



The temporal changes in saturated hydraulic conductivity of forest soils

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I investigated the temporal variability of forest soils infiltration capacity through compaction. I performed the measurements of mine in The Botanical Garden of Sopron between 15.09.2014 - 15.10.2014.

I performed the measurements in 50·50 cm areas those have been cleaned of vegetation, where I measured the bulk density and volume of soil hydraulic conductivity with Tension Disk Infiltrometer (TDI) in 3-3 repetitions. I took undisturbed 160 cm³ from the upper 5 cm layer of the cleaned soil surface for the bulk density measurements. Then I loosened the top 10-15 cm layer of the soil surface with spade. After the cultivation of the soil I measured the bulk density and volume of water conductivity also 3-3 repetitions. Later I performed the hydraulic conductivity (K_{sat}) using the TDI and bulk density measurements on undisturbed samples on a weekly basis in the study area. I illustrated the measured hydraulic conductivity and bulk density values as a function of cumulative rainfall by using simple graphical and statistical methods. The rate of the soil compaction pace was fast and smooth based on the change of the measured bulk density values. There was a steady downward trend in hydraulic conductivity parallel the compaction. The cultivation increased the hydraulic conductivity nearly fourfold compared to original, than decreased to half by 1 week. In the following the redeposition rate declined, but based on the literature data, almost 3-4 months enough to return the original state before cultivation of the soil hydraulic conductivity and bulk density values.

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