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Thermal Analysis of Humic and Fulvic Acids Extracted from Composts Prepared with Different Materials and Mineral Enrichments.

Claudivan C. Lima[1], Eduardo de S. Mendonça[2], Ivo R. Silva[2], and Asunción Roig[3]. (1) Escola Agrotécnica Federal de Satuba, Zona Rural, Satuba-Alagoas, 56120-000, Brazil, (2) Univ Federal de Viçosa, Av. P. H. Holfs, s/n, Viçosa-Minas Gerais, 36571-000, Brazil, (3) CEBAS-CSIC, Campus Univ de Espinardo, Apartado de Coreo 164, Murcia, 30100, Spain

The aim of the present work was to evaluate by thermogravimetric techniques the effect of several mineral enrichments of compost upon the humic substances. With these purposes, were prepared eight different mixtures with the following wastes: Sweet Cane Bagasse (SCB), Ashes of Sweet Cane Bagasse (ASCB), Poultry Manure (PM), Filter Cake (FC) and castor oil plant residue (Ricinus communis, L.) (MR). The treatments were prepared by mixing the wastes in the following combinations: a) SCB+ASCB+PM; b) SCB+ASCB+PM + mineral fertilisers NPK, where N= urea; c) SCB+ASCB+PM + mineral fertilisers NPK, where N= ammonia sulphate; d) SCB+ASCB+PM + serpentinite and micaxisto powdered rocks; e) SCB+FC; f) SCB+MR + gneiss powdered rocks; and g) SCB+MR. These treatments were distributed in randomised blocks with three replicates. After 150 days, representative samples of the tree replicates, were taken to the extraction of organic matter, to fractionation in fulvic and humic acids and their purification. These fractions were undergone to a thermic decomposition by Differential Thermal Analysis (DTA) and thermogravimetric analysis (TG) and also to elemental analysis. The N:C, H:C and O:C atomic ratios, the oxidation degree, ThermoGravimetric Index (TGI) and DTA of the humic substances were studied. These results reflect that these were relevant molecular changes in the FA, thus, the enrichment with SM originated to obtain a compost with more aromatic level of FA. However, there were little effect upon the molecular structure and composition of the HA.