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Study on the Influence of Slope Shape on the Development of Ephemeral Gully Based on UAV

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In order to explore the influence of slope shape on the development of ephemeral gully, 225 ephemeral gullies were obtained by visual interpretation based on the unmanned aerial photography of Langerzigou in Jingbian County, Shaanxi Province. The number and length of ephemeral gullies, the distance from the gully head to the watershed and the gully density were calculated. The original slope DEM was obtained by interpolating the elevation points on the ephemeral gully watershed, and the DEM was used to extract the terrain curvature to describe the hillslope shape, and then analyze the relationship between the slope shape and the ephemeral gully index. The results showed that: (1) the DEM after the elevation point interpolation on the ephemeral gully watershed was used to synthesize the ephemeral gully, which can well describe the original slope topographic features before the development of the ephemeral gully. (2) From the point of view of single slope shape, the gully density of the transverse concave slope was the highest, and the number of ephemeral gullies, the average distance from the gully head to the watershed of the longitudinal concave slope were the largest. the average length of the ephemeral gully and the number of the longitudinal convex slope were the largest. From the point of view of the combined slope shape, the average length of the ephemeral gully and the average distance from the gully head to the watershed on the biconvex slope and the convex slope were larger than those on the biconvex slope and the concave-convex slope. The ephemeral gully length of double concave slope was significantly different from that of double convex slope and convex concave slope ($P < 0.05$); The ephemeral gully length of concave convex slope was significantly different from that of double convex slope and convex concave slope ($P < 0.05$); There was a significant difference in the distance from the trench head to the watershed between the concave convex slope and the concave convex slope ($P < 0.1$). (3) The curvature distribution characteristics of different forms of slope shallow ditch development were analyzed.