



## Production of 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 the same area and to achieve a more sustainable livestock production. Corn is one of the most used crops in integrated systems due to its multiple uses on farm, like grain or silage production. This study aimed at evaluating the productivity of corn for silage in two integrated livestock production systems.

**Material and Methods** The field experiment was carried out in an 12 ha area of integrated crop livestock forest systems at Embrapa Cattle Southeast in São Carlos, SP (21°57'S, 47°50'W, 860 m alt) during the 2013/2014 and 2014/2015 growing seasons. At the integrated crop livestock (ICL) treatment the summer crop corn was sown with the forage *Urochloa brizantha* cv. Piatã. The integrated crop livestock forest (ICLF) system there also the *Eucalyptus urograndis* (Clone GG100) trees planted in single rows (East-West orientation) with 15 m between rows and 2m between plants. Corn was harvested for silage purpose and the productivity was evaluated at both ICL and ICLF systems. At the ICLF, four distance from North eucalyptus rows evaluated: 1.5m (A); 3.75m (B); 7.5m(C) e 11.25m(D) from North row. Light transmission by the trees was also evaluated.

### Results and Conclusions

Table1. Productivity of corn for silage in integrated crop livestock (ICL) system and integrated crop livestock forest system (ICLF), evaluated at four distances between the eucalyptus rows (ICLF A to ICLF D), during the 2013/2014 and 2014/2015 growing seasons in São Carlos, SP, Brazil.

Treatment	Growing season 2013/2014			Growing season 2014/2015		
	Dry Matter (10 <sup>3</sup> Kg ha <sup>-1</sup> )	% of grains	Light Transmission (%)	Dry Matter (10 <sup>3</sup> Kg ha <sup>-1</sup> )	% of grains	Light Transmission (%)
ICL	8.1 ab	16.2 a	100	12.1 a	28.5 b	100
ICLF A	3.5 d	7.1 b	39.7	6.6 b	28.3 b	44.7
ICLF B	5.3 c	11.5 ab	89.6	10.0 a	34.3 ab	67.9
ICLF C	7.0 ab	17.0 a	86.8	11.6 a	41.4 a	75.5
ICLF D	5.7 bc	14.5 a	72.9	11.1 a	37.4 ab	60.8
CV (%)	12.06	25.26	-	10.27	13.55	-

Different letters mean significant differences, at P<0.05

In the two growing seasons dry matter productivity showed differences (P <0.05) according to the positions of the corn rows in relation to eucalyptus rows, with higher yields in the corn rows more distant from eucalyptus rows and in the ICL system. In 2013/2014, under severe drought, these differences were higher, despite the higher light transmission, indicating strong competition for water. The average dry matter productivity in the floor area between eucalyptus rows was 5,380 kg ha<sup>-1</sup>, corresponding to 66% of production in ICL. In 2014/2015, with satisfactory water supply, despite the low light transmission, differences between production systems were lower (ICLF productivity corresponded to 81% of the ICL system). In this season, % of grains in the samples was higher in the ICLF system.

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