Effect of forage peanut inclusion in a Marandu grass pasture on forage disappearance compared to Marandu grass fertilized

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Introduction

Nowadays farm producers are looking for alternatives to synthetic nitrogen fertilizer. One of the options is the inclusion of legumes into grasslands. Legumes can contribute with nitrogen and the high nutritive value to the animal production system based on grassland. This research aimed to evaluate the forage disappearance of Marandu grass in a mixed sward with forage peanut, fertilized with nitrogen (N) and the control without N source.

Materials and Methods

Location: Forage and Pasture Sector (FCAV/UNESP, 21°14'05'' S, 48°17'09'' W)
Animals: 21 non-lactating dairy heifers, mean weight 300kg

Treatments:
Completely randomized design
T1) Marandu grass without N fertilizer (control);
T2) Marandu grass fertilized with urea (150 kg N ha^{-1} year^{-1});
T3) Marandu grass in a mixed sward with forage peanut (Arachis pintoi cv. Amarillo).

Grazing management:
Rotational grazing with mob-stocking (Allen et al., 2011);
Grazing start: 95% LI and 35 cm of grazing height (Pedreira et al., 2007);
Grazing interruption: 20 cm of grazing height; one day period of occupation.

Statistical analysis: Tukey test to analyze the effect of treatment; polynomial orthogonal contrast to analyze the effect of grazing cycles.

View of experimental area. Brachiaria brizantha cv. Marandu and Arachis pintoi cv. Amarillo.

Results and Discussion

Table 1. Forage disappearance (kg DM^{-1} day^{-1} ha^{-1}) in pastures of Marandu grass without N fertilizer (control); fertilized with urea and in a mixed sward with forage peanut, in different grazing cycles in the rainy season of 2017, in Jaboticabal/SP/Brazil.

Grazing Cycle	Treatment Control (T1)	Fertilized (T2)	Mixed (T3)	Mean
1	1948 (232)	1305 (465)	770 (153)	1341 (283)
2	2009 (961)	1842 (129)	-	1284 (363)
3	534 (0)	6687 (1599)	1707 (0)	2976 (533)
4	2517 (732)	3909 (2388)	1305 (418)	2577 (1179)
5	2713 (1520)	6353 (3139)	1796 (685)	3621 (1781)
Mean	1944 (861) b	4019 (1544) a	1394 (419) c	2452 (941)

The ANOVA was not significant for cycles (P>0.05), but it was significant for treatments (P<0.05). Means followed by the same letter in the row (treatment) do not differ by Tukey's test (P >0.05). Numbers in parentheses correspond to standard error of the mean (±).

* Forage disappearance was affected by treatments, but there was neither an effect of grazing cycles nor the interaction among treatments and cycles on this variable;

* T2>T1>T3: adjustment of the stocking rate for intake of the same percentage of mass produced in all treatments;

* T1>T3: heifers need to consume less forage in the mixed sward to have the same amount of total digestible nutrients as the control.

Conclusion

The inclusion of forage peanut negatively affected the forage disappearance. A system animal performance assessment should be carried on in order to better understand the effect of the inclusion of this legume to a grassland.

References

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