

# Correlations among carcass traits taken by ultrasound and after slaughter in Mediterranean (*Bubalus bubalis*) young bulls

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**ABSTRACT:** The objective of this work was to estimate the correlations among measurements taken in vivo with ultrasound equipment with some carcass traits measured after slaughter. Twenty eight Mediterranean bulls, with average shrunk body weight of 330 kg and 14 months of age, were fed by 120 days with high concentrate diets. The shrunk body weight, the ribeye area (REAU), the back fat thickness (FTU) over the Longissimus dorsi muscle between 12<sup>a</sup> and 13<sup>a</sup> ribs and rump fat (EGP8U), were measured at 28 days intervals. Real-time ultrasound equipment Piemedical Scanner 200 VET, with 18 cm linear array transducer was utilized. After the slaughter, the hot carcass weight (PCQ) and the kidney, pelvic and inguinal fat (GRPI) were weighted and the dressing percentage (DP) calculated. After 24 hours of cooling the ribeye area (REAC), backfat thickness (FTC) and rump fat (EGP8C) were measured. Both the REAC, FTC and EGP8C were underestimated by ultrasound measurements. The Pearson correlation coefficients for ribeye area, backfat thickness and rump fat measured in the carcass and with ultrasound, were 0.96, 0.99 and 0.91, respectively. The coefficient between DP and REAU was 0.47; 0.45 between DP and REAC, 0.56 between DP and FTU and 0.58 between DP and FTC. DP presented a 0.59 correlation coefficient with EGP8U. The Spearman correlation was estimated between REAU and REAC, FTU and FTC, EGP8U and EGP8C, and the values were 0.96, 0.99 and 0.91, respectively. The ultrasound measures could be used to estimate carcass traits in buffaloes with good accuracy.

**Key words:** Buffaloes, Carcass traits, Ultrasound evaluation.

**INTRODUCTION** - For the meat productive chain the knowledge of the quali-quantitative carcass traits is relevance, looking for standardization and improvement of the quality of the final product presented to the consumer. The determination of some of these characteristics, in a fast way, no destructive and with good precision it can be obtained through the technique of the ultrasound scan in real time. Several research works have employee this technique to measure in bovine characteristics of corporal composition in live animals (Wilson (1995), May et al. (2000), Silva et al. (2001). Wilson (1992) relate a high and positive correlation between percentage of subcutaneous fat and percentage of trimming fat and, negative correlation with percentage of lean meat in the carcass. The relationships between fat thick-

ness and loin eye area of *longissimus dorsi* muscle, measured by ultrasound in live animal and the carcass composition have been similar to the relationships among the same measures in carcass (Hedrick, 1983). However, it is of consensus among the researchers that exist some technological limitations that interfere in the accuracy of the measures made in the carcass and for ultra-sound, among them they stand out the technician's experience, age and sex of the animal, among others. The objective of the present work was to estimate the correlations among the measures for ultrasound and in the carcass and the study of the use viability of those measures for determination of the corporal composition in Mediterranean buffaloes.

**MATERIAL AND METHODS** - Twenty eight Mediterranean (*Bubalus bubalis*) bulls were used with average live weight of 330 kg and 14 months of age. The animals remain in feedlot by a period of 120 days, after a period of adaptation of 28 days, receiving diets with 75% of concentrate. Weighting was realized every 28 days, after fast of solids of 18 hours. During the weightings they were picked the measures of loin eye area of *longissimus dorsi* muscle (REAU), backfat thickness (FTU), between 12<sup>th</sup> and 13<sup>th</sup> ribs and rump fat (EGP8U) for ultrasound scan in real time. Vegetable oil was used as acoustic acoplant and an equipment Piemedical Scanner 200 VET, with linear trasductor of 3.5 MHz and 18 cm, coupled an acoustic guide. At the end of the experiment the animals were slaughtered at commercial slaughterhouse. After slaughter, hot carcass weight (PCQ), kidney, pelvic and inguinal fat (GPRI) and carcass dressing percentage (DP) were measured. After 24 hours of cooling the carcasses, loin eye area of *longissimus dorsi* muscle (REAC) and backfat thickness (FTC), between 12<sup>th</sup> and 13<sup>th</sup> ribs and rump fat (EGP8C) were measured. Pearson correlations was determined by SAS program (1990).

**RESULTS AND CONCLUSIONS** - The Pearson correlation coefficients among ultrasound and carcass measures are presented in Table 1.

REAC and REAU presented means of 69.5 ( $\pm$  6.8) and 66.8 ( $\pm$  7.0) cm<sup>2</sup>, while FTC and FTU presented means of 10.4 ( $\pm$  3.0) and 9.9 ( $\pm$  3.0) mm, respectively. The Pearson correlation coefficients that showed values of .96 and .99 between REA and FT were made calculations measured in the carcass and for ultrasound, respectively. The correlation coefficients for

Table 1. Pearson correlation coefficients among ultrasound and carcass measures from Mediterranean buffaloes finished in feedlot.

Traits	Pearson Correlation		
	REAU (cm <sup>2</sup> )	FTU (mm)	EGP8U (mm)
Hot carcass weight (kg)	.74**	.62**	.71**
Carcass dressing (%)	.47**	.56**	.59**
REACarcass (cm <sup>2</sup> )	.96**	-.13	-.07
FTCarcass (mm)	-.02	.99**	.79**
EGP8Carcass (mm)	.06	.65**	.91**
Carcass retail product (kg)	.68**	.30	.50**
Carcass retail product (%)	.32	-.83**	-.72**

\* P<.05; \*\* P<.01 REAU = ribeye area of *longissimus dorsi* by ultrasound; FTU = backfat thickness by ultrasound; EGP8U = rump fat by ultrasound.

ALD and for EGS were highest to the found in bovine by Silva et al (2001). The ranking correlations, accomplished by the test of Spearman showed that REAU presented a correlation of .96 with REAC, while FTU had a correlation of .99 with FTC. Those values were lightly superior to the found in most of the works with bovine and they indicate that the measures accomplished by ultrasound scan or in the carcass, relatively they didn't alter the classification of the animals. A possible explanation for the largest values obtained in buffaloes is the fact of these animals possess larger values of backfat thickness than bovine, when compared to a same weight and that, the collection of images, interpretation and measures in the carcass were accomplished by the same technician, what contributed to smaller variation. The carcass dressing percentage (DP) it presented correlations of .47 and .36 with REAU and REAC. In the Figure 1 the graph of the dispersion of the data is presented between REAU and REAC and Figure 2 the graph of the dispersion of the data is presented between FTU and FTC. In the regression of REAU as a function of REAC, it was obtained a  $r^2$  of .96 and in the regression of FTU as a function of FTC, it was obtained a  $r^2$  of .99.

Figure 1. Graph of dispersion data of loin eye area of *Longissimus dorsi* muscle (REA).

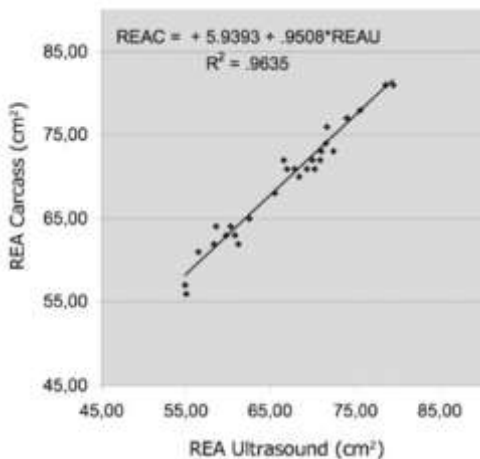
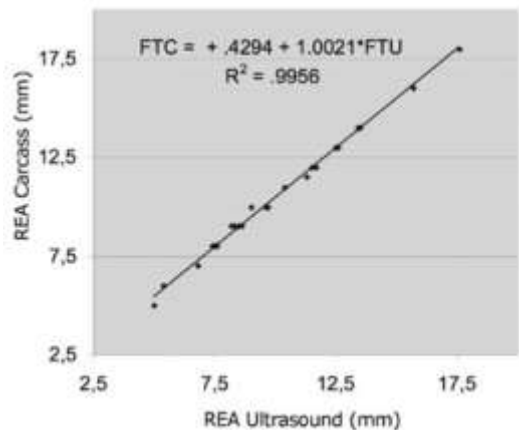


Figure 2. Graph of dispersion data of backfat thickness (FT).



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