

The impact of olive leaves, mosses and the burrowing of wild boars on soil erosion in olive orchards

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The main factor controlling soil erosion is vegetation cover (Cerdà and Doerr, 2005; Van Eck et al., 2016; van Hall et al., 2017). However, due to the removal of the vegetation in agricultural fields and the increase in soil erosion rates other factors arise as keys to control soil erosion rates and mechanisms (Ochoa-Cueva et al., 2016; Rodrigo Comino et al., 2016). Soil erosion rates in olive plantations are high due to the lack of vegetation cover as a consequence of intensive tillage and herbicides abuse (Taguas et al., 2015; Parras-Alcantara et al., 2016; Zema et al., 2016). This is also found in vineyards and other orchards around the world (Prosdocimi et al., 2016; Rodrigo Comino et al., 2016), and the reason to look for sustainable management techniques such as geotextiles, mulches or catch crops that will stop the accelerated soil erosion (Giménez Morera et al., 2010; Mwangi et al., 2016; Nawaz et al., 2016a; 2016b; Nishigaki et al., 2016). All these management techniques are difficult to apply and have high costs. Natural solutions such as weeds to provide cover are very efficient and have no cost (Cerdà et al., 2016; Keesstra et al., 2016) and they can be adapted to the management of the farmers. In olive orchards under herbicide treatment there is a natural growth of mosses and the development of a litter layer composed of olive leaves. There is also burrowing by wild boars that “ploughs” the soil. This research evaluates the impact of the three items above on soil erosion. The measurements were carried out using simulated rainfall experiments over an area of 0.25 m² at a rainfall rate of 55 mm h⁻¹ during one hour (Cerdà, 1996; Prosdocimi et al., 2017) on 15 plots of mosses, 15 wild boar burrowed surfaces and 15 leaf covered surfaces during the winter of 2015. The soil erosion rates were 34 times greater in the wild boar burrowed soils, meanwhile the litter and mosses covered soils showed similar erosional responses and the soil erosion rates were negligible.

Acknowledgements

The research leading to these results has received funding from the European Union Seventh Framework Program (FP7/2007-2013) under grant agreement n_ 603498 (RE CARE project) and the CGL2013- 47862-C2-1-R and CGL2016-75178-C2-2-R national research projects.

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