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The impact of windthrow and fire disturbances on selected soil properties in the Tatra National Park

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In November 2004, forest stands in the Tatra National Park (TANAP) were affected by windthrow and in July 2005, the wildfire broke out on a part of the affected area. The objective of this study is to evaluate the impact of the windthrow and fire disturbances on soil microbial activity. Basal and potential soil respiration, N-mineralisation, catalase activity, soil microbial biomass, and cellulase activity were measured in soil samples taken from the A-horizon (depth of 0–10 cm) along 100 m transects established on 4 plots (reference site, burnt, non-extracted, and extracted sites) in October 2006. Some soil microbial characteristics exhibited a high spatial variability, especially microbial biomass and N-mineralisation. Significant differences in soil microbial characteristics (especially basal soil respiration and catalase activity) between plots were found. Generally, the highest microbial activity was revealed on the plot affected by fire. Soil microbial activity was similar on the extracted and non-extracted sites.

Keywords:

windthrow; wildfire; spruce stands; forest soil; microbial activity

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