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# IRRIGATION INTERVALS AS A GUIDE TO SURFACE IRRIGATION SCHEDULING OF MAIZE IN UPPER EGYPT

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## ABSTRACT

Capita share from water for different ways of consumption in Egypt is less than 1000 cubic meter/year (water poverty limit). Agricultural sector is the largest water consumer. Irrigation scheduling is one of the fundamental requirements in the effective use of water for agricultural purposes. The present investigation was carried out at Shandaweel Agricultural Research Station, Sohag Governorate, Upper Egypt, during the growing seasons of 2013 and 2014, to identify the scheduling irrigation (selected from every 10, 15, 20 and 25 days) needed for scheduling irrigation of maize crop. Also, the effects of the four selected treatments on grain yield, bbiological yield, plant height and water relations were studied.

Results of the two maize growing seasons indicated that the irrigation at 10, 15 and 20 days led to an increase in plant height by 12.9%,8.2% and 5.2% in the first season, and 10.9%,8.1% and 5.3% in the second season, as compared with the treatment 25 days, respectively. Also, for the same respective treatments Biological yield was increased by 72%, 33.9% and 17.6 % in the first season, and 67.1%, 45.8 and 30.8% in the second season. Grain yield was increased by 44.39%, 21.8% and 13.6 % in the first season, and 28.2%, 15% and 4.3% in the second season, for the same respective treatments. The superiority of grain yield was as compared with the treatment 25 days.

Average applied water values for the two growing seasons were 4468.4,4077.6, 3651.2 and 3441.6 $m^3$/fed./season for every 10, 15, 20 and 25 days , respectively. Also, for the similar relevant treatments average grain seasonal water consumptive use values were 3286.5, 2912.9, 2625.9 and 2458.4 $m^3$/fed./season. This means that as applied irrigation water increased, maize crop actual evapotranspiration also increased.

As the maize plants. It reached the peak at 50 and 60 days from planting at the two studied seasons, respectively. Maximum daily ETc values were 7.74 and 8.25 mm/day in the two studied seasons, respectively. Seasonal KC was every 10 days. The best result of grain maize water use efficiency was obtained with irrigation every 10 days.

It can be concluded that the application of irrigation every 10 days as the effective one could be recommended for scheduling irrigation of maize crop at Shandaweel Agricultural Research Station, Sohag Governorate, Upper Egypt to obtained the best results from maize grain yield and water use efficiency.

**Keywords**: irrigation, K.C, Maize, scheduling .