COMBINING ABILITY AND HETEROSIS ESTIMATES FOR SOME FLOWERING AND VEGETATIVE TRAITS IN MAIZE UNDER TWO PLANT DENSITIES.

By

Sultan. M.S. *; M.A. Abdel-Monaem* and Soad.H. Haffez*.

*Department of Agronomy, Fac. Agric., Mansoura Univ., Egypt.

ABSTRACT

A half diallel set of crosses among six inbred lines of maize were evaluated under two plant densities (23333 and 35000 plants/fad) for some flowering and vegetative traits at Sherenkash Village, Talkha district, El-Dakahlia Governorate. Obtained results are as follows:

1- highly significant variances due to general combining ability (GCA) for all studied flowering and vegetative traits under both plant densities were detected, except stem diameter, which was only non significant under normal plant density .

2- Significant or highly significant variances due to specific combining ability (SCA) for all studied flowering and vegetative traits under both plant densities were recorded.

3- The GCA/SCA for all studied flowering and vegetative traits was larger than one under both plant densities, showing that additive gene action had a predominant role in the inheritance of these traits, except stem diameter under normal plant density

4- GCA effects showed that the parents no. 3 (R24) and 4(R25) could be considered as good general combiners for earliness , parents no. 2 (R9), 5(R27) and 6(R39) are the best general combiners for plant shortness and low ear height under both

plant densities , parents no. 2(R9), 3(R24), and 6(R39) could be regarded as the best general combiners for thickness of plants under stress plant density and parent no. 4 (R25) could be regarded as the best general combiner for ear leaf area under both plant densities.

5- SCA effects showed that the best F1 cross combinations were crosses P1xP4, P2xP5 under stress plant density, for earliness , P1xP4, P3xP5 and P5xP6 are the best combinations for plant tallness under both plant densities , P3xP4, P4xP5 crosses are the best combinations for low ear height under both plant densities and P1xP2 , P3xP5 are the best combinations for increasing ear leaf area.

6-The highest value of heterotic effects relative to mid and better- parents for anthesis and silking dates were obtained by P1xP4. This cross had the highest negative significant heterotic under stress plant density.

Key Words: Heterosis, Combining Ability, Maize, Plant Density.