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Estimation of organic carbon loss potential in north of Iran

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The development of sustainable agricultural systems requires techniques that accurately monitor changes in the amount, nature and breakdown rate of soil organic matter and can compare the rate of breakdown of different plant or animal residues under different management systems. In this research, the study area includes the southern alluvial and piedmont plains of Gorgan River extended from east to west direction in Golestan province, Iran. Samples from 10 soil series and were collected from cultivation depth (0-30 cm). Permanganate-oxidizable carbon (POC) an index of soil labile carbon, was used to show soil potential loss of organic carbon. In this index shows the maximum loss of OC in a given soil. Maximum loss of OC for each soil series was estimated through POC and bulk density (BD). The potential loss of OC were estimated between 1253263 and 2410813 g/ha Carbon. Stable organic constituents in the soil include humic substances and other organic macromolecules that are intrinsically resistant against microbial attack, or that are physically protected by adsorption on mineral surfaces or entrapment within clay and mineral aggregates. However, the (Clay + Silt)/OC ratio had a negative significant ($p < 0.001$) correlation with POC content, confirming the preserving effect of fine particle.