

Study of effective factors on gully erosion and its zonation in Neyzar Region of Qom Province.

Abstract

Different soil erosion types including water and wind erosion which result in soil degradation and reducing fertility potential of soil, cause desertification in the region. "Gully Erosion" is one of water erosion types with progressive trend that results in soil degradation, and produces a lot of sediments. Determination of effective factors on gully erosion and its hazard zonation is one of substantial approaches in order to manage and control this phenomenon, and select the most appropriate and applied effective option. Hence this study is performed to classify effective factors on gully erosion, and identifies regions with high potential in gully erosion using analytical hierarchy process method in Neyzar region, Qom. The most effective factors on gully erosion including slope degree, slope aspect, lithology, land use, and land suitability, were collected and digitized in GIS. Then, gullies inventory map was prepared using 1:20000 aerial photos (1372), and field studies were carried out by GPS. In the next step, effective factors were compared in pairs, and the weight of each factor was calculated that illustrates its contribution. Next, scaled map of each factor in respect to their quantities was prepared, and finally, gully erosion was zoned using scaled layers and scale index related to each factor. Results indicate that lithology (0.4978), and land use (0.2227) are the most important factors in gully initiation, respectively. For the assessment of zonation map, gullies inventory map shows that about 91% of gullies are located in zones of high and very high risk in this region. Therefore, due to the fact that AHP is based on dual comparison of factors, results in easy and accurate necessary calculations and it includes many effective factors, it is a suitable and efficient method for gully erosion hazard zonation.

Keywords: Gully erosion, Analytical Hierarchy Process model, Zonation, Neyzar region.



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