

Ameliorative effects of Stockosorb and Xanous superabsorbents on cucumber growth under saline-soil conditions

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(Received: 20 Aug. 2014 ; Accepted: 19 April 2015)

Abstract

The ability of hydrogels to absorb large amounts of water implies that they both provide less soil water losses by preventing deep percolation of water and also increase water use efficiency of plants leading to decrease the effects of water deficiency due to salinity stress on crops. To study the effect of two types of superabsorbent (Stockosorb and Xanous) on growth of greenhouse cucumber under saline-soil conditions, a factorial experiment based on completely randomized design with 12 replications was carried out in Research Greenhouse of Yazd University. At the first stage of the experiment, effect of applying superabsorbent polymers (Stockosorb and Xanous) at three levels (0, 3 and 6 g/kg dry soil) was investigated 25 days after planting by measuring different characteristics including number of leaves, plant height, leaf length and leaf width. At the second stage, the abovementioned characteristics, along with the number of flowers and fresh and dry weight of plants, were measured 35 days after planting. Results indicated that at both stages, adding Stockosorb to the saline soil (EC= 5 dS/m) significantly increased all measured parameters when compared to the control. Application of two levels of Xanous hydrogel to the saline soil had no significant effect on measured traits, except on number of flowers, as compared to the control. Variations of number of flowers in both hydrogel treatments, and at both application levels, showed that using superabsorbent could be important in enhancing the crop yield under difficult saline conditions.

Keywords: Superabsorbent, Stockosorb hydrogel, Xanous, Saline soil.

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