Mapping rainwater harvesting sites in Panjkora River Basin, Khyber Pakhtunkhwa, Pakistan

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For improved water resources management, conservation of water, and the resolving/coping water-related challenges, rainwater harvesting (RWH) practices are of vital importance. For increasing agricultural productivity and water availability, selecting the suitable site with appropriate design for RWH is essential, particularly when water resources are more vulnerable to the impacts of climate change. State of the art integrated methods must be employed to for better water sustainability, especially under mountains environment. For this purpose, the Panjkora river basin was selected using Multi Influencing Factor (MIF) as spatial data model technique. The said model was incorporated in the Geographic Information System (GIS) using both customary and remotely sensed datasets. According MIF results, the study area has 80.22 km^2, 1681.99 km^2, 3116.10 km^2, 844.86 km^2, and 35.10 km^2 as less suitable, moderately suitable, suitable, high suitable and very high suitable for RWH interventions, accordingly.

To verify the accuracy and suitability of the model, the results were evaluated using ROC-AUC tests where MIF exhibited a score of 0.724, which is considered an encouraging and acceptable accuracy. On the basis of the results, the applied technique is recommended to be extended to various hydro-meteorological and physiographic regions in north of Pakistan.

Keywords: GIS; MIF; RWH; accuracy assessment; ROC-AUC.