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Edaphic attributes in the cultivation of organic medicinal plants in Itapuranga, Goiás, Brazil

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Abstract

The cultivation of aromatic plants in organic farming constitutes an alternative to enhance agricultural biodiversity, generating income while preserving the environment. This study evaluated biometric and edaphic attributes of three aromatic and medicinal plant species cultivated under organic management at the farm Sítio Morada do Sol, in Itapuranga, Goiás, Brazil. The farm supplies organic raw materials to Livealoe Cosmetics, a company based in farm certified organic natural cosmetics. The selected plants were carqueja (*Baccharis trimera* var. *carqueja* DC. - Asteraceae), Alecrim-Pimenta (*Lippia origanoides* Kunth - Verbenaceae), and Paribaroba (*Piper marginatum* Jacq. - Piperaceae).

Sítio Morada do Sol supplies organic raw materials to the company Livealoe Cosmetics, a pioneering Goianian company in the production of natural cosmetics with organic and certified production in Brazil. Soil samples were collected from the 0–0.20 m layer and plant heights of these three species in the winter of 2023. Samples were collected from beds irrigated by sprinklers, according to the crop's needs. Soil samples were collected in winter 2023 from the 0–0.20 m layer in irrigated beds managed according to crop water requirements. Soil analyses followed EMBRAPA recommendations. Plant height was measured for the three species.

The biometric data for height indicated means and standard deviations as follows: carqueja - 52.3 +/- 4.9 cm; Alecrim-Pimenta - 62.6 +/- 13.5 cm; Paribaroba - 114.4 +/- 78.13 cm, respectively. The phosphorus levels extracted by Mehlich 1 were higher in Paribaroba and Carqueja (60 mg dm⁻³) than in Alecrim-Pimenta (29.1 mg dm⁻³). The potassium levels extracted by Mehlich 1 were above 100 mg kg⁻¹ in all species. The calcium (Ca) and magnesium (Mg) levels extracted by potassium chloride were 4.0 cmolc dm⁻³ for Ca and 1.0 cmolc dm⁻³ for Mg. These values indicate medium to adequate levels of soil fertility for plant growth and biological activity. The results suggest that agroecological soil management and organic fertilisation at Sítio Morada do Sol are associated with favourable soil chemical conditions for the cultivation of aromatic and medicinal plants. The study also highlights the potential of these species as components of diversified organic production systems in the Brazilian Cerrado.

Keywords: Agroecology, cerrado soils, organic agriculture, sustainability indicators