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THE INFLUENCE OF FIRES ON THE BIOLOGICAL ACTIVITY OF FOREST SOILS IN VRANCEA, ROMANIA

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Abstract

Soils are influenced by stand composition and hydrological regime as well as by stress abiotic factors, including forest fires. As such, this study analyzed three stands affected by fires of different severities. Soil samples were gathered during the spring of 2017 from three sample areas in Vrancea County, eastern part of Romania. For each area studied, soil profiles were studied in 3 areas affected by fires and in control areas located close to each other. The soil respiration was determined by monitoring CO_2 fluxes with an EGMEnvironmental Gas Monitor, PP systems. The microbial measures (mesophilic heterotrophic bacteria, fungi and nitrogen fixing bacteria from genus *Azotobacter)* were achieved through the plate count method. The results were statistically interpreted with the ANOVA classical- univariate analysis. The fires affected the humus and total nitrogen quantities at a certain time interval from their apparition, but only for the first 10 centimetres of the soil depth and in the case of low intensity fires. The correlation between high temperatures and CO_2 fluxes was also established. The fires also affected the abundance of fungi. After six years from their apparition, the ''unseen'' effects of fires on forest soils characteristics are still detected, such as the decrease of soil respiration and bacteria amount, a pH increase and a decrease of humus and total nitrogen.

Key words: dehydrogenases activity, soil respiration, soil bacteria and fungi

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