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Soil and Water Research

Evaluation of the relationships between runoff-rainfall-sediment related nutrient loss (A case study: Kojour Watershed, Iran)

Noor H., Fazli S., Alibakhshi S.M.:

Soil & Water Res., 8 (2013): 172-177

Suspended sediment (SS) resulted from distributed soil erosions facilitates soil organic matter and phosphorus (P) transportation and influences soil depletion and water quality. Organic matter (OM) in soil is the most important indicator of soil quality and productivity. P is one of the major nutrients controlling eutrophication of surface water. Irregular contaminant load pulsed by heavy rainfall may damage the ecological quality of downstream waters. Evaluation of OM and P, depleted by erosion processes in watershed scale, is necessary for better understanding the watershed system and should lead to appropriate management approaches. On the other hand, different behaviours of soil erosion as well as the necessity of regional studies have been proved. The present study was conducted in the Kojour watershed, Iran in order to (1) get some ideas about the storm-wise OM and P load in river, (2) evaluate the relationship between the peak of OM and P concentration and discharge during individual rainfall events, and (3) assess the applicability of rainfall and runoff variables of ten storm events in the

prediction of storm-wise OM and P loss. The results showed that most of the OM and P peaks preceded the peak discharge, following a clockwise hysteretic loop that exhibited hysteresis with a greater OM and P concentration for a given discharge occurring on the rising limb rather than on the falling limb. The results also showed that regression models had good efficiency in estimation of storm-wise OM and P loss with coefficient of determination of 0.96 and 0.93, respectively.

Keywords:

clockwise hysteretic loop; organic matter phosphorus loss; regression models; suspended sediment

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