



Crude protein content of *Brachiaria brizantha* cv. BRS Piatã in integrated crop-livestock-forest system and its relationship with the SPAD index

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Introduction

Crude protein (CP) content in tropical grasses is one of the main nutritional limiting factors for livestock on pasture. Under arboreal systems there is an increase of CP in forages. The design of a fast, efficient and cost-effective method for CP determination is strategically very important. Therefore, so the relationship of SPAD index with the CP content was tested in a trial.

Material and Methods

An experiment was carried out at Embrapa Beef Cattle (20°24'90" S, 54°42'72" W, 530 m altitude), in Campo Grande, MS, Brazil. Treatments were formed by sampling locations comprised by 5 equidistant points (A, B, C, D and E) in a pasture (*Brachiaria brizantha* cv. BRS Piatã) between the rows of eucalyptus trees, distant 22x2 m, and one location under full sun (F), in a similar pasture with no trees. Evaluations were carried out in January, April and August 2014. SPAD readings were taken on any newly shot forth grass leaf. A Chlorophyll Meter SPAD-502 was used. CP content was determined via near infrared spectroscopy system (NIRS). The data were processed using regression statistics.

Results and Conclusions

Levels of CP and SPAD index values showed the same behavior along the transects through the trees (fig. 1). They were significantly higher in shaded sampling points (A, B, C, D and E), than under full sun (F). It was possible to establish a linear model with $R^2 = 0.94$ for the relationship between contents of CP, and SPAD index readings (fig. 2), the SPAD index, as well as the CP content was positively influenced by shading. The results indicate that chlorophyll content index (SPAD) may be used as an indicator for protein content on this forage.

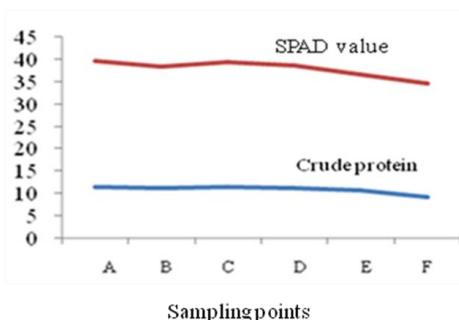


Fig.1. Crude protein (%) and SPAD values along the transect between trees (points A, B, C, D and E) compared to full sun (F).

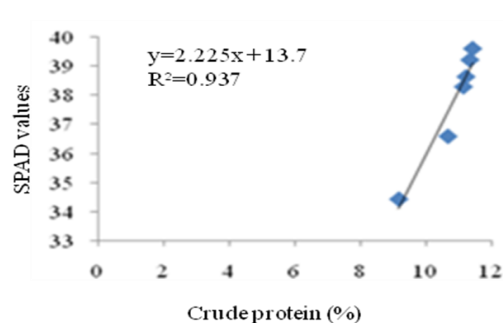


Fig. 2. Relationship between the crude protein (CP,%) and SPAD values.

References cited

Marten, et al. (1985). Near infrared reflectance spectroscopy (NIRS), analysis of forage quality. Washington: USDA; ARS, 1985. 110 p. (Agriculture Handbook, 643).

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