عنوان مقاله:

CARBON SEQUESTRATION IN SOILS UNDER DIFFERENT LAND USE SYSTEMS AND ITS IMPACT ON CLIMATE CHANGE

محل انتشار:

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خلاصه مقاله:

The study was carried out to assess soil organic carbon storage (SOC) under different land use systems within the same locality and interpret the results with reference to CO2 emissions and soil degradation processes. The soils were taken from a depth of 0-20 from a cocoa plantation (cocoa under deeplitter, cocoa under shallow litter and cocoa under weed), oil palm plantation, uprooted oil palm plantation and an arable land under cultivation (cassava +plantain). The SOC stored (Mg ha-1) was determined by multiplying the fraction of the percent SOC (divided by hundred) to the bulk density and thevolume of the soil. The CO2 equivalent was determined by multiplying SOC stored by a factor, 3.67 (Molar ratio of 44/12). The land use systems thatsequestered more organic carbon and less CO2 emission was ranked as: uprooted oil palm plantation followed by maize> oil palm plantation> cocoaunder deep litter> cocoa under shallow litter> arable land> cocoa under weed. The CO2 emission ranged between 17.4 to 65.9 % depending on the type of land use. The study showed that, the magnitude of carbon sequestration is more under oil palm plantation than cocoa plantation. The CO2 emission was significantly greater under cocoa plantation than oil palm plantation and even more where the cocoa plantation was not well managed(i.e. under shallow litter fall and weeds). It was observed that plantation agriculture increases the SOC storage than arable agriculture. The study indicated that, the conversion of land into different uses resulted in variable magnitudes of the carbon sequestered. Appropriate land management practices that reduce carbon emissions are therefore required to reduce global warming.

کلمات کلیدی:

CO2 emission, global warming, land management, soil degradation, soil organic carbon