SPATIAL DISTRIBUTION OF ROCK FRAGMENTS IN PURPLE SOIL IN THREE GORGES RESERVOIR AREA

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The existence of rock fragments is one important features of purple soil. However, the variation in rock fragments on purple soil-mantled hillslope is poorly understood. In order to understand the spatial distribution pattern of rock fragments in purple soil, a typical catena which contained both a relatively steep slope and a relatively gentle one was selected. Ten pedon pits on hillslope from crest to foot were selected and the content and size of rock fragments of soil layers varied in depth at different position of hillslope were investigated. Results show that: (1) the rock fragment content of purple soil varied in 0.4%~50%. The small rock fragments with diameter of 5~20 mm and medium rock fragments with diameter of 20~76 mm were the main components. (2) With increasing depth of soil layer, the total content of rock fragments increased as soil layer deepened and the equivalent diameter of rock fragment enlarged. (3) On the relatively steep slope, the content and equivalent diameter of rock fragments increased from crest to foot. On the relatively gentle slope, the content and equivalent diameter decreased from crest to foot. We can concluded that vertical distribution of rock fragments within soil column was determined by pedogenic process and the depth of soil layer significantly influence rock fragment content, rock fragment size and content ratio of rock fragments with different diameter, while slope-scale variation of rock fragments depended on dominant hillslope transport process, i.e. water erosion processes or gravity erosion process.

Keywords: Rock fragment content; Rock fragment size; Vertical variation of rock fragment; Slope-scale variation of rock fragment

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