II INTERNATIONAL WORKSHOP ON

SOIL BIODIVERSITY

Centro de Ciências Agrárias, UFPI, Teresina - PI

15 a 17 de abril de 2024

ANAIS

II Internacional Workshop on Soil Biodiversity

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II INTERNATIONAL WORKSHOP ON SOIL BIODIVERSITY

2° EDIÇÃO

TERESINA - PIAUÍ, 2024

FICHA CATALOGRÁFICA
Universidade Federal do Piauí
Biblioteca Setorial do Centro de Ciências Humanas e Letras
Serviço de Processos Técnicos

I61a International Worksop on Soil Biodiversity *(2 : 2024 : Teresina, PI)*.

Anais do II International Workshop on Soil Biodiversity, de 15 a 17 de abril de 2024, Teresina / Centro de Ciências Agrárias, Universidade Federal do Piauí. – 2.ed. -- Teresina : Centro de Ciências Agrárias, 2024.

23 p.

Evento realizado nos dias 15 a 17 de abril de 2024

1. Microbiologia do solo. 2. Solo-Manejo. 3. Sustentabilidade. I. Centro de Ciências Agrárias. II. Universidade Federal do Piauí. III. Título.

CDD 631.46

Bibliotecária: Maria José Rodrigues de Castro - CRB3/001510

SOIL MICROBIAL ATTRIBUTES ARE AFFECTED BY DIFFERENT LAND USES IN THE CERRADO OF PIAUÍ

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With the growth in demand for food, the Cerrado biome has been transformed into agricultural systems, impacting soil quality and altering its microbiological attributes. The objective of this study was to evaluate the effect of different soil uses on the microbiological quality of an Oxisol in the Cerrado of Piauí. The study was carried out in the municipality of Sebastião Leal, Piauí, Brazil. The experimental design was in randomized blocks, with 5 replications. The forms of land use consisted of conventional tillage, no-tillage, silviculture, pasture, and native forest (control). Soil sampling was carried out at a depth of 0.0-0.1 m, evaluating total organic carbon (TOC) and microbiological attributes: microbial biomass carbon (MBC), soil respiration (SR), microbial quotient (qMic) and respiratory quotient (qCO_2). Land use changed the TOC and microbial attributes of the soil. Among the land uses, no-tillage increased the TOC (1.67 dag kg^{-1}) of the soil, but it did not differ from native forest (1.43 dag kg^{-1}). Land uses significantly reduced MBC. There was no difference between land uses for soil respiration, however it affected qMic and qCO_2. Soil use reduced qMic, especially in no-tillage. In contrast, no-tillage increased qCO_2. Therefore, the conversion of native forest into an agricultural system can change soil quality and negatively affect MBC. No-tillage is a more sustainable use of land, as it favors the increase of carbon in the soil.

Keywords: Agroecosystems; Soil quality; Soil carbon.

Acknowledgements: Chapada do céu farm