

IMPACT OF IRRIGATION INTERVALS TO WATER USE EFFICIENCY IN SOME COTTON VARIETIES AND THEIR HYBRIDS.

Layla I. Mohemmed

Musaab A. Y. Al-Khirillah

* Assist. Prof. – Dept. of Crop Science – College of Agriculture – Univ. of Baghdad. saadflaih@yahoo.com

** Assist. Lecturer – Office of Technical Education – Ministry of Education . musaab09@yahoo.com

ABSTRACT

A field experiment was carried out during 2010-2011 at the experimental field of crop sciences dept. – College of Agriculture – Abu-Graib, to evaluate genotypes under water stress conditions and attempt to breeding of hybrids for tolerant of this stresses, with higher yield capacity. However estimate of GCA for parents and SCA for their hybrids, heterosis and some genetic parameters. Five varieties of cotton (*Gossypium hirsutum* L.) included Cocker-310, Dise, Macneer, Marsoomi-5 and Rabeaa-122 were crossed, during the season of 2010. The traits for 10 single crosses and 5 parents were tested during 2011 using RCBD under split plot design arrangement with three replications, irrigation treatments occupied main plot (included irrigation weekly and at two weeks) and genotypes (parents and their crosses) occupied sub plots. Results showed significant differences in irrigation interval at two weeks in most characteristics studied, this treatment produced highest seed cotton yield $104.36 \text{ g.plant}^{-1}$ and WUE 1.11 Kg.m^{-3} . Significant differences were found among genotypes (parents and crosses) for all characteristics studied. The parent Macneer and crosses Dise x Macneer and Cocker-310 x Rabeaa-122 were attained highest seed cotton yield account 102.02 , 111.75 and $110.02 \text{ g.plant}^{-1}$ respectively. The parents Cocker-310, Macneer and Rabeaa-122 were gave highest water use efficiency (0.80 , 0.80 and 0.79 kg.m^{-3} , crosses Marsoomi-5xRabeaa-122 and Cocker-310 x Rabeaa-122 gave 0.92 and 0.91 respectively. The highest stress tolerance index was gave from the parents Macneer, Cocker-310 and Rabeaa-122 and crosses Dise x Macneer and Cocker-310 x Rabeaa-122 accounted 1.04 , 1.03 and 1.00 for parents, 1.24 and 1.20 respectively. The results of hybrid vigor showed that cross Cocker-310 x Rabeaa-122 in irrigation at two weeks gave highest percent account 22.05 and 21.90% for seed cotton yield and water use efficiency respectively. It could be conclude to dependent on irrigation at two weeks that attained higher values of water use efficiency and seed cotton yield.

Key words: irrigation intervals, WUE, stress tolerance index , seed cotton yield.