



Water efficiency on carcass traits of grazing cattle

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Water efficiency has been an important consideration in cattle production systems. This study aimed to evaluate the association between water efficiency and intake with the carcass traits of grazing cattle. The study was conducted at Embrapa Gado de Corte in Campo Grande, MS, from October 2023 to February 2024, over 118 days. The subjects were 38 non-castrated male Nelore cattle with a body weight (BW) of 301.21 ± 28.58 kg and an age of 12.87 ± 1.13 months. These cattle were kept in an area of 18.94 ha with *Brachiaria brizantha* cv. Marandu pasture and 9.85 ha with *Brachiaria brizantha* cv. Xaraés pasture, receiving mineral supplementation. The animals were identified with electronic RFID tags compatible with an electronic drinking system (Ponta®) equipped with a weighing station. The average individual water intake (WI) was remotely obtained via the electronic drinking fountain system. Residual water intake (RWI) was calculated using a linear regression model of WI on BW and average daily gain (ADG), thereby obtaining the expected WI for each animal. The RWI value was determined by the difference between the observed and expected WI. Gross water efficiency (GWE) was calculated by dividing WI by ADG. Carcass characteristics were evaluated at the beginning and end of the experiment using an Aloka SSD 500 ultrasound with a 17.2 cm linear transducer and a frequency of 3.5 MHz. Measurements of rib eye area (REA, cm²), backfat thickness (BFT, mm), and intramuscular fat (IF%) were taken from the *Longissimus thoracis* muscle between the 12th and 13th ribs. The rump fat thickness (RFT, mm) was evaluated on the *biceps femoris* muscle. At the end of the experimental period, gains in REA (gREA), BFT (gBFT), IF (gIF), and RFT (gRFT) were calculated. Pearson correlations at a 5% significance level were analyzed between the variables. There was a high correlation ($p < .0001$) between final REA and gREA ($r = 0.94$) and a moderate correlation ($p < 0.0002$) between final BFT and gBFT ($r = 0.57$). There was a high correlation ($p < .0001$) between final RFT and gRFT ($r = 0.80$) and between final IF and gIF ($r = 0.88$). The correlations of WI, RWI, and GWE with REA, BFT, RFT, gREA, gBFT, and gRFT were weak and not significant ($p > 0.05$). The water intake and the efficiency of drinking water use for weight gain in beef cattle are not phenotypically correlated with carcass traits measured by ultrasound.

Keywords: water intake, water efficiency, carcass ultrasound.

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