LIMITING PHYSICAL PROPERTIES OF TECHNOSOILS FORMED BY THE FUNDÃO DAM FAILURE, MG, BRAZIL.

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Abstract

The physical properties of the Technosols formed by the deposition of tailings may constitute a physical barrier that limits water movement and plant development due to the properties received from the tailings. This study aimed to evaluate the physical quality of the Technosols formed by the rupture of the Fundão Dam, Mariana, MG, Brazil, based on the evaluation of physical properties and Load Bearing Capacity Models (LBCM). For that, three areas under different types of vegetation were selected: eucalyptus (Euc), forest with human-assisted revegetation (RF), and forest with natural vegetation (NF). Three sampling subareas were demarcated in each area: non-impacted areas (Ni), directly impacted areas (Di), and partially impacted areas (Pi). Undisturbed samples were collected in two layers and subjected to the uniaxial compression test after they were equilibrated at different matric potentials. Soil compression curves and LBCM were elaborated. Soil bulk density (BD), total porosity (TP), organic matter (OM), texture, sand fractionation, and particle density (PD) were also determined. The results showed that the clay content was less significantly, and the silt and very fine sand content was higher significantly in the Technosols, generating an increase in BD and reduction in TP. Technosols generally exhibited greater load-bearing capacity, due to higher pre-consolidation pressure values attained by these soils, as a result of the lower clay and OM contents. The high resistance of these soils is one limitation for revegetation of the areas evaluated, being necessary use of management practices that promote full regeneration of the soil physical properties.

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