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Catch crops impact on soil water infiltration in vineyards

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Infiltration is the key component of the hydrological cycle (Cerdà, 1999; Bagarello et al.,, 2014; Zema et al., 2016). Infiltration determines the partitioning of rainfall into runoff and subsurface flow (Cerdà, 1996; Bagarello et al., 2006; Wang et al., 2016). In the Mediterranean, agriculture resulted in the degradation of the soil structure, reduction of the organic matter and increase in the soil losses (Cerdà et al., 2009; Laudicina et al., 2015; Iovino et al., 2016; Willaarts et al., 2016). There is an urgent need to restore the agriculture soils to avoid floods, reduce the carbon emissions and avoid reservoir siltation (Aksakal et al., 2016; Ben Slimane et al., 2016; Yagüe et al., 2016). Catch Crops are widespread used due to their impact on the soil fertility (Mwango et al., 2016; Nishigaki et al., 2016 ; Nawaz et al., 2016). Catch crops also increase the amount of organic matter but little is known about the effect on soil infiltration. Two paired plots were selected in Les Alcusses (Moixent municipality) in Eastern Iberian Peninsula to compare the infiltration rates between a 8-years catch crop (Vicia sp) with a control (plough) soil. The measurements were carried out by means of ring infiltrometer in August 2014 and December 2014 under dry and wet conditions (Cerdà, 2001; Di Prima et al., 2016). The results show that the steady-state infiltration rates were 1.8 higher during the summer period, and that the catch crops did not increase the infiltration rates.

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