

Post-fire environments

Are we doing the right things to avoid soil degradation in post-fire environments?

There are many factors conditioning the recovery of fire-affected ecosystems. So, it is important to assess what measures are necessary to apply and their effectiveness in each case. Certain post-fire actions may cause more damage than burning itself, while there are others that are not always necessary as the ecosystem may sometimes be able to recover by itself.

The POSTFIRE Project – “Soil quality, erosion control and plant cover recovery under different post-fire management scenarios” – is co-ordinated by Dr Jorge Mataix-Solera with the participation of members from five different universities covering Spanish Mediterranean environments.

This project aims to obtain applicable results by studying and comparing different types of post-fire restoration techniques in different soil types, under different vegetation and climatic conditions. Among the possible post-fire actions, the project focuses on the study of natural regeneration, the efficiency of soil protection and conservation techniques (e.g. mulching), soil improvement and accelerating techniques for the recovery of vegetation cover (e.g. the application organic compost) and the assessment of the impact of traditional activities as the removal of burned wood (a treatment called ‘salvage logging’), which may be aggressive to the soil.

Preliminary results show that salvage logging treatments applied some months after fire occurs when soil is very fragile and new vegetation starts to sprout again, can affect soil quality much more even than the fire itself can, and especially over some soil types that are very vulnerable to soil degradation. The looseness of soil quality (by losing organic matter content, microbial biomass and activity, soil structure, etc.) affects the recovery of



vegetation and promotes more soil erosion. We are checking new indicators to assess the recovery of soil quality after post-fire treatments such as ‘glomalin’ content in soil, a glycoprotein produced by mycorrhizal fungi activity and also related to an important physical property as soil aggregate stability. More research is necessary to know how post-fire treatments affect soil systems in the medium and long term, and to promote changes in forest management techniques when necessary.

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