

◆ Research Paper ◆

Study on the Small Gravity Erosion on the Gully Slopes

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Abstract: Gravity erosion is active in the hilly-gully region of Loess Plateau which contributes large amount of sediment by conveying much earth into the valleys. Field observation on the gravity erosion was carried out in Qiaogou watershed. Erosion pins were used to measure erosion rate on the gully slope, and shear tests were done to discuss the effecting factors of the gravity erosion. Field survey showed that mainly small gravity erosions were occurred in Qiaogou watershed and which produce much sediment. Three types of small gravity erosion types, including loess grain fall, mass fall and slump, were measured, and their effecting factors were discussed. Study shows that the small gravity erosion are mainly controlled by the slope gradient, rainfall, weathering, etc. These influence factors can reduce the internal friction angle and cohesion of the intact loess and therefore lead to lowering the critical depth of the gravity erosion on the slope, this can explain the occurrence of the shallow gravity erosions on the slopes. Gravity erosion has different intensity in different evolution stages of the gully, so it is possible to estimate the intensity of gravity erosion by the evolution stages of the gully.

Keywords: Gravity erosion, Loess Plateau, Gully slope, Valley evolution, Erosion pin