

The effects of Aquasorb water-absorbing polymer and irrigation frequency on yield, water use efficiency and growth indices of greenhouse cucumber

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Abstract

Lack of sufficient water resources and drought stress is one of the main problems for crop production in arid and semi-arid regions of the world, such as Iran. The use of water absorbing polymers (hydrogels) improves water retention capacity of soils and can lead to optimal use of the restricted water resources. In this research, the effects of four levels of Aquasorb water-absorbing polymer (0, 2, 4, and 8 grams Aquasorb per kg of soil) and three irrigation frequencies (3, 6 and 9 day intervals) on growth indices, yield and water use efficiency (WUE) of greenhouse cucumber, cultivar Negar, were investigated. The results showed that yield and growth indices of the cucumber were affected by the application of hydrogel and increased as compared with control. Also, water consumption by cucumber decreased significantly as the irrigation interval increased. The highest yield (196.3 g/plant) was obtained when the hydrogel was used at the rate of 2 g/kg of soil and irrigation interval was 6 days. Although the use of hydrogel increased water consumption of the cucumber, but its application at the rate of 2 g/kg soil significantly increased WUE (17.0 g/L) of this plant.

Keywords: Hydrogel, Irrigation frequency, Length of main stem, Dry matter percentage.

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