

Deficit Drip Irrigation in Organic Cultivation of Aromatic Plant

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Abstract : In countries with limited water resources, where the irrigation demands are higher than the 70% of the total water use, the demand for fresh water increases while the quality of this natural resource is downgraded. The aromatic and pharmaceutical plants hold a high position in the culture of the most civilizations through the centuries. The 'Mountain Tea,' species of the Greek flora, is part of a series of aromatic plants and herbs that are famous for their pharmaceutical properties as well as their byproducts and their essential oils. The aim of this research was to study the effects of full and deficit irrigation on the growing and productive characteristics of organically cultivated 'Mountain Tea' (*Sideritis raeseri*). The research took place at the University of Thessaly farm in Velesino, Magnesia - Central Greece, during the year 2017, which was the third growing season. The experiment consisted of three treatments in three replications. The experimental design was a fully randomized complete block. Surface drip irrigation was used to irrigate the experimental plots. In the first treatment, the 75% (deficit irrigation) of the daily water needs was applied. In the second treatment, the 100% (full irrigation) of the daily water needs was applied. The third treatment was not irrigated (rainfed). The crop water needs were calculated according to the daily measured evapotranspiration (ET_c) using the Penman-Monteith method (FAO 56). The plants' height, fresh and dry biomass production were measured. The results showed that only the irrigated 'Mountain Tea' can be cultivated at low altitude areas with satisfactory results. Moreover, there are no statistically significant differences ($P < 0.05$) at the growing and productive characteristics between full and deficit irrigation treatments, which proves that by deficit irrigation, an important amount of irrigation water can be saved.

Keywords : mountain tea, surface drip irrigation, deficit irrigation, water saving

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