



Soil Erosion Management in Vineyards & Fruit Trees Orchards in Méditerrananean context: experimental results and review

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Soil erosion is increasingly seen as a major environmental problem. Among the cultivated lands, vineyards represent the form of agricultural use that causes one of the highest soil losses. While the theme of soil water erosion in vineyards was well addressed in the recent study by Prosdocimi et al. 2016 on the effect of triggers on soil water erosion, a lack of knowledge persists on the impact of soil conservation practices on runoff, erosion and soils structure at different scales: from plot to hillslope scale. At the plot scale, the review of Maetens et al., 2012 based on 353 runoff plots throughout Europe and the Mediterranean region, shows how adapted soil and water management practices could be efficient in reducing erosion, more than reducing runoff. At the hillslope scale, only several papers show the effect of various management practices in Mediterranean Vineyards and fruit trees Orchards, including grasses or cover crops, straw mulches, tillage, as well as terracing (as Marques et al., 2010; Napoli et al., 2016; Sastre et al., 2017; Keestra et al., 2016 . . .).

In this talk, we present 3 types of results:

(1) Based on a literature review, we present and describe soil and water management practices that are commonly used in Mediterranean fruit orchards and vineyards;

(2) Based on a field experiment conducted over 4 years on several vineyard fields (2000 m²) located in the south of France, we show the effects of "classical agricultural practices", such as chemical weeding, mechanical weeding and herbaceous cover, on runoff and erosion rate ;

(3) we discuss the difficulty of taking spatial and temporal scale effects into account when assessing the effectiveness of soil and water management practices. Over time, taking into account the relative effectiveness of the practices is variable over time, as for example the effects of tillage on the soil surface structure which varies considerably after several rainy events. In space, given that several practices distributed at the hillslope or watershed scale could have different combined effects depending on their spatial distribution.