Abstract

To determine changes in some physical properties of a silty-clay Calcisol, three wastewater classes were added: from the storage lagoon of the UAAAN treatment plant (domestic wastewater 1) (RUA), from the Ramos Arizpe (RMP) stream running through the municipality of Saltillo, from the treatment plant of the School of Forestry (domestic wastewater 2) (REF); and UAAAN well water (PUA), as control. The land was irrigated by gravity with a net layer of 20 mm, every two days, with four frequencies. At the depths of 0-0.30, 0.30-0.60, and 0.60-0.90 m, solid density (DS), bulk density (DA), porosity (E), field capacity (CC), and soil color (CS) were measured monthly for 10 months. There were no changes in DS, but there were increases in DA from 1.18 Mg m$^{-3}$ to 1.28 Mg m$^{-3}$ when RUA was added. Initial E was 47.20% with RMP and final E was 38.38% with the same wastewater. Initial CC was 24.89% and 18.04% at the end of the experiment, with the addition of RUA wastewater. The topsoil layer became darker with addition of RMP because of its organic content. RMP and RUA impacted some measured soil physical properties positively, except for DS; whereas REF and PUA had no important impact.

Keywords

Municipal wastewater, bulk density, solids density, porosity.