RESIDUAL WATER INTAKE AS AN INDICATOR OF WATER EFFICIENCY IN CATTLE

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Growing concerns about the availability of drinkable water have increasingly pushed pressure on livestock production. Thus, the objective of this study was to evaluate the residual water intake (RWI) as an indicator of water use efficiency in beef cattle and its relationship with water consumption, feed intake, feed efficiency and growth. Records on 749 Senepol heifers, of approximately 17 months of age, involved in feedlot performance tests, were used. Traits studied included body weight (BW), RWI, residual feed intake (RFI), average daily feed intake (ADFI), average daily water intake (ADWI), average daily gain (ADG) and feed conversion ratio (FCR). Individual daily feed and water intake records were collected over a 70-day period, using electronic feed and water bunks developed by Intergado Ltd.. A linear regression model of ADFI on metabolic BW (BW0.75) and ADG was fitted. RFI was calculated as the actual ADFI minus that predicted using the regression equation. The same approach was performed for calculating RWI by using ADWI instead of ADFI in the linear regression model. The animals were divided into three groups according to RWI: high (> average RWI plus one standard deviation), medium (average RWI ± one standard deviation) and low (< average RWI minus one standard deviation). The high and low RWI groups were compared using Tukey’s test in relation to the other evaluated traits. Animals with low RWI had a mean of -3.23 L d⁻¹ whereas those with a high RWI had 3.79 L d⁻¹ (P<0.05). Water consumption (28.6 and 21.6 L d⁻¹), water consumption (3.72 and 3.03 L kg ADFI⁻¹) and water consumption (35.5 and 26.6 L kg ADG⁻¹) were also different (P<0.05) between high and low RWI groups. There was no significant difference (P>0.05) for BW and ADG. For ADFI, FCR and RFI there were significant differences between the high and low RWI groups (ADFI: 7.85 and 7.17 kg d⁻¹, FCR: 9.75 and 8.87 kg kg⁻¹ and RFI: 0.31 and -0.34 kg d⁻¹, respectively). Senepol cattle present variability in the efficiency of water use. RWI can be used as an indicator of water efficiency in cattle.

Keywords: livestock, Senepol, sustainability, selection.

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