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### DYNAMICS OF CARBON IN CERRADO SOILS UNDER DIFFERENT LAND USES

Gisele Silveira de Brito<sup>1\*</sup>, Vânia Regina Pivello<sup>1</sup>

1. Departamento de Ecologia, Instituto de Biociências, Universidade de São Paulo, São Paulo, 05508-090, Brazil. \*Correspondence to [britogs@gmail.com](mailto:britogs@gmail.com)

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Native vegetation substitution by agricultural activities alters the carbon cycle, usually reducing the soil storage capacity and increasing CO<sub>2</sub> emissions to the atmosphere. We aimed to evaluate the effects on soil carbon pools of the Cerrado conversion into pastures and eucalyptus plantations. In a region originally covered by *cerradão* physiognomy (São Paulo State, Brazil) we had four sampling sites composed by a control area (Cerradão) and two land uses (Pasture, Eucalyptus). Soil samples were taken at 0-10 and 10-30 cm depths to quantify organic carbon (SOC), labile carbon (LC), microbial carbon (MBC), soil basal respiration (SBR), and to calculate soil organic carbon stocks (SOCS), microbial quotient (MQ), and metabolic quotient (MTQ). We analyzed the main effects and interactions of land use (LU), site and soil depth, using a linear model with nested factors (R software). SOC and SOCS, more resistant to environmental changes, did not show significant LU effect, unlike LC ( $p=0.005$ ), less resistant to microbial decomposition and essential for maintaining soil fertility, that decreased 18-24% in pastures and 55-48% in eucalyptus plantations. MBC and MQ also decreased in pastures and eucalyptus, showing significant LU effect ( $p=0.037$  and  $p=0.002$ , respectively). LU effect was also noticed in MTQ ( $p=0.051$ ). The effect of the interaction between site and LU occurred in SBR ( $p=1.026e-06$ ) and MTQ ( $p=0.006$ ). MTQ values were higher in pastures, indicating that microbial community was spending more energy to maintain the metabolic activity than to synthesize biomass. Pasture and Eucalyptus results point to less balanced soil systems relative to native Cerrado. Pastures showed less metabolic active carbon in the total soil organic matter, and probably higher C emissions. Eucalyptus results indicate significant reduction of biological activity that may affect carbon cycling and stocking capacity. In conclusion, land use conversion significantly altered soil carbon parameters, especially in those less stable.

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