The relationship between soil erosion rate and soil water on test beds, Chuncheon, Republic of Korea, using ultrasonic monitoring sensor and TDR

K.H.NAM[1], J.J.LEE[2], C.O.CHOO[1] AND G.C.JEONG[1]*

[1]Andong National University, Andong, Korea
(namsoil@naver.com, mineralogy@hanmail.net,
*correspondence: jeong@andong.ac.kr)
[2]INFORWORLD, Seoul, Korea
(jklee8103@paran.com)

Introduction

In Korea most rainfall have been concentrated in summer season during which soil erosion by torrential rain commonly takes place in short periods[1, 2]. Therefore it is nearly impossible for us to measure detailed rates of soil erosion. In this study, realtime sensor using ultrasonic with reproductibility of less than 1 mm was applied to measure for soil erosion rate and amount.

Results and Discussion

Erosion depths are linearly correlated with the rates of rainfall. Soil humidity was using TDR (Time Domain Reflectometry) that uses electrical conductivity in soil water. Soil humidity is higher in soils at lower slopes, that is, rest bed 1(5°) showed highest soil humidity to be 11.80%. In August, 2013, there is a high relationship between erosion depth and soil amount eroded with a linear trend (R2 = 0.7644). It is evident from our test beds that soil was preferentially removed by repetition of movement and staying on soil surfaces.

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[1] Jeong *et al* (2011) *Nat. Hazards* **59**, 347-365. [2] Ryu *et al* (2013) *Proc. KSEG*. Conf.133-135.