

**DATA ON *PICEA OBOVATA* (PINACEAE) NEEDLES MOISTURE EXCHANGE UNDER THE  
AEROTECHNOGENIC POLLUTION (THE KOMI REPUBLIC)**

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SUMMARY

The aim of the research was to evaluate characteristics of spruce needles water regime as indicators for the assessment of forest health under aerotechnogenic contamination. The research was performed on *Picea obovata* Ledeb. (Pinaceae) in bilberry spruce forest located 10 km from the source of pollution. The intensity of transpiration, photosynthesis and stomatal conductance of the intact second-year-needles was measured directly in the tree canopy with electronic gas analyzer LI COR 6400. Total water content of the needles was determined by thermogravimetric method. Water deficiency was found as difference between maximal water content after saturation and real content in the needles. Water potential was determined by compensation method using refractometer. Studies showed that intensity of needle transpiration of spruce at the contaminated site was 1.4 times higher than at the control while photosynthesis was almost 3 times lower. Transpiration ratio (transpiration intensity / photosynthesis intensity) at the experimental site was 0.7, and at the control – 0.4. Moisture content of needles was almost the same at both control and contaminated sites (57 and 58 %) as well as water content (53 and 57 %). Water deficit was 10 % in control and 5 % in the experiment while water potential of spruce needles was 0.2 Mp at both sites. Water deficiency of needles at the experimental site was lower than in control. It may indicate the retention of stomatal regulation under the pollution from industrial emissions. Our results demonstrate that under moderate pollution, water exchange processes in the spruce needles do not change significantly. Total water content, moisture content and water potential at both the control and polluted sites were almost identical. However, even with the high stomatal conductance and small water deficiency, process of transpiration at the contaminated site was disturbed.

Key words: middle taiga, spruce forest stands, needle, moisture exchange, aerotechnogenic pollution, the Komi Republic.