



II INTERNATIONAL WORKSHOP ON SOIL BIODIVERSITY

Centro de Ciências Agrárias, UFPI, Teresina - PI
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BIOMASS AND MICROBIAL ACTIVITY IN COPROLITES FROM DIFFERENT LAND USE SYSTEMS IN EASTERN MARANHÃO, BRAZIL

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Coprolites are fecal structures produced by earthworms, formed from the digestion of organic substrates that stimulate soil microbial activity. Although earthworms are fundamental to the biological quality of the soil, their effects on tropical agroecosystems are still poorly understood, especially when considering their impact on different land use systems. The aim was therefore to evaluate the effect of earthworm gut transit on biological attributes of coprolites compared to soil, as well as to explore their responses to anthropogenic changes in land use. The study was carried out in an agricultural frontier area in the municipality of Brejo, Maranhão, Brazil. Six land use systems were considered: an open area with rice cultivation without (i) and with (ii) limestone application; an open area with soybean cultivation with 3 t (iii) and 6 t (iv) of limestone; a corn + Marandú consortium (v), as well as a reference area with Cerrado vegetation (vi). In each area, four soil samples (0-0.10 m) and coprolites deposited on the surface were collected, from which the carbon (CBM) and nitrogen (NBM) of the microbial biomass were determined, basal respiration (RBS) and the metabolic quotient (qCO_2) was calculated. The data was analyzed using the confidence interval of the mean ($p < 0.05$). The coprolites showed significantly higher CBM levels than those observed in the soil, with the exception of the coprolites collected in the native Cerrado area. However, lower qCO_2 was observed in the coprolites than in the soil, except for the coprolites collected in the native Cerrado. In summary, coprolites increase the concentration of CBM while improving the efficiency of metabolic activity, favoring the conservation of C. Higher microbial activity is associated with areas under agricultural use with sustainable practices.

Keywords: agricultural frontier; earthworms; soil biology.