Project Title: The Effects of Irrigation Applications with Refined Municipal Waste Water on Some Soil and Plant Properties

Research Area	Soil, Water Resources and Environment
Research Program	Increasing Water Using Efficiency
Executive Institute	International Agricultural Research and Training Center
Supporting Institute/s	Izmir Metropolitan Municipality Water and Sewerage Services (İZSU) ,E.U. Faculty of Agriculture Department of Farm Structures and Irrigation, Menemen Left Bank Irrigation Association, Menemen Agriculture Chamber.
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Research Period	2010 - 2013

Project Summary: This research was conducted to examine that the effects on some physical, chemical and microbiological properties of soil and the yield of cotton and vetch, which were irrigated by treated domestic wastewater. The research was conducted by completely randomized design with three replications for three years. The effects of domestic sourced treated waste water, well water and their mixtures on silty loam and loamy textured soils were investigated. The content of used water were examined treated domestic wastewater's pH, sodium adsorption ratio (SAR), suspended solids (SS) were 'very good', boron, $SO_4^{=}$, biological oxygen demand (BOD) were 'good', electrical conductivity (EC), %Na, Cl^- were 'useful', and fecal coliform bacteria were 'harmful' determined. The content of heavy metal in treated domestic waste water is lower than permissible limit of irrigation water. According to the results of analysis of soil pH has decreased very few. The value of EC, exchangeable sodium percentage (ESP), boron and Na of soil, in which were applied treated domestic wastewater, were increased. Applied treated wastewater had no effect on $CaCO_3$, OM, total N, P_2O_5, K_2O, K, Ca and Mg in the soil. Ca, has decreased in all of irrigation issues over time. Na, Mg and Ca cations and Cl^-, $SO_4^{=}$ anion in soil were increased and HCO_3^- anion was decreased. Available microelements in soil layers were not changed compared to the irrigation subjects. However, the available microelement values of the end were determined lower than the values at the beginning of the trial. The potential toxic element values in soil layers were not varied by irrigation subjects. However, the values of Fe, Cu, Zn, Pb, Cd values of the end were lower than the values at the beginning. Domestic treated wastewaters have been determined to have no effect on the soil microbiological and biochemical properties. Domestic sourced treated wastewater practices had no effect on the yields of cotton and vetch

Key words: Domestic waste Water, Irrigation, Water properties, Soil properties