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Influence of terraced fields on eroded terrain indicators—take the second of gullied rolling area on the Loess Plateau as an instance

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In order to study the influence of artificial terrain (terraced fields) on topographic factors, this paper, based on the basic principles of soil erosion and soil conservation, uses aerial photogrammetry to obtain high-precision DEM in Zhifanggou watershed, and extracts the slopes of terraced and non-terraced areas, Slope–Length and Slope Length factor, Topographic Wetness Index, Connectivity Index and Relative Path Impact Index, and analyze the changes of these factors to understand the impact of terraces on eroded terrain. The research shows that: (1) The construction of terraces makes the slope slow down, the slope length is cut off, and the LS factor becomes smaller; (2) The construction of terraced fields reduces the connectivity at the field surface and increases the connectivity at the ridge; the IC value of terraced fields is greatly affected by slope, and the IC value of non-terraced fields is greatly affected by slope length. (3) With the increase of slope, the connectivity of sediment increases and soil erosion intensifies; runoff accumulation is likely to occur in local depressions, resulting in increased connectivity of sediment. (4) The relative path impact index is effective for identifying erosion risk areas susceptible to changes in water flow paths. This paper expounds the influence of terraced fields on eroded topographic indicators and hydrogeomorphology, which is of great significance for accurately assessing the impact of terraced fields on soil erosion and for soil erosion control in the Loess Plateau.