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Interactive comment on "Examining the fixation kinetics of chelated and non-chelated copper micronutrient and the applications to micronutrient management in semi-arid alkaline soils" *by* T. K. Udeigwe et al.

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Dear author, I found your paper of interest please find attached my comments Sincerely Artemi Cerdà

Interactive comment on Solid Earth Discuss., 7, 2875, 2015.

Influence of humic acid applications on soil physicochemical properties

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Abstract

Soil structure is often said to be the key to soil productivity since a fertile soil, with desirable soil structure and adequate moisture supply, constitutes a productive soil. Soil structure influences soil water movement and retention, erosion, crusting, nutrient recycling, root penetration and crop yield. The objective of this work is to study, humic acid (HA) application on some physical and chemical properties in weak structured soils investigated. The approach involved establishing a plot experiment in the laboratory conditions. Different rates of HA (control, 0.5%, 1%, 2% and 4%) were applied to soil at three incubation periods (21, 42 and 62 days). At the end of the each incubation period, the changes in physicochemical properties were measured. Generally, HA addition increased EC values at the all incubation periods. HA applications decreased soil modulus of rupture. Application of HA at the rate of 4% was significantly increased soil organic carbon contents. HA applications at the rate of 4% significantly increased both mean soil total nitrogen content and aggregate stability after at three incubation periods ($p<0.05$). Therefore, HA was potential to improve structure of soil in short term.

Key words: Aggregate stability, humic acid, soil modulus rupture, soil physicochemical properties, soil structure

1 Introduction

The widespread use of unsuitable and unsustainable production techniques in agricultural systems has resulted in extensive deterioration of soil quality and reductions in soil organic matter content and crop production (Verhults et al., 2010; Martinez-Blanco et al., 2011). Soil quality is threatened by the increase in human opulation, by intensive management of cultivable land and by urbanisation and soil degradation. There is a general agreement that oil biochemical, microbiological and biological properties are more than physical and chemical properties for the purpose of estimating alteations in soil quality and hence soil degradation (Keesstra et al., 2012; Paz- Ferreiro nd Fu, 2013). Soil organic matter plays an essential role in nutrient (N, P, S, K) cycles, soil stability and the ecological and environmental aspects of sustainability of soil fertility (Garcıa-Gil et al., 2004). Turkey soils generally have low organic matter levels and are commonly treated with mineral fertilizers that may improve yield in the short-term, but do not enhance the physical properties of the soil and result in soil degradation over the longer-term. Many regions in Turkey, especially the organic matter content of soils in Central Anatolia has fallen below 2% or 1% (Şeker and Karakaplan, 1999).

Fig. 1.