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RESPONSE OF TOMATO PLANT TO FOLIAR APPLICATION OF POTASSIUM SILICATE UNDER DIFFERENT IRRIGATION WATER LEVELS

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ABSTRACT

This experiment was carried out during the two summer seasons of 2016 and 2017 at the experimental farm, Faculty of Agriculture, Al-Azhar University, Nasr city, Cairo, Egypt, to assess the effect of three irrigation water levels namely 60, 80 and 100 % of crop evapotranspiration and potassium silicate as a foliar spray at the concentrations of 100, 200 and 300 ppm as well as distilled water as a control treatment and their interaction on the growth, yield and fruits quality of tomato (*Lycopersicon esculentum* Mill.) cultivar Alisa. The results indicated that the highest significant values in number of leaves, fruit weight and length, beside on total yield in weight fruits exerted from using the irrigation levels at 80 and 100% of Etc and the concentration of 300 ppm potassium silicate. The same trend was obtained for leaf total chlorophyll, dry weight and relative water contents. Also, the highest significant of plant height, fruit diameter and total yield in number were obtained from applying 100 % of Etc and spraying with potassium silicate at 300 ppm. On the other hand, the highest values in leaf proline content and water saturation deficit were achieved from using the irrigation level at 60% of Etc in untreated plants with potassium silicate. At the same time, T.S.S content and water use efficiency significantly increased with decreasing irrigation water levels at 60% and 80% of Etc in the plants sprayed with the concentration of 300 ppm potassium silicate. In addition, the highest ascorbic acid content was obtained by the level at 60% of Etc with potassium silicate at 300 ppm.

Key words: Tomato, irrigation levels and potassium silicate.