Field measurement and model prediction of infiltration in treated wastewater irrigated clayey soil

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Soil water infiltration is a critical process in designing irrigation systems, especially if traded wastewater (TWW) is being used. In this study, the ability of seven different infiltration models (Kostiakov, Modified Kostiakov, Philip, Horton, Holaton, SCS (US-Soil Conservation Service) and Huggins and Monke) were compared to estimate and assess those models' parameters, and to evaluate their prediction ability for TWW irrigated soils. The field measurements were conducted in TWW irrigated soils using a hood infiltrometer. Six comparison criteria including Mean error, Geometric mean error, Root mean square error, Coefficient of determination, F-Statistic and Akaike information criterion were used to determine the best performing model with the least number of fitting parameters. The research indicated that three-parameter models had the best description of the relationship between cumulative infiltration and time in the researched TWW irrigated soils.