



Impacts of the *Meskat* water-harvesting system on soil horizon thickness, organic matter, and canopy volume of olive tree in Tunisia

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Received 9 January 2013; Accepted 8 September 2013

ABSTRACT

The *Meskat* system is the main traditional water-harvesting practice widely used in the region of Tunisian Sahel. This study aims to assess the impact of this system on several soil characteristics and on olive tree vigor. For this purpose, a strip experimental design was selected in the Sousse region. This study was focused on soil horizon thickness, its saturated hydraulic conductivity, and its organic matter content; olive tree canopy volume; and length of fruiting shoots of olive trees. The results showed that thickness of soil horizon A and B increased in the area close to the water-harvesting system. However, the soil-saturated hydraulic conductivity decreased in the structures close to the *Meskat* and organic matter content of the soil increased, especially in the root zone. These soil parameters could be considered as key indicators of soil fertility, affecting the agronomic performance of olive trees. Data indicate that canopy volume increased for the trees in the *Mankaa*, a small plot delimited by embankment that collecting run-off, close to the *Meskat*. Because olive tree is biennial bearing when rain-fed, this water-harvesting system seems to have no significant effect on the length of its fruiting shoots. The investigated parameters for soil are affected by *Mannkaa–Meskat* distance, indicating the beneficial effect of this water-harvesting system.

Keywords: *Meskat* system; Run-off; Soil fertility; Olive tree; Tunisian Sahel

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Presented at the 6th International Conference on Water Resources in Mediterranean Basin (WATMED6), 10–12 October 2012, Sousse, Tunisia