

Light Organic Matter under Integration of Agriculture, Livestock and Forestry Systems (SP-Brazil)

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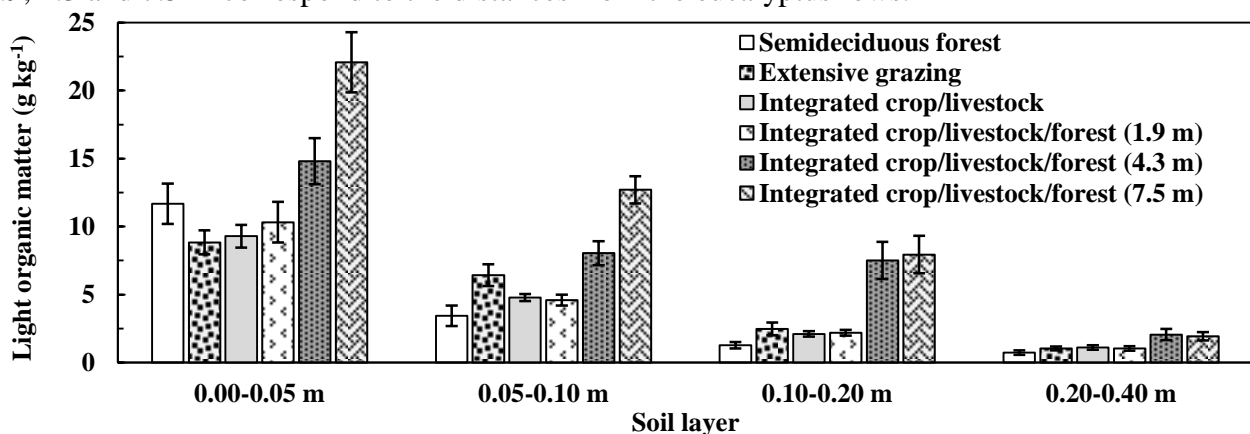
Introduction The study of the different fractions of soil organic matter (SOM) can set, or even predict, the function of soil in carbon (C) storage or loss in agroecosystems. The light organic matter in water (LOM) can be easily measured and it is among the most sensitive compartments to management effects. In this study, we evaluated the effects of extensive grazing (EG), integrated crop/livestock (ICL) and integrated crop/livestock/forest (ICLF) on LOM content in the soil.

Material and Methods

The systems were installed in an area previously used with EG, located at Embrapa Pecuária Sudeste (22°01'S, 47°54'W, 856 m asl), São Carlos, SP. The treatments were: (i) EG with *Urochloa decumbens* since 1980; (ii) ICL, rotating two years of *Urochloa brizantha* and one year of *Zea mays* since 2005; (iii) ICLF including, besides the *Urochloa brizantha* and *Zea mays*, *Eucalyptus urograndis* with interrows of 15 meters. In this treatment, installed in 2011, the distances of 1.9, 4.3, and 7.5 m were also assessed. (iv) semideciduous forest (SF). Soil samples (n=6), each one composed of five simple samples, were collected in the 0.00-0.05, 0.05-0.10, 0.10-0.20 and 0.20-0.40 m soil layers. The LOM was determined according Anderson & Ingram (1989).

Results and Conclusions

Fig. 1. Light organic matter in water (LOM) under crop, pasture and forest systems (n=6). Note: 1.9, 4.3 and 7.5 m correspond to the distances from the eucalyptus rows.



The average values for the LOM in ICLF system (n=18) were 15.74, 8.44, 5.88 and 1.68 g kg⁻¹ for the 0-5, 5-10, 10-20 and 20-40 cm soil layers, respectively. The LOM contents were higher mainly at distances of 7.5 and 4.3 m from eucalyptus lines (Fig. 1). The ICLF showed the highest values of LOM, being a promising system in SOM input. The LOM in EG and ICL was lower when compared to SF at a depth of 0-5 cm, but was equivalent or even higher in the other layers.

References cited

Anderson & Ingram (1989) Tropical Soil Biology and Fertility.

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