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The effect of initial saturation on infiltration process in an undisturbed soil sample

R. Němcová, M. Císlerová, M. Sněhota

Czech Technical University in Prague, Faculty of Civil Engineering, Czech Republic (renata.nemcova@fsv.cvut.cz)

The stability of hydraulic characteristics of a coarse sandy loam has been studied in the lab. The semi-automatic set-up has been used to observe the dynamics of water movement in soil sample during ponded infiltration. The fully controlled recurrent infiltration–outflow experiments were carried out on an undisturbed soil sample for a series of initial saturations, different for each run. The soil sample was taken at the experimental site Korkusova Hut' in Šumava Mountains, Czech Republic. The dimensions of the cylindrical column sample are 120 mm in diameter and 200 mm in length. The cumulative flow volumes through the top and the bottom boundary, the pressure heads in three depths and the weight of sample were continually recorded during each experiment. Measured data were processed and evaluated using S_1D_DUAL model. The measured values of steady infiltration rates for particular runs have changed significantly in the initial moisture contents. This finding contradicts the standard Richards' theory.

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