Aleppo pine afforestation in the Massis del Caroig, Eastern Spain. The impact on soil water repellency and infiltration rates.

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Paloma Hueso and co-workers (2014; 2015) researched the impact of soil treatment on soil erosion and organic matter recovery in Mediterranean types ecosystems and they demonstrated that the surface wash and the soil quality is determined by the soil management. Afforestation and proper management with fertilizers, mulches and vegetation recovery, are common strategies to fight against soil erosion in Mediterranean type ecosystems García Orenes et al., 2010; Barbera et al., 2012; García Orenes et al., 2012; Mukuria and Aynekulu, 2013; Jiménez et al., 2015; Tengberg et al., 2015; Tesfaye et al., 2015). However, Hueso et al., (2014; 2015) did not paid attention to the impact that water repellency can trigger in the runoff generation and water repellency when soils increase the organic matter.

In Eastern Spain, afforestation with Aleppo Pine (Pinus halepensis Mill.) was very popular during the XX century, although little is know about his impact on soil hydrology. Many of the impacts of afforestation were found positive (García et al., 2000; Maestre et al., 2003; Bellot et al., 2004; Maestre and Cortina, 2004; Chirino et al., 2006; Querejeta et al., 2008; ). This research shows the impact of Pinus halepensis Mill. on soil water repellency, in comparison to the natural scrubland and the cover of Quercus ilex.

Within the El Teularet-Sierra de Enguera Experimental Station five types of vegetation covers were selected: Pinus halepensis, Quercus Ilex, Quercus coccifera, Rosmarinus officinalis, Thymus vulgaris and Brachypodium retusum. The Water Drop Penetration Time method (Cerda and Doerr; 2007; 2008) was applied. A hundred drops were applied at the soil surface, 1, 2, 5 and 10 cm depth 5 times along the year 2013 under different soil moisture content. The results show that the water reptlency of the soils is: Pinus halepensis > Quercus coccifera > Rosmarinis officinalis > Quercus ilex > Thymus vulgaris > Brachypodium retusum. This is related to the higher organic matter content and the production of water repellent substances by the vegetation.

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