

Abstract

In this research, the influence of livestock manure on the quantitative and qualitative properties of Ajwain under partial root zone drying with saline water. In this regard, an experiment was carried out as a split plot in a randomized complete block design with six treatments and three replications in the Research Farm of Agricultural Research Institute of University of Zabol. The treatments were defined with combining three irrigation strategies with two application rates of livestock manure. Irrigation strategies included freshwater irrigation, partial rootzone drying with saline water, and alternate use of freshwater and saline water under partial rootzone drying. Livestock application rates were 10 and 30 t ha⁻¹. The variance analysis results showed that the interactions effects of different levels of irrigation and livestock manure application rates on thousand seed weight, seed yield, yield of essential oil, and percentage of essential oil were significant. In addition, the simple effect of the levels of irrigation and livestock manure application rates on biological yield, harvest index and number of umbrellas per plant was significant. The means comparison of the interactions effects of irrigation and livestock manure showed that the highest thousand seed weight (1.47 g) was observed under freshwater irrigation with livestock application rate of 30 t ha⁻¹. In addition, freshwater irrigation with livestock application rate of 10 t ha⁻¹ resulted in the highest seed yield (44.21 kg ha⁻¹), essential oil (107.44 kg ha⁻¹), the percentage of essential oil (2.4%), the number of umbrellas per plant (28.5 number), and biological yield (199.12 kg ha⁻¹). Nevertheless, the highest harvest index (38.06%) was observed under partial rootzone drying with alternate use of freshwater and saline water.

Keywords: Soil Amendment, Effective ingredient of Ajwain, Partial Root-zone Drying, Sistan plain



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Title

The influence of livestock manure on quantitative and qualitative characteristics of Ajwain (*Trachyspermum Copticum*) under partial root-zone drying with saline water

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