

# 3<sup>rd</sup> International Conference on **Earth Science & Climate Change**

July 28-30, 2014 DoubleTree by Hilton Hotel San Francisco Airport, USA

## **Influence of agricultural land use on organic carbon distribution in soil aggregate size fractions in Ile-Ife, Southwestern Nigeria**

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There is currently limited knowledge of which mechanisms are most important for C storage under different soils and land-use systems, yet such knowledge is crucial for devising systems with efficient C sequestration. This study is therefore aimed at evaluating the influence of land use type on soil organic carbon (SOC) distribution, SOC protection potentials of soil aggregate fractions and the relationships between SOC and the soil aggregate stability. In a study conducted at the teaching and research farm, Obafemi Awolowo University, Ile-Ife, Nigeria, soil samples from 0-15 cm and 15-30 cm depths were collected under seven different land use types and dry sieved into aggregate size fractions of 1-2, 0.5-1, 0.25-0.5, 0.125-0.25, 0.05-0.125, and <0.05 mm. The organic matter and total N composition of each of the size fractions were analysed while the water stability of the macro-aggregate fractions (1-2, 0.5-1 and 0.25-0.5) were determined by wet sieving. The aggregate stability of the size fractions decreased with increase in aggregate size. The WSA was significantly ( $P < 0.05$ ) positively correlated with SOC for each aggregate size, but less so at the lower depth indicating that the soils' water stability were mainly mediated by organic C. Soil tillage and cultivation reduced the soils' SOC. The consistently lower C:N ratio obtained in the fine particle size fractions may indicate lower decomposition rates, thus suggesting a measure of protection of SOC by the fine sized soil particles.

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