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Assessment of Zeolite application in the condition of leachate reuse on soil quality

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Today, Zeolites are used in industry, agriculture and environment conservation more than before. The objective of this study was to investigate the effects of application of zeolite on some soil quality properties. The soil had a sandy clay loam texture and it was irrigated by leachate from Isfahan compost factory. For this purpose, a completely randomized block design experiment with 4 treatments and 5 replications was performed in 20 PVC soil columns (110 mm in diameter and 400 mm in height) filled with treatments soils. During the research period, soil columns were irrigated 12 times at 3 days interval. Depth of irrigation water added to the soil columns was 20 mm each time. The treatments were: T1- sandy clay loam soil irrigated with fresh water (control) , T2- sandy clay loam soil irrigated with leachate, T3- sandy clay loam soil mixed with 5% Zeolite (Semnan zeolite) irrigated with leachate, T4- sandy clay loam soil mixed with 10% Zeolite irrigated with leachate. The results show that irrigation with the leachate caused EC (dS/m) and OM% to increase at 1 and 5 percent levels in comparison,with other treatment. The results of this research show that EC values were 0.79, 9.87, 13.56 and 14.91 (dS/m) in topsoil and 0.78, 16.82, 13.98 and 11.49 (dS/m) in subsoil, in T1, T2, T3 and T4, respectively. However application of leachate caused an increase from 0.24% OM (T1) to 1.71% OM (T4) in topsoil and 0.25% OM (T1) to 1.3% OM (T4) in subsoil. The results show that leachate could neutralize the soil pH.

Keywords: Leachate , Soil, Zeolite, Electrical conductivity, Organic matter

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