did not present significant effects on the CY. Negative association were observed between CY and TP/ FT. In view of these results, it is important to collect more data before an adequate model to predict carcass yield can be established and used for selection purposes.

*Keywords: beef cattle, rib eye area, carcass weight, path analyses.*

According to the literature, (Fernandes *et al.*, 2010; Mourão *et al.*, 2010; Cyrillo *et al.*, 2012) beef cattle linear body measurements appear as a reasonable tool for predicting live weight and the slaughter point of the animals, especially for many producers who do not have access to the carcass ultrasound technique, either for economic reasons and / or property infrastructure. In zebu cattle, including Nelore – the most important beef breed in Brazil, works relating production traits with body dimensions are frequent, but few studies have analyzed the correlations between biometric measurements and carcass yield (CY). The objective of this work was to identify which variables are related to the carcass yield, using path analysis.

### Summary

### Introduction

Corresponding Author: [leonardo.nieto@geneolus.com.br](mailto:leonardo.nieto@geneolus.com.br)

## Material and methods

The present study, including 120 nelore steers, was developed at Cachoeirão Farm, located in Bandeirantes, Mato Grosso do Sul State. At the beginning of the experimental phase, the animals, with an average age of 20 months, were grouped in two batches of 60 animals each one, according to live weight. After this, they were put in a feedlot system being submitted to the same sanitary and nutritional management, until reaching the average weight of 570 kg. At the end of the feeding test the animals were weighed and there were obtained the biometric measurements: height at withers (HW), height at the rump (HR), thoracic perimeter (TP) and body length (BL) and were obtained longissimus muscle area (LMA), subcutaneous fat thickness (FT). After slaughter, information on hot carcass weight and carcass yield (CY) were recorded. The data were analysed by path analysis with the CALIS procedure of SAS (SAS Inst. 9.4). Data analysis adopted is a causal diagram illustrating the carcass yield as basic variable and the others as explanatory variables.

## Results

The results showed that LMA is the main variable responsible for the CY variation. (Figure 1). The body measurements and FT did not present significant effects on the CY (0.20). Negative association were observed between CY and TP/ FT, -0,10 and -0.12, respectively. Rosa *et al* (2014) analyzed 35 Nellore bulls, confined for 96 days, with  $402 \pm 14.90$  kg and 18 months old and noted that measures of loin eye area evaluated by ultrasonography, it were found positive correlations with body length (0.32), rump (0.36) and thigh (0.20); withers height (0.20) and pelviano contour (0.38) ( $P < 0.05$ ). Variables of hip height and chest, chest width and pin bones, and heart girth showed positive correlations with two or more productive traits of economic interest, such as slaughter weight, hot carcass weight and dressing percentage ( $P < 0.05$ ).

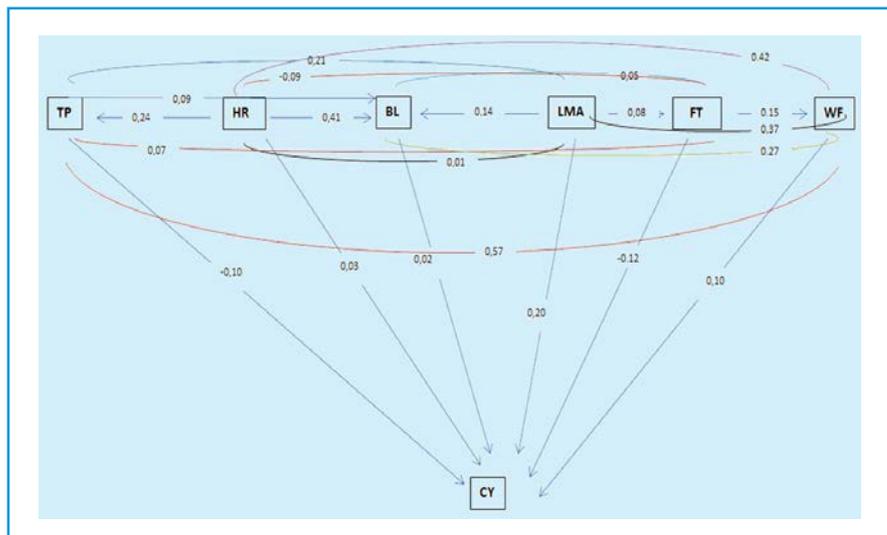


Figure 1. Diagram illustrating the carcass yield as basic variable and the others as explanatory variables.

In view of these results, it is important to collect more data before an adequate model to predict carcass yield can be established and used for selection purposes.

## Conclusion

---

**Cyrillo, J.N.S.G.; Nardon, R.F.; Mercadante, M.E.Z.; Bonilha, S.F.M.; Arnandes, R.H.B.** Relações entre medidas biométricas, características de carcaça e cortes cárneos comerciais em bovinos Zebu e Caracu. *Boletim da Indústria Animal*, v.69, p.71-77, 2012.

**Fernandes, H.J.; Tedeschi, L.O.; Paulino, M.F.; Paiva, L.M.** Determination of carcass and body fat compositions of grazing crossbred bulls using body measurements. *Journal of Animal Science*, v.88, p.1442-1453, 2010.

**Mourão, R.C.; Rodrigues, V.C.; Moustacas, V.S.; Costa, D.P.B.; Pinheiro, R.S.B.; Figueiredo, M.; Vieira, A.O.** Medidas morfométricas de novilhos castrados Nelore e F1 Nelore x Limousin. *Agropecuária Científica no Semi-árido*, v.6, p.27-32, 2010.

**Rosa, B.; Sampaio, A.; Oliveira, E.; Henrique, W.; Pivaro, T., Andrade, A.; Fernandes, A.; Mota, D.** Correlações entre medidas corporais e características das carcaças de tourinhos Nelore terminados em confinamento. *Boletim de Indústria Animal*, v,71(4), p.371-380, 2014.

## List of references

---