

Piatã grass intercropped with maize hybrids in integrated crop-livestock-forest system

Andréia da Cruz QUINTINO^{1*}, Roberto Giolo de ALMEIDA², Joadil G. de ABREU¹, Manuel C. M. MACEDO², Davi J. BUNGENSTAB²

¹ Graduate Program in Tropical Agriculture, Universidade Federal de Mato Grosso, Cuiabá, 78060-900, MT, Brazil. ² Embrapa Beef Cattle, 79106-550, Campo Grande, MS, Brazil.
 E-mail address of presenting author*: andreiaquintino@yahoo.com.br

Introduction

The use of agrosilvopastoral systems can be an affordable alternative to reclaim and intensify the use of pastures leading to more sustainable cattle husbandry (Paciullo et al., 2007). In this context, in the Brazilian Cerrados, adoption of such systems is increasing, combining crops, trees and cattle husbandry through rotation, mixing or succession of sown pastures with crop farming.

Material and Methods

A trial was carried out in Campo Grande, MS, Brazil (20°27' S, 54°37' W, 530 m asl) in an integrated crop-livestock-forest system based on 22x2 m single rows of eucalyptus trees (227 trees ha⁻¹) planted in 2009. Experimental design was random blocks with split plots having the three maize hybrids in the plots (Riber Sementes 9005 PRO; Dekalb 390 PRO and Dow Agrociencias 2B707 HX). Split plots were sampling points (A, B, C, D, and E) with four repetitions. Points A and E were respectively the closest to tree rows and C was the central point between tree rows with B and D as intermediate points. In December 2012 maize was seeded using no-till system in 0.9 m spaced lines until 1.0 m from each side of tree rows intercropped with Piatã grass (*Brachiaria brizantha*). In April 2013 maize was harvested and Piatã grass was sampled and separated into leaf blade, stem and dead material. Photosynthetically active radiation (PAR) was measured twice a month in the morning and afternoon using a ceptometer (Accupar, model PAR-80). Crude protein of Piatã grass leaf blade content was determined using near infrared spectroscopy system (NIRS). Analysis of variance was performed and means were grouped by Scott-Knott test (p<.05).

Results and Conclusions

Table. 1. Forage dry matter, leaf blade proportion and crude protein of Piatã grass at five sampling points with the respective photosynthetically active radiation (PAR).

Variable	Sampling point				
	A	B	C	D	E
Forage dry matter (kg ha ⁻¹)	431 b	1072 a	831 a	971 a	649b
Leaf blade (%)	60,65 a	43,21 b	46,40 b	45,68 b	46,21 b
Crude protein (%)	6,60 a	4,35 b	4,89 b	4,64 b	4,95 b
PAR (%)	55,26 c	94,42 a	93,49 a	78,63 b	54,14 c

Different letters in the line are significantly different through the Scott-Knott test (p<.05).

There was no effect of maize hybrid over Piatã grass yield. There were variations on values of parameters evaluated according to sampling points, i.e. distance from trees (Table 1). At point A, under lower PAR, grass yield was lower, associated to higher leaf blade proportions and crude protein content. Therefore, for Piatã grass mixed with maize on integrated crop-livestock-system, shading has negatively influenced grass yields without reducing crude protein contents.

References cited

Paciullo et al. (2007). Pesq. Agrop. Bras. 42: 573-579.

Acknowledgements

Embrapa, UFMT, Capes.