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TILLERING DYNAMICS IN MOMBAÇA GRASS (*Panicum maximum*, Jacq.) UNDER GRAZING

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Abstract

An experiment was conducted in Pirassununga, Southeastern Brazil, to observe tillering pattern of Mombaça grass (*Panicum maximum* Jacq.) after grazing. A complete randomized block design was used with treatments arranged in factorial (3 herbage allowances X 2 grazing periods). There was high and positive correlations between the total tiller population and the number of tillers until the third week after grazing, giving evidence of a higher tillering until the second week and a slight reduction on the third one. The Mombaça grass tillering dynamics alters along the weeks according the allowance level adopted.

Keywords: grazing periods, herbage allowance, tillering

Introduction

Factors involved in plant regrowth after defoliation, include residual leaf area (Davies, 1974), level of reserve compounds (Davidson & Milthorpe, 1965), survival of the apical meristems, tillering capacity and redistribution of photoassimilates between the root and shoot during the first days of regrowth (Ryle & Powell, 1975). Tillering is the starting point of

forage growth and sustainability, and it can be stimulated mainly by decapitation of apical meristem, which eliminates apical dominance (Rodrigues et al., 1986; Barbosa et al., 1997).

Tillering ability is, therefore, a major concern in the grazing management to be adopted, in order to find out a compromise point between the needs of plant and grazing animals. Knowing when tillers start to emerge is important, once the nutrient needs that promote the forages growth development, at that particular moment, should be attempted.

Material and Methods

The experiment was conducted at FZEA-USP, in Pirassununga, SP, from September 1998 to October 1999. The experimental area was established with Mombaça grass in twenty-four 400m^2-paddocks, distributed in 4 blocks. A randomized complete block design with a factorial (3x2) was used, with three levels of herbage allowance (4, 8 and 12 Kg DM/100 kg LW) and two grazing periods (1 and 3 days). In September 98 lime was applied to reach a base saturation of 70%, and in November, phosphorus fertilizer was applied to increase soil level to 25 mg/dm^3, and the first nitrogen and potassium fertilization, at 50 kg/ha.

After each grazing in the summer, N and K were applied. In each paddock, a 0,125 m^2 area was limited, where the number of new tillers originated on the 1^{st}, 2^{nd} and 3^{rd} weeks were counted after grazing. These new tillers represented the total number of tillers emerged.

Results and Discussion

For a 4% allowance, there was a higher number of total new tillers (NT) (Table 1). These findings are similar to those of Boggiano et al. (1999) who, working with *Paspalum notatum* in native pastures in southern Brazil, observed that increasing the grazing intensity resulted in a higher tillering, probably due to the reduction of apical dominance. Moreover, a

possible increase of light incidence at the base of the tussock may have favored tillering process whose evaluation defendend on herbage allowance.

Reduction of tiller shooting is evident for the 8 ans 12% allowances after the second week of rest (Table 1).

The correlation between the number of new tillers (NT) and those that appeared in the 1st, 2nd and 3rd weeks, suffered a slight reduction in weeks after grazing (0,70; 0,61 and 0,40, respectively). This shows that, besides the tillering that had occurred until the 3rd week after grazing, forage development characteristics, which change quickly, may be more or less intense depending on herbage allowance. Higher allowances (8 and 12%) caused reduction in tillering starting on the 2nd week, although in a less drastic way (Figure 1), suggesting shade and apical dominance effects, attributed to the selection possibility of available forages and higher stubble accumulation. This inhibits the appearance of new tillers at the base of the tussock.

The most significant tillering response at low allowances seems to be related to apical meristem elimination and dominance break down, as well as light conditions within the canopy. Mombaça grass tillering dynamics is altered over time but is influenced by allowance level adopted. The highest tillering in the first week is evident although the higher the herbage allowance, the lower is the difference.

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Table 1 – Tillering dynamic (new tillers of the 1st, 2nd, 3rd and total, N1, N2, N3 and NT, respectively) in Mombaça grass grazed under three level of herbage allowance (HA) and two grazing periods (GP).

Treatments		N1	N2	N3	NT
	4%	88 a	70 a	43 a	201 a
HA	8%	61 b	66 a	40 a	167 b
	12%	51 b	50 a	32 a	133 b
GP	1 day	69 a	63 a	40 a	172 a
	3 days	63 a	60 a	33 a	156 a
	4%	44% a	35% a	21% a	100%
HA	8%	37% b	39% a	24% a	100%
	12%	38% b	38% a	24% a	100%
GP	1 day	40% a	37% a	23% a	100%
	3 days	40% a	38% a	21% a	100%

Means in the column followed by distinct letters differed by Tukey test (P<0,05).

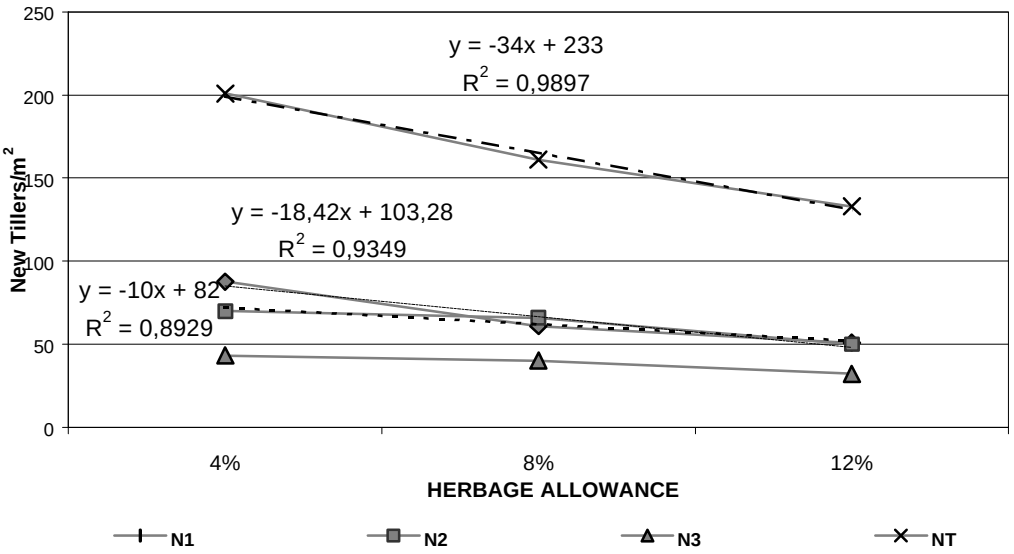

Figure 1 – Linear models of new tillers shoot in 1st , 2nd, 3rd week and total new tillers(N1, N2, N3 and NT, respectively) in Mombaça grass (*Panicum maximum* Jacq.) in three herbage allowance.