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Characterization of Organic Matter in Spodosol Amazonian by Fluorescence Spectroscopy

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Abstract : Soil organic matter (SOM) plays an important role in maintaining soil productivity and accounting for the promotion of biological diversity. The main components of the SOM are the humic substances which can be fractionated according to its solubility in humic acid (HA), fulvic acids (FA) and humin (HU). The determination of the chemical properties of organic matter as well as its interaction with metallic species is an important tool for understanding the structure of the humic fractions. Fluorescence spectroscopy has been studied as a source of information about what is happening at the molecular level in these compounds. Specially, soils of Amazon region are an important ecosystem of the planet. The aim of this study is to understand the molecular and structural composition of HA samples from Spodosol of Amazonia using the fluorescence Emission-Excitation Matrix (EEM) and Time Resolved Fluorescence Spectroscopy (TRFS). The results showed that the samples of HA showed two fluorescent components; one has a more complex structure and the other one has a simpler structure, which was also seen in TRFS through the evaluation of each sample lifetime. Thus, studies of this nature become important because it aims to evaluate the molecular and structural characteristics of the humic fractions in the region that is considered as one of the most important regions in the world, the Amazon.

Keywords : Amazonian soil, characterization, fluorescence, humic acid, lifetime
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