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TERRAMATER project: A tool for post-fire rehabilitation and restoration of soils

[1]Macías, F., [1]Antelo, J, [2]Verdes, P.V., [3]Figueiredo, T., [3]Fonseca, F., [4]Hernandez, Z., [5]Valente, T., [5]Barroso, A., [5]Henriques, R., [6]Carvalho, M., [6]Fernandes, M.J., [6]Teixeira, S., [6]Delerue-Matos, C. and [7]Macías-García, F.

[1]*CRETUS. Department of Soil Science and Agricultural Chemistry. Universidade de Santiago de Compostela. Spain*
[2]*Department of Applied Physics. Universidade de Santiago de Compostela. Spain*
[3]*Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança. Portugal*
[4]*Mountains of Research Collaborative Laboratory (MORE). Portugal*
[5]*Instituto de Ciências da Terra. Universidade do Minho. Portugal*
[6]*REQUIMTE/LAQV, Instituto Superior de Engenharia Do Porto. Politécnico Do Porto. Portugal*
[7]*Recursos y Valorización Ambiental, S.L. Spain*

Abstract

In recent years the risk of wildfires in the regions located in the Portuguese-Spanish border varied between moderate to high or very high. The loss of the vegetation cover and the presence of huge areas of unprotected soil due to the occurrence of large wildfires, as well as the limited post-fire protection actions, have increased the risk of soil erosion to catastrophic levels. Thus, it is crucial to act immediately to restore the ecosystem, avoid or minimize the soil erosive processes and the impact to the forest masses in the affected areas. The main objective of the TERRAMATER project is the recovery of the environmental, ecological and productive functions of burnt areas, reducing soil losses due to erosion and increasing soil resilience to future episodes of wildfire. The improvement of ecological functions in the recovered areas also aims to reduce the threat of pests in the neighboring forest masses. This will be achieved by remediation actions conducted in soils affected by wildfires or prescribed fires, including the application of soil amendments based on the use of technosols obtained from organic wastes and industrial byproducts. The soil plots selected for the study correspond to areas in the north of Portugal and northwest of Spain, dominated by either Atlantic-type or Mediterranean-type shrublands. The amendments will be previously formulated and tested under controlled conditions according to the soil information obtained and the local knowledge of post-fire ecological conditions. Also, the biogeochemical processes associated with the recovery and improvement of the quality of the affected soils will be taken into account. The application of the technosol amendments, will produce an increase in the organic carbon pools and promote the protection and improvement of the

soil quality, which will result in an opportunity for ecological restoration of burnt areas and the subsequent reduction in emissions of greenhouse gases. Finally, this application will help to minimize the pollution of water bodies close to the burnt areas resulting from the runoff of nutrients and suspended materials from ashes.

Keywords: post-fire, soil rehabilitation, soil management, technosol, amendment

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