



كلية الزراعة  
Faculty of Agriculture



جامعة الفيوم  
Fayoum University

### Abstract

Salicylic acid (SA) controls plant growth and induces water deficit tolerance in plants. Summer and fall season experiments were conducted in 2013 to study the effect of 1mMSA on growth, anatomy, yield, chlorophyll fluorescence, osmoprotectants and water use efficiency (WUE) of squash plants under three levels of irrigation ( $I_{100}=100\%$ ,  $I_{80}=80\%$  and  $I_{60}=60\%$  of crop evapotranspiration). Growth, chlorophyll fluorescence, leaf anatomy, leaf photosynthetic pigments, total soluble sugars (TSS), proline, harvest index (HI), yield and WUE were significantly affected by both deficit irrigation (DI) and the combined DI+ exogenously applied SA treatment. The combined DI+SA treatment modified the adverse effects of DI and enhanced all aforesaid parameters, while decreased proline concentrations. The combined treatment of  $I_{60}$  or  $I_{80}$  + SA produced plants having yields and WUE as produced with the plants generated under full irrigation conditions without SA treatment. From these results, we conclude that with exogenously applied 1mMSA, the  $I_{60}$  or  $I_{80}$  strategy studied here could be successfully applied during summer and fall seasons for the production of commercial squash allowing water savings of 20%–40% without any detrimental effect on plant growth or yield.