Soil Loss Assessment for Palair Reservoir Catchment Area Based on Geoinformatics Approach

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Abstract: This study has attempted to quantify the soil loss rate in the Palair reservoir catchment area, Khammam district, Telangana, India. A Digital Elevation Model (2.5 m by 2.5 m spatial resolution), rainfall data over 16 years, soil and land cover/land use extracted were used as an input to compute soil loss rates. GIS-based USLE factors were integrated and analyzed in the ArcGIS 10.8 platform. The large spread of soil loss is mainly associated with a change in the R-factor. The results showed that yearly soil loss in the study area ranges up to 11591.91406 t ha^{-1} year^{-1} with a mean annual soil loss of 1095.242479 t ha^{-1} year^{-1}. The overall yearly soil loss in the study area is 12695956.6 tonnes. Approximately 111.2 ha of the area is within the extreme and very extreme erosion clusters that demand immediate controlling measures. The primarily responsible factors for soil loss are identified as LULC and terrain characteristics.

Keywords: GIS, Palair reservoir, Soil Erosion, Soil loss, USLE