

<b>Article title</b>	Effect of deficit irrigation and growing seasons on plant water status, fruit yield and water use efficiency of squash under saline soil
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<b>Journal Name</b>	Scientia Horticulturae
<b>Volume and issue</b>	2015
<b>Publication Date</b>	Volume (186) Pp. 89–100.

### Abstract

A successive summer and fall experiments were conducted to study the effect of deficit irrigation growing seasons on the squash water status, total fruit yield and water use efficiency (WUE) in saline soil ( $ECe 12.6 \text{ dS m}^{-1}$ ). Three treatment levels of actual evapotranspiration (ETc) were tested in each season. The irrigations treatments were: (1) control, (100%) where irrigation was applied in order to avoid any considerable soil water deficit. (2)  $DI_{85\%}$ , where deficit irrigation (85% of control irrigation regime) was applied and (3)  $DI_{70\%}$ , where 70% of the control regime was applied. In well-watered conditions seasonal water use by squash was 479 over 86 days in summer and 306 mm over 91 days in fall season, respectively. Interaction between season and deficit irrigation treatment significantly affected plant water status as evaluated by relative water content, canopy temperature, photosynthesis efficiency. Leaf area index (LAI), total soluble solid (TSS), harvest index (HI), water-use efficiency, fruit weight, and fruit length have also been affected. After two seasons (i.e., fall and summer), soil salinity (ECe), and both of  $Cl^-$  and  $Na^+$  concentrations declined significantly in 0–60 cm depth and more reduction were achieved in 0–20 cm soil depth than in 20–40 and 40–60 cm depths. Squash yield the fall growing season was higher by 19.54% comparison with the yield in summer season the highest water use efficiency (WUE) was obtained at  $I_{85\%}$  IWA. In two seasons the highest squash yield was recorded under well irrigated treatment, control (100% ETc) but non-significant differences between  $I_{100\%}$  and  $I_{85\%}$  were recorded. Therefore, under limited irrigation water, it is recommended to irrigate squash plants at  $I_{85\%}$  to produce not only the same yields, approximately, but also to save more of water as compared to  $I_{100\%}$  treatment.