



## **Rainfall simulations on a fire disturbed mediterranean area**

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Rainfall simulator experiments were carried out in the Liguria region, Italy, immediately after a forest fire in early August, 2003, to evaluate the effects of forest fire on soil hydraulic properties, runoff and erosion. Two adjacent 30 m<sup>2</sup> plots were set up with common physiographic features, and the same fire history, except for the fire of August 2003, which burned only one of them. Since both plots were previously subject to the passage of fire in March 1997, one compares the hydrologic and sedimentologic response of an area burned in year 2003 (B03) with that of an area burnt 6 years before (B97). Each rainfall simulation consisted of a single 60 minute application of rainfall with constant intensity of about 76 mm h<sup>-1</sup>. The results show runoff ratio, evaluated for different pre-event soil moisture conditions, ranging from 0 to 2% for B97 plot, and from 21 to 41% for B03. Runoff ratio for the recently burned plot was 60 times higher than for the plot burned six years before, under wet conditions, and 20 times higher, under very wet conditions. A large increase in sediment production also was measured in B03 plot, as compared with that in B97 plot. Suspended sediment yield from B03 plot was more than two orders of magnitude higher than that from B97 plot in all the simulated events. The high soil losses measured immediately after burning indicate that effective post-fire rehabilitation programs must be carried out to reduce soil erosion in recently burned areas. However, the results for the plot burned six year prior show that recovery of the hydrological properties of the soil occurs after the transient post fire modification.