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Soil loss rates on rangelands are considered as a quantitative indicator for conservation and health of rangeland. Noting significance of soil erosion in rangelands, one erosion prediction model needs to particularly consider vegetation role. Therefore, the present study was made to evaluate performance of RHEM model in estimating the amount of soil erosion of Rangelands of Zayandeh Rood watershed, by studying characteristics of 70 rainfall events in 5 plots along with measurement of sediment and runoff. RHEM Model inputs including climate (rainfall amount and intensity), percentage of canopy coverage, percentage of land coverage, soil texture, slope and percentage of slope and slope type were measured in each plot. At the calibration stage, measurements of performance criteria including E_{NS} and the coefficient of determination (r^2) for sediment are made equal to 0.69 and 0.914, respectively and for runoff 0.78 and 0.9, respectively. At the validation stage, the measurements of E_{NS} and (r^2) are made equal to 0.6 and 0.711, respectively, and 0.53 and 0.68, respectively for Runoff. The results obtained from the model show that the model performance is relatively high and RHEM model can be reliably used to estimate soil loss in the rangelands of Zayandeh Rood watershed. The results of sensitivity analysis also indicated a different and a high level of sensitivity re variation of slop, canopy cover, and ground cover respectively.

Keyword: Rangelands Water erosion, sensitivity analysis, RHEM Model

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