

台灣中部坡地土壤水分特性曲線之研究及水分移動之模擬

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摘要 本研究以台中大坑、大肚山與南投九份二山土壤實測資料，利用曲線擬合技術求得 van Genuchten 水分特性方程式參數，大肚山土壤質地為粘質壤土，質地較為砂質壤土之大坑與九份二山細，入滲率小，容易產生逕流。其水分特性曲線推估方程式如下所列：

大坑（砂質壤土） $\theta(h) = 0.025578 + 0.413422 / [1 + (0.0639h)^{1.27}]^{0.2126}$

九份二山（砂質壤土） $\theta(h) = 0.026550 + 0.374450 / [1 + (0.0401h)^{1.45}]^{0.3103}$

大肚山區（粘質壤土） $\theta(h) = 0.029778 + 0.564222 / [1 + (0.0699h)^{1.25}]^{0.2000}$

本研究亦應用 Richards Equation 模擬三種土壤之水分移動情形，發現細質地土壤水分入滲較慢水分入滲深度較淺，當發生豪大雨時，土體將有可能無法消化降雨量而導致地表逕流，增加災害發生之機率。

關鍵詞：水分特性曲線、水分特性參數、水分特性曲線方程式。

Study of the Soil Water Characteristics Curve for Slope Land Soil and Simulation of Water Movement in Central Taiwan

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ABSTRACT Three soil samples collected from Da-keng, Chiu-fen-er-shan, and Da-Du mountain in central Taiwan were used as study materials. The water characteristics of the soil samples were measured and the characteristic function parameters were determined by the curve fitting technique. The Da-Du mountain soil is the finest soil with the lowest infiltration rate. The water characteristic equation for three soil samples are described as follows

Da-keng $\theta(h) = 0.025578 + 0.413422 / [1 + (0.0639h)^{1.27}]^{0.2126}$

Chiu-fen-er-shan $\theta(h) = 0.026550 + 0.374450 / [1 + (0.0401h)^{1.45}]^{0.3103}$

Da-Du mountain $\theta(h) = 0.029778 + 0.564222 / [1 + (0.0699h)^{1.25}]^{0.2000}$

The research also simulated water movement by Richards Equation. The result shows the finest soil may produce runoff during raining.

Key Words: water characteristics curve, water characteristics parameter, water characteristics curve equation.

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