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Quality of soil and Transfer of pesticide under wastewater irrigation regime

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Wastewater (WW) usage in irrigation is seen as good and cost effective alternative to face scarcity of water in some arid areas of the world. In Morocco the situation of water resources could be alarming by 2030. Irrigation with WW has been proven beneficial in terms of stabilizing soil structure, enrichment with mineral nutrients useful for crops and increase of production. Usage of WW may coincide with the presence of pollutants such as pesticides and heavy metals in the soil. This situation may enhance the transfer of the pollutants towards groundwater sheet. Gharb area in an important agricultural area of Morocco dominated by sandy and clayey soils, the closeness of water sheet and frequent preferential flow channels in the soil. Test of mobility was conducted in non structured soil columns (30 cm length, 7.5 cm internal diameter), composed with 6 section of 5 cm each and packed with 300g of previously air dried soil sieved at 2mm. Mass equivalent to the rate of application of fenoxyprop-ethyl, an herbicide commonly used in the area was applied 1 cm under the top layer of the soil in the columns. Three columns were used for the test; one of them was eluted with distilled water and used as control. Columns were irrigated with treated wastewater at the flow rate of 1mL/min. Percolated water was collected at 5 intervals of 1 hours. Residue was the herbicide was analyzed in percolated water and the sections of the columns. Result showed net increase in organic matter and conductivity of soil and slight decrease in pH. Analysis of residue showed that the movement of herbicide has increased in the columns percolated with wastewater compared with the control. The herbicide was found five top sections treated eluted with WW and remains in the top section in the control. No residue was detected in percolated water from all the columns treated and the control.