

FOREST LOGGING INFLUENCE ON MICROBIAL COMMUNITIES COMPOSITION IN MEDITERRANEAN PINE STAND

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Several studies investigated the impact due to forest logging on soil degradation. Field studies revealed a complex relationship among microbial communities and soil degradation showing a wide variability of response. During timber harvesting, soil structure is reorganized and the porosity, together with the continuity among the pores, is reduced influencing the composition of microbial communities. The objective of this work was to evaluate the variation of two types of bacterial communities of the soil after forest logging operation related to a regeneration cut. The study area is located, in the Regional Park of Migliarino- San Rossore Massaciuccoli (PI). The area is represented by a high stand of *Pinus pinea* (100-120 years old). Soil samples were collected in patchy cut areas (strip cut) harvested in two different years (2006 and 2011) and compared with a control area (not harvested). In the control area, the soil samples were also collected in the proximity of plants and undergrowth, in order to evaluate the influence of the vegetation on the biological component of this soil. To measure the bacterial community variations, before and after logging, the extraction of total DNA was performed from soil samples, and amplifications by PCR were carried on by using specific primers for *nif* and *amo* genes. The PCR products were then analyzed by the T-RFLP method, to generate a fingerprint of microbial community for all soil samples and for both types of genes. The genetic data were also used to determine the Shannon's and Evenness biodiversity indexes. The analysis of population structure was performed through a method implemented in the Geneland package. The results showed significant changes after logging both in composition and in species for both types of genes. An analysis of microbial spatialization in each areas was also carried out.