

عنوان مقاله:

Sensitivity Analysis of Hydraulic Parameters in the Simulation of Unsaturated Soil Water Dynamics

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خلاصه مقاله:

Soil water content is one of the most important parameters for estimating irrigation frequency and providing the plant's water requirement. Since measurement of soil water content is both expensive and time consuming, water movement models are used to estimate these values. In this study, LEACHW model was used to estimate soil water content for two "dry" (۲۰-۲۹ Aug) and "wet" (۱-۶ Jul) periods during the ۱۹۹۵ growing season. Different values of hydraulic parameters were applied to investigate the sensitivity analysis of these parameters in the estimation of soil water content. Thus the values of b (pore distribution coefficient in Campbell's equation (۲) were selected from ۲ to ۲۴, and $k(\theta)/k_s$ ratios of ۰.۱, ۱, ۱۰ and ۱۰۰ were used. Finally ۳۲ treatments were investigated for each period. Results showed that despite large variation for the hydraulic parameters, similar trends of results were obtained for all soil water content estimations. Statistical analysis comparing the estimated and measured results showed a systematic difference which can be adjusted using a few measured values of soil moistures. As an example, simulated results using $b=۲۴$ and $=۰.۱$ were calibrated to adjust the simulated results. The results of this study showed that a simple calibration method can be used for the estimation of soil moisture content without using extensive data required to represent hydraulic characteristics of soils.

کلمات کلیدی:

LEHACW, Sensitivity analysis, Soil water content, Simulation, Soil hydraulic parameters

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