

## 黃土區土壤質地對坡面產流產沙過程的影響

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**摘 要** 土壤因素是造成水土流失問題的主要影響因子之一。通過室內類比降雨試驗研究不同質地土壤坡面的產流產沙過程及其機理。結果表明，重壤土的入滲性能<中壤土<輕壤土。在降雨歷時為 70min、雨強為 1.5mm/min、坡面土壤前期含水量為 11%左右類比降雨條件下，重壤土、中壤土以及輕壤土的平均入滲率分別為 0.338 mm/min、0.656mm/min 與 0.974 mm/min，而逕流係數分別為 0.804、0.561 和 0.396。土壤前期含水量對坡面的逕流和產沙過程影響存在差異，其中對重壤土影響較小、中壤土次之、而對輕壤土影響最大。不同質地土壤產沙過程不同，重壤土坡面以片蝕為主，輕壤土產沙主要是在土壤前期含水量較大且以塌陷方式產生，而中壤土以細溝形式產沙。對三種土壤的累積入滲量、逕流係數以及不同形式的產沙過程進行回歸分析獲得較為理想的結果。

**關鍵詞：**土壤質地、入滲、逕流係數、產沙量、土壤侵蝕。

## Soil Texture Influence on Plot Runoff and Sediment Yielding Processes in the Loessial Region

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**ABSTRACT** The varying texture of soil is one of the most important factors influencing soil and water losses. Experiments were conducted on different soil plot runoff and sediment yielding processes and their impact factors under simulated rainfall conditions. Results showed that the infiltration rate of light soil is greater than medium and heavy soil. Under the conditions of a soil water content of about 11%, rainfall intensity of 1.5 mm/min, and a duration of 70 min, the infiltration rate of heavy soil, medium soil and light soil were 0.338 mm/min, 0.656 mm/min and 0.974 mm/min respectively. The runoff coefficients were 0.804, 0.561 and 0.396 respectively. The three soil plots are sediment yielding processes are different. Heavy soil plots are mainly eroded by sheet, light soil by collapse, and medium soil by rill. The soil water content has different effects on soil plot runoff and the sediment generation processes of the three soils. It has a more obvious effect on light soil than medium soil and has a slight effect on heavy soil. The relationship between soil accumulative infiltration volume ( $f$ ), runoff coefficient ( $k$ ), sediment yield ( $S$ ) and precipitation time ( $t$ ) was analyzed by nonlinear regression, and the results were as predicted.

**Key Words:** soil texture, infiltration, runoff coefficient, sediment yield, soil erosion.

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