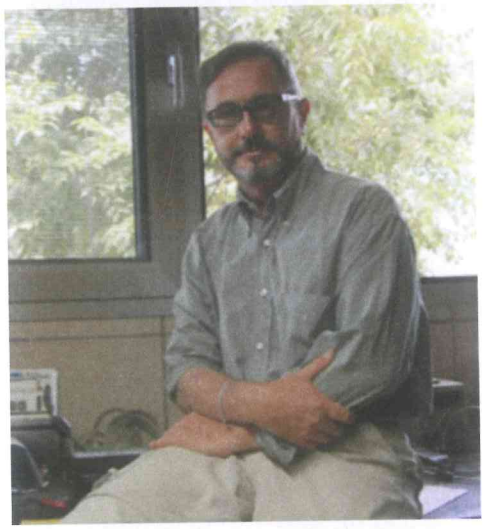

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Direct evaporation from the soil: are we giving it the right relevance?

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Although under full canopy cover the direct evaporation from the soil surface is often almost negligible with respect to transportation from the canopy, these conditions are never attained in orchards, where part of the soil is permanently exposed even under very high plantation densities. Notwithstanding, irrigation scheduling calculations for drip irrigated orchards often overlook this component of the water balance, or include it in the evapotranspiration without attempting precise appraisals for specific cases. The existent semi-empirical estimation methods (FAO, Ritchie – Philip) have strengths and weaknesses, especially for localised irrigation with relatively small and almost permanently-wet spots, although also for these conditions a specific method was developed.

Using this method and olive groves as example target, we present case studies aimed to estimate the total amount of water that evaporates from the soil and from the emitter wet zone in particular. The relative importance of this often overlooked sink of irrigation water is presented for these cases, and the opportunities for reduction of this unproductive evaporation loss in water-limited horticulture are discussed. The results suggest that direct evaporation from the soil could represent an important relative water cost which can lead to significant production losses under deficit irrigation conditions. Our ability to select the right agronomical and technical solutions to minimise the direct evaporation from the soil is directly dependent on our capacity of precisely model it in a given situation: further research on this issue is paramount for improving the efficiency of water limited horticulture.

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