Herbage accumulation and vegetation structure in Tanzâniagrass (*Panicum maximum*, Jacq. cv Tanzania) pasture submitted to regime of intermittent stocking

A.C. Ruggieri, C.A.M. Gomide, E.R. Janusckiewicz, E.D. Contato and R.A. Reis
Instituto de Zootecnia, C.P. 63, Sertãozinho, SP, Brazil CEP 14160-900, Email: ruggieri@iz.sp.gov.br

Keywords: yield, herbage mass, sward persistence, leaf/stem ratio, tussock perimeter

Introduction Knowledge of pasture structure characteristics such as height, tillering density, leaf area index (LAI) and herbage mass (HM), together with growth rates and forage accumulation, can become important tools to indicate improvements to the production system. This experiment evaluated the structural and productive characteristics and persistence of a Tanzaniagrass pasture.

Material and methods The pastures were grazed (cows with medium weight of 450 kg) from Dec. 2002 to March, 2004 in a completely randomised design with 2x2 factorial scheme with two rest periods (25 and 35 d) and two residue heights post grazing (30 and 50 cm) and three replicates. Before each grazing, measurements of the medium height, light interception and the LAI of each paddock were made to verify the effect of the residue pos- grazing and rest period on the growth cycle for the following grazing. The total HM was assessed by cutting $1m^2$ samples at ground level. Harvested samples were separated into the fractions leaf, stem and dead material. Plant cover was evaluated by sampling a straight transect line (Carvalho *et al*., 2003) after the exit of the animals from the pasture. The data were analysed by the procedure GLM of SAS.

Results There were differences in HM between the first and second year, but these arose only in the treatment with residue 30 cm and 25 d rest. The higher HM in the first year had a higher dead material %, while leaf:stem ratio (L/S) differed between the grazing cycles in the first year. There were differences in plant cover (Table 2) among the treatments with values being higher with 25 d compared with 35 d of rest. The average of plant cover was 48%, in line with this being a bunch grass with rapid growth, high soil cover and low plant density. The perimeter of the tussocks was higher for the longer rest period, associated with these treatments having longer available time for the plants to develop. However the most severe grazing intensity with the shortest rest stimulated tillering and resulted in higher plant population.

Table 1 Effect of treatments on herbage mass, dead material and leaf:stem ratio during two years

	Total HM (t/ha)				
	residue 30, rest 25	residue 50, rest 25	residue 30, rest 35	residue 50, rest 35	average
Year 1	4.7a	5.8a	5.7a	6.4a	5.7A
Year 2	5.2a	5.1a	4.2b	5.1a	4.9B
	Dead material (%)				
Year 1	12.76a	14.24a	14.06a	15.02a	14.02A
Year 2	9.49a	10.77a	8.57a	11.15a	9.99B
	L/S				
Year 1	3.59 a	3.00 ab	2.48 bc	2.26 c	2.83A
Year 2	2.65a	2.62a	2.85a	2.60a	2.68A

Table 2 Occurrence of plants, perimeter of tussocks and height of tussocks in relation to treatments

Treatments	Plant cover (%)	Perimeter of tussocks (cm)	Height of tussocks (cm)	LAI
Residue 30, rest 25	56.67A	118.34BC	55.33C	6.3
Residue 50, rest 25	50.00AB	90.63C	60.57B	6.5
Residue 30, rest 35	46.67B	123.96B	57.10C	6.0
Residue 50 cm, rest 35	40.00C	159.33A	89.76A	5.6

Values with different letters differ significantly at $P<0.05$

Conclusion The management system with shorter rest gave more plants, while longer rest periods gave larger tussocks. Higher residues and longer rest periods resulted in taller plants.

Reference

Carvalho, D.D., A.A.G. Pagano & J.F. Figueiras (2003). Cobertura de solo e tamanho de touceiras em pastagens de capim Aruana e Tanzânia In: Reunião anual da SBZ,40, 2003, Santa Maria. Annals, CD rom.