

Soil organic carbon and growth of wheat under different tillage systems and farm manure levels under wheat-rice system in Pakistan

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Organic matter serves as panacea for soil and it may be used to define soil quality because soil quality is improved by organic matter and finally it strengthens the environmental protection process through carbon sequestration. Agricultural practices can affect the soil carbon under various types of management options. Soil organic carbon (SOC) and growth and yield of wheat (*Triticum aestivum* L.) were investigated under different soil tillage systems (deep tillage DT, conventional tillage CT and minimum tillage MT) and farm manure levels (control, 15 and 30 Mg ha⁻¹) in a field experiment (in control recommended NPK rate was applied) designed in split plot fashion under randomized complete block statistical arrangement. Two years results showed that SOC varied significantly under selected farm manure application levels while SOC distribution in top 100 cm soil layer showed varying trend for different tillage methods. Similarly growth and yield of wheat were also affected by different treatments. Agronomic parameters like plant height, spike length, number of tillers per square meter, biological yield, grain yield and 1000-grain weights were all affected by the application of the treatments. Increasing manure rate affected the above mentioned parameters positively. This baseline information may be used to assess the contribution of tillage system and farm manure for maximizing crop yield and carbon sequestration under wheat-rice cropping system of Pakistan.