Grazing Behaviour of Nellore Beef Cattle in Three Different Pastoral Systems in Western Paraná, Brazil

PETER LAWRENCE¹, MAXIMILIAN BERGER², TIAGO MACHADO³, AMERICO GARCEZ NETO⁴, UTA DICKHOEFER⁵

¹University of Hohenheim, Institute of Animal Production in the Tropics and Subtropics, Germany
²University of Hohenheim, Institute of Animal Production in the Tropics and Subtropics,
³Federal University of Paraná, Laboratory of Animal Nutrition,
⁴Federal University of Paraná, Laboratory of Animal Nutrition, Brazil
⁵University of Hohenheim, Inst. of Animal Production in the Tropics and Subtropics, Germany

Abstract

In Paraná state, Brazil, five Nellore beef cattle each were used to analyse their grazing behaviour in three grazing systems during April-June 2014:

1) an integrated crop-livestock system (ICLS) with soybean (Glycine max) as summer crop and signal grass (Brachiaria brizantha) as winter pasture (bulls, 433±64.5 kg live-weight);
2) an open monopasture system (MPS) with signal grass (cows, 405±37.3 kg liveweight); and
3) a silvopastoral system (SPS) with guinea grass (Panicum maximum) as forage and Eucalyptus as tree species (cows, 405±37.3 kg liveweight).

Forage dry mass was similar in all systems with 3.6, 3.6, and 3.4 t/ha in ICLS, MPS, and SPS, respectively (p = 0.75). While forage in ICLS and SPS contained more crude protein than in MPS (p < 0.001), neutral detergent fiber contents were highest in MPS followed by SPS and ICLS (p < 0.001). Accordingly, metabolisable energy concentrations and organic matter digestibility were highest in ICLS and similar between SPS and MPS (p < 0.001). The THI was higher in MPS (71.9) and ICLS (70.2) than in SPS (60.7), but did not reach the level of climatic stress in any system.

Strong correlations were found between the time spent ruminating (r²=0.96), grazing (r²=0.94), and on other activities (r²=0.92) determined by the chewing sensors or visual observation (n=112 intervals of 30 min). Daily grazing time was longer in MPS compared to SPS and ICLS (p = 0.03), but there was no difference between systems for ruminating

Contact Address: Uta Dickhoefer, University of Hohenheim, Inst. of Animal Production in the Tropics and Subtropics, Fruwirthstr. 31, 70599 Stuttgart, Germany, e-mail: Uta.Dickhoefer@uni-hohenheim.de
(p = 0.09). Animals in ICLS spent more time on other activities (p = 0.01) and moved around less than in SPS or MPS (p = 0.03).

**Keywords:** Automatic sensors, grazing behaviour, integrated systems, Nellore cattle, South America