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# Forage production intercropped with corn for silage in integrated crop livestock forest systems

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**Introduction** Integrated crop livestock forest systems are strategies to integrate agriculture, livestock and forest in a same area, to achieve a more sustainable livestock production. In these systems, pasture sowing can be made simultaneously with annual crops sowing, such as corn. This study aimed evaluating the forage productivity of *Urochloa brizantha* cv. Piatã, implemented with corn for silage in two integrated livestock production systems.

**Material and Methods** We evaluated the forage productivity of *U. brizantha* cv. Piatã intercropped with corn for silage, simultaneously sowed in integrated production systems. The field experiment was carried out in an area of integrated crop livestock forest system at Embrapa Cattle Southeast in São Carlos, SP (21°57'S, 47°50'W, 860 m alt) during the growing season of 2013/2014. Sixty days after corn harvest were evaluated forage productivity and forage quality. The treatments included integrated crop livestock (ICL) system and integrated crop livestock forest (ICLF) system with *Eucalyptus urograndis* (Clone GG100) planted in single rows (East-West orientation) with a distance of 15 m between rows and 2m between plants. In the ICLF were evaluated four points between the eucalyptus rows (0m-A; 3.75m-B; 7.5m-C e 11.25m-D from North row). Light transmission by the trees was evaluated.

**Results and Conclusions**

Table1. Forage productivity and quality of *U. brizantha* cv. Piatã in integrated crop livestock (ICL) system and integrated crop livestock forest system, evaluated at four points between the eucalyptus rows (ICLF A to ICLF D), during the 2013/2014 growing season in São Carlos, SP, Brazil.

| Treatment | Plant Heigth (cm) | Forage Dry matter (Kg ha$^{-1}$) | Foliage dry matter (Kg ha$^{-1}$) | Crude Protein (%) | In vitro Dry Matter Digestibility (%) | Light Transmission (%) |
|---|---|---|---|---|---|---|
| ICL | 62.9 b | 3058.7 ab | 1894.0 a | 9.1 b | 66.1 ab | 100 |
| ICLF A | 64.8 b | 2226.2 b | 1131.9 b | 11.1 ab | 60.7 b | 35.1 |
| ICLF B | 73.2 ab | 2522.1 ab | 1377.6 ab | 12.6 ab | 65.1 ab | 35.3 |
| ICLF C | 90.7 a | 3707.1 a | 1897.2 a | 14.0 a | 66.7 a | 65.1 |
| ICLF D | 85.9 a | 3353.2 ab | 1690.0 ab | 13.1 a | 65.7 ab | 79.4 |
| CV(%) | 13.8 | 24.3 | 21.7 | 14.9 | 4.6 | - |

Different letters mean significant differences, at P<0.10

There are no significant differences in ICL forage production in comparison with the different points of ICLF system (P<0.10), despite the effect of trees on light transmission in ICLF system. The average forage productivity in ICLF was 2,952 kg DM ha$^{-1}$, corresponding to 97% of productivity at ICL. Significant differences was found among the points of ICLF for forage productivity and foliage dry matter with higher yields in the farthest point from eucalyptus row (ICLF C), such as the higher plant height and higher values of crude protein and in vitro dry matter digestibility. The average protein content of the ICLF system was 12.7% versus 9.1% in the ICL system.

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