Indicating Erosion and Sediment Yielding Processes on Purple Soil Slopes Using ^{7}Be Measurements

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Abstract: Fallout radionuclides tracing techniques have been proven to be an important complementally means to conventional soil erosion monitoring methods. Due to its short half-time and shallow distribution in soil profile, the cosmogenic radionuclide ^{7}Be serves as a useful tool for indicating short-term erosion and sedimentation processes. Based on the combined use of ^{7}Be measurements and sediment grain size analysis, this paper investigated the erosion and sediment yielding processes using simulated rainfall experiments undertaken on purple soil slopes. The results shown that the turning point of erosion forms estimated from ^{7}Be measurements was similar to that of the sediment grain size analysis, especially for 20° slope. ^{7}Be approach has unique advantages when indicating the development of erosion processes and the sheet erosion can be clearly identified. This information has great significance in soil erosion prevention, especially rill erosion.

Key words: radionuclide; ^{7}Be; purple soil; erosion; Three Gorges Reservoir region

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