

# Assessment of Chemical and Biological Soil Composition in Cerrado Using Fourier Transform Infrared Spectroscopy

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The Cerrado, Brazil's second-largest biome, occupies 23% of the national territory and plays a crucial role in the agricultural economy, particularly in Mato Grosso do Sul, where pastures support livestock farming. Entomopathogenic fungi, such as those of the genus *Metarhizium*, offer sustainable alternatives for pest control, reducing the use of agrochemicals and fostering more eco-friendly agricultural practices. Fourier Transform Infrared Spectroscopy combined with Attenuated Total Reflectance (FTIR-ATR) has been applied in soil analysis, enabling the identification of its chemical composition and quality assessment under different management practices. This study aimed to evaluate the use of FTIR-ATR spectroscopy as a tool for identifying fungi in pastures of the southern Mato Grosso do Sul Cerrado, contributing to the sustainable management of these areas. To achieve this, soil from a 15.8-hectare pasture area located in the municipality of Nova Andradina, Mato Grosso do Sul, Brazil, was analyzed. The soil was characterized using conventional methods and FTIR-ATR spectroscopy. The results obtained through FTIR-ATR spectroscopy revealed absorption bands associated with the presence of fungi and other components in the soil matrix. Thus, it was concluded that FTIR-ATR spectroscopy is an effective technique for identifying biological materials in Cerrado soil without requiring extensive sample preparation.

**Awards Won:**

