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Canopy structure of Marandu palisadegrass pasture under rotational stocking strategies

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Introduction

Marandu palisadegrass is the most common pasture in Brazil, occupying about 50% of the cultivated pasture areas. As a tufted perennial grass, the control of sward structure under grazing is important for increasing forage quality, efficiency of utilization and the productivity. The efficient exploitation of the potential forage production of tropical grasses can be beneficial to the producer. Besides the increase in production per area, it is possible to increase the area required to produce forage for the dry season. In addition, the intensive management of pastures is a strategy that can accommodate the expansion of food and biofuel crops without the opening of new agricultural frontiers (Martha Jr. et al, 2012).

The objective of this study was to evaluate the structural traits of *Brachiaria brizantha* cv Marandu pasture managed under rotational stocking with a fixed rest period or variable according to the canopy light interception of 95%.

Material and Methods

There were evaluated two rest periods (RP) in a rotational stocking, one corresponding to 30 days (RP30) and another to the time required to reach 95% light interception (LI95) by the canopy. Assessments were made in summer-autumn period of 2011-2012, considering five grazing cycles. In both treatment the occupancy period was 3 days and maintaining the height of 20-25 cm residue. Were measured, in pre-grazing, the pasture height, leaf-stem ratio (LSR) and leaf proportion. Forage samples were taken by cutting, at ground level, the forage contained in two sample units of 0.5 x 1 m per paddock. These samples were fractionated into leaf, stem and dead material and dried in a forced circulation oven at 55 ° C for 72 hours. The experimental design was randomized blocks with four repetitions. Data were analyzed as repeated measures using the Mixed Procedure of SAS®. Means were estimated using the "LSMEANS" command and compared with T test at 10% significance level.

Results

The mean grazing interval for LI95 ranged from 18 to 30 days, averaging 23 days. The lower rest period allows a reduction in the number of paddocks used during the growing season, providing an increase in stocking rate and in milk production per area (Gomide et al., 2012). Besides this advantage, there are positive changes in sward structure. The average canopy height was 36 and 42 cm, respectively for LI95 and RP30. The leaf-stem ratio was higher for LI95 in almost all grazing cycles (Table 1) with an average value of 1.69 versus 1.27 for RP30. The leaf percentage in the pre-grazing forage mass reduced over the season in both treatments. However, this reduction was more pronounced for RP30, from 54% in cycle 1 to 31% in cycle 4, while in LI95 the decrease was from 55% to 49%, respectively, for cycles 1 and 4 (Figure 1).

Table 1 –Leaf-stem ratio according to the grazing cycles in two treatments of rest period: 30 days (RP30) and according to 95% of light interception (LI95).

Grazing Cycles	LI95	RP30	SE
1	2.70Aa	2.24Aa	0.23
2	1.76Ba	1.26Bb	0.07
3	1.52Ca	1.09Cb	0.05
4	1.37Da	0.89Db	0.06
5	0.87Eb	1.10Ca	0.06
Average	1.64 a	1.32 b	0.05

Means followed by the same letter, lowercase in rows and uppercase in columns, do not differ by T test at 10% probability. / SE – standard error.

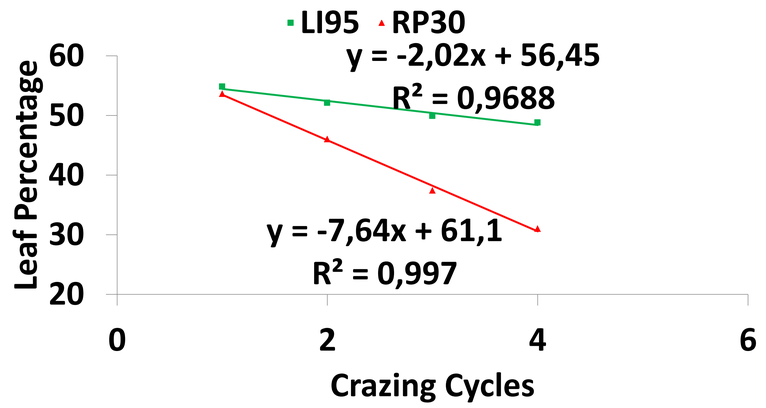

Figure 1 – Sward leaf percentage as a function of the grazing cycles in two treatments of rest period of Marandugrass pasture: 30 days (RP30) and according to 95% of light interception (LI95).

Conclusions

During the growing season, the adoption of morphophysiological criteria for interrupting the rest period improves the structure of Marandu palisadegrass pasture.

In comparison with rest period of 30 days, the light interception criterion permit to reduce the rest period with consequent reduction in sward height, increasing in the leaf-stem ratio and the proportion of leaf on the sward.

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Funded by: CNPq FAPEMIG