



Effect of a forest fire in splash erosion: a short term study

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Wildfires alter the properties of soils and remove vegetation, sometimes leading to severe degradation processes. One of the most important processes associated with the fires is the splash erosion. The region of “El Bierzo” annually records one of the highest number of fires in the North of Spain, exposing much of their soils to erosion. Therefore, the main objective of this work is to estimate soil loss due to splash erosion in the first months after a forest fire, and establishes its relationship with the characteristics of precipitation and changes in the soil as vegetation.

The work was carried out in the town of Congosto, after a fire in May 2012 which burned 23 hectares of scrubland and *Pinus radiata* afforestation. Four study areas were chosen: two burned (one with pine tree and the other with scrubland) and two not fired (one with the control of the pine tree area and the other with the control of scrubland area). Transects were established for each study area. Five splash erosion devices were installed per area, called funnels, and several measurements of hydrophobicity, infiltration capacity and soil moisture were performed simultaneously. Soil samples were taken to determine the effect of fire on it and two vegetation sampling were conducted to study its evolution. One disdrometer was installed to study the characteristics of precipitation.

The biggest splash soil losses occur in burned areas, especially in the scrubland. The factor that has the greatest influence on soil loss by splash is the presence of bare soil exposed to raindrop impact. Kinetic energy is the main property associated with rain splash erosion. The rate of vegetation recovery was very slow, which significantly affects the bulk soil loss. The changes do not significantly influence soil splash erosion, although an increase in the smaller class aggregates may promote erosion in areas of scrubland. A high infiltration rate and a low hydrophobicity rate can decrease significantly the soil loss by erosion.