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The effect of urban compost leachate on heavy metal accumulation, soil quality and barely and sorghum yield

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In the alternation process of urban garbage into compost, large amounts of leachate will be produced, because of too much wetness of garbage. If the leachate is not managed and collected properly it can cause soil and underground water contamination. On the other hand, the garbage leachate contains organic matter and different nutritive elements, which can be used as perfect fertilizers to strengthen the soil fertility. This study was performed with 3 levels of compost treatments (0, 400,800 ton/ha) in a split plot statistical design. To study the effect of leachate on soils quality, before planting and after harvesting, samples were taken at these depths (0-30 Cm, 30-60 Cm). After drying the samples, we measured the physicochemical characters. Also, to assign plants performance, some plant samples were taken and digested to analyze their heavy metals concentration (Ni and Pb) and some nutritive elements and plants biomass were determined. The result showed that the garbage latex slightly decreases the soil PH because of lime and buffering capacity of soil. This decrease, positively affected the absorbance capability of phosphorus, Ferrous, Magnesium and Cupper increased this capacity in comparison with the control pot which is proportionate with the use of leachate. Leachate application also increased the absorbable Nitrogen and Potassium in soil and the physical characters like aggregates stability, bulk density and finally sorghum and barley yield in comparison with control pot. The concentration of Ni and Lead in comparison with the control pot increased but it wasn't significant and no signs of toxicity which is caused by leachate in plant tissues were observed.

Keywords: urban garbage compost, leachate, soil quality, plant yield

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