

Sensitivity of crop and soil parameters in estimation of groundwater recharge using an improved soil moisture balance method

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Abstract

This paper describes a sensitivity analysis of soil and crop parameters used in an improved soil moisture balance method to determine the greatest influence of parameter on estimating groundwater recharge. Sensitivity analyses are important in investigating the effect of uncertainties of parameter values and the variability of crops and soils in recharge estimation. The principle variable components such as near surface soil storage, runoff, fractional available water, root zone depth, soil moisture deficit, total available water and crop co-efficient were checked for variability in recharge. Near surface soil storage and fractional available water did not have a substantial effect on the potential recharge estimates. Influence of soil moisture deficit was observed in irrigated crop. The reduced root penetration resulted in increasing the potential recharge. The critical sensitive parameters for the soil moisture balance model were crop coefficient, depth of the root zone and runoff.

Keywords

Sensitivity analysis, Soil moisture balance, Groundwater recharge, Limestone aquifer

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