BREEDING STUDIES ON MAIZE
(*Zea mays L.*)

BY

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B.Sc. Agric. (Agronomy), Suez Canal University, 1998

Thesis

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ABSTRACT

The present study aimed to estimate combining ability and gene action controlling yield and yield components and quality characters in some of exotic inbred lines of maize. Nine exotic inbred lines were crossed to each of three testers, synthetic variety Giza-2, T.C.310 and S.C. Pachayer at Agricultural Research Farm, Faculty of Agric. Suez Canal University, Ismailia in 1999 and 2002 seasons. The resultant 27 topcrosses with their parents (***i.e.*** 9 inbred lines and three testers) were evaluated in field trails at two locations (Abohammad and Abosweer) in 2001/ 2003 seasons. The results can be summarized as follow:-

1- The best general combiners of parental lines were A140/14 for vegetative traits except, No. of leaves/plant, Ma21 for most of yield component traits and protein content, A288/2 and AK135 for grain yield and A207/3 for oil content.

2- In respect to GCA effects for tester, S.C. Pachayer had desirable GCA effects for most of studied traits. This may be attributed to the narrowest genetic base for S.C. Pachayer than Giza-2 and T.C.310.

- The non-additive gene effect was found to be more important than additive gene effect for the inheritance of characters studied and it was more affected by environmental conditions than additive.

Application field: The result of research can be used for producing some maize hybrids from inbred lines which give the best combining ability and have a good characters.

Key words: Maize- Zea mays- Topcrosses- Line x Tester- Gene action.

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