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Spatial variation of infiltration rate in sloping semi-arid Gypsic Haplustepts

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Semi-arid hillslopes are widespread in Central Turkey and little is known on their hydrological processes. The hydrological processes such as infiltration rate, hydraulic conductivity, and soil water holding capacity are critical yield determining factors in these landscapes. The aim of this study was to investigate spatial variation of infiltration rate on gypsic haplusteps on a typical sloping cultivated land scape. We measured infiltration rate at 155 test sites and analyzed spatial variation of data by geostatistical technique. The infiltration rate was highly variable (CV%= 90) and moderately skewed to right (coefficient of skeweness= 0.96). The geostatistical range was 300 m, indicating that the sample points separated with a distance lower than 300 m were spatially dependent, and nugget effect was 0.19 indicated the infiltration rate was strongly specialty dependent. The surface map showed that the slope was a critical factor effecting infiltration rate. The results may have important implications for similar landscapes.
Key Words: ınfiltration rate, hillslope, geostatistic