



Effect of drought on fine roots productivity in poplar-based short rotation coppice

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Short rotation woody crops (SRWC) are alternative source of bioenergy, which apart from their 'carbon neutrality' have potential to store carbon (C) into soil and mitigate the increasing CO₂ emission. Studies of below ground biomass of trees are divided into two types according to root diameter – analysis of fine roots (less than 2 mm) and coarse roots (more than 2 mm). Trees roots are spatially highly heterogeneous and it requires large number of samples to obtain a representative estimate of belowground biomass. For this study we used hybrid poplar clone J-105 (*Populus nigra* x *P. maximowiczii*) grown under short rotation coppice system in the region of Bohemian-Moravian Highland (49°32'N, 16°15'E and altitude 530 m a.s.l.) since April 2000. The plantation with planting density of 9,216 trees ha⁻¹ was established on the former agricultural land and the length of the rotation cycle was set to 6-8 years. While mean annual rainfall was 609 mm with mean annual temperature 7.2°C during 1981-2013 significant increase of temperature and more frequent droughts are expected. In 2011, we established drought experiment based on throughfall exclusion system, reducing up to 70 % of throughfall precipitation. Thus 2 treatments with normal and lowered soil moisture levels were introduced. In January and February 2014, we cored 18 places including drought and control using root bipartite auger. The main goal of the study is to assess the response of fine roots productivity and fine roots vertical distribution on the reduced soil water availability. Results will be presented at the conference.

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