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## Changes in soil quality indices at different land uses in Semirom area

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**Background and Objectives:** Assessment of soil quality indices is important for identifying the effect of land use on soil function. Soil organic matter (SOM) is a major indicator of soil quality due to its capacity in affecting soil structure by enhancing aggregation. The aim of this study was to quantify the soil quality changes in pasture and agricultural lands around the Semirom city.

**Materials and Methods:** The study was conducted in a completely randomized design with five different levels including pastures, orchards, rain fed farming, irrigated cultivations of wheat and barley with 6 repetitions. A composite random soil sampling was done from the depth of 0-15 cm. Soil properties such as electrical conductivity (EC), pH, wet aggregate stability, particulate organic matter (POM), soil organic carbon (SOC) and carbohydrates were measured in each land use.

**Results:** The results showed that organic carbon (OC) and particulate organic carbon (POC) increased significantly in irrigated cultivation as compared to pasture. However particulate organic carbon was lower in rain fed farming compared with pasture. POC content were at least 2 times greater than those values in pasture and rain fed wheat farmlands. The highest carbohydrate amounts were observed in the irrigated wheat field ( $2 \text{ g kg}^{-1}$ ) while the lowest values were belonged to the rain fed wheat cultivations ( $0.94 \text{ g kg}^{-1}$ ). The content of carbohydrate had an increase of 40% in irrigated wheat field and a decrease of 50% in rain fed wheat field compared with pasture. The orchard and irrigated wheat and barley land uses had the highest mean weight diameter (MWD) of soil aggregates and the lowest values were obtained in the rain fed wheat and barley farming.

**Conclusion:** Overall, the survey results indicate a better soil quality of the orchards and irrigated farmlands, whereas the rain fed farmlands had more feeble soil quality as compared to other investigated land uses. Particulate organic carbon and carbohydrate showed greater sensitivity to land use changes. Therefore, these parameters are better indicators as compared to other investigated indicator for evaluating soil quality in the studied area.