



## Soil moisture in sessile oak forest gaps

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By social demands are being promoted the aspects of the natural forest management. In forestry the concept of continuous forest has been an accepted principle also in Hungary since the last decades. The first step from even-aged stand to continuous forest can be the forest regeneration based on gap cutting, so small openings are formed in a forest due to forestry interventions. This new stand structure modifies the hydrological conditions for the regrowth. Without canopy and due to the decreasing amounts of forest litter the interception is less significant so higher amount of precipitation reaching the soil.

This research focuses on soil moisture patterns caused by gaps. The spatio-temporal variability of soil water content is measured in gaps and in surrounding sessile oak (*Quercus petraea*) forest stand. Soil moisture was determined with manual soil moisture meter which use Time-Domain Reflectometry (TDR) technology. The three different sizes gaps (G1: 10m, G2: 20m, G3: 30m) was opened next to Sopron on the Dalos Hill in Hungary. First, it was determined that there is difference in soil moisture between forest stand and gaps. Second, it was defined that how the gap size influences the soil moisture content.

To explore the short term variability of soil moisture, two 24-hour (in growing season) and a 48-hour (in dormant season) field campaign were also performed in case of the medium-sized G2 gap along two/four transects. Subdaily changes of soil moisture were performed. The measured soil moisture pattern was compared with the radiation pattern. It was found that the non-illuminated areas were wetter and in the dormant season the subdaily changes cease.

According to our measurements, in the gap there is more available water than under the forest stand due to the less evaporation and interception loss.

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