



HYDROLOGICAL RESPONSE OF SOIL AMENDMENTS UNDER THE SAME CLIMATIC CONDITIONS (AS MEDITERRANEAN)

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Soil loss due to water erosion is a serious problem in Mediterranean areas, that causes great concern. The resulting pattern of vegetation and bare soil is a key factor in runoff generation. According to this, different organic carbon extra-sources (sewage sludge, polymers, mulching, manure, etc) have been proved as an erosion control methods. Some studies indicate a positive influence on plant cover and sediment yield and reducing the high soil losses usually found in degraded areas, bare slopes and cultivate soils from Mediterranean. The aim of the study was to evaluate the role played by different soil amendments in the runoff generation and soil loss from closed and afforested plots. The experimental area is located in the Natural Park of Sierra Tejada, Almijara and Alhama, in South of Spain. The study was carried out in seven 24 m² (2 x 12 m) closed plots. Every pot had four repetitions. Rainfall was measured with a tipping-bucket raingauge (0.2 mm accuracy). In order to verify possible differences, we applied the test of Mann-Whitney U in corroboration with the previous homogeneity test of variance.

Average total runoff collected from the 24 m² plots was negligible for pinus branches mulching (5.52 l) and straw mulch (6.36 l), and high for hydroabsorbent polymers (22.49 l) and sheep manure (23.67 l). Mean soil losses for each of the land management indicated that hydroabsorbent polymers and sheep manure contributed with the greatest amounts, while straw mulch and pinus branches had negligible or no soil loss. The applications of straw mulch and pinus branches were very effective in reducing soil losses and produced an increase on the available water content respect to the control plots, although was lower than hydroabsorbent polymers.