GENETIC BASIS OF TOLERANCE TO SOME ENVIRONMENTAL STRESSES IN MAIZE (*Zea mays* L.)

BY

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B.Sc. in Science, Fac. of Science (Plant-Chemistry),
El-Mansoura Univ., 1990

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ABSTRACT

Hala Fawzy El-Sakka Eissa, Genetic Basis of Tolerance to Some Environmental Stresses in maize (*Zea mays* L.), **Unpublished Master of Science, Genetics Dept., Fac. of Agric, Ain Shams Univ., 1997**

From seven *Zea mays* inbred lines, two were chosen as salt tolerant and salt sensitive genotypes (G267 and G278, respectively). They were evaluated with their F_1 and F_2 for their relative salt tolerance for some yield traits.

The K/Na, Ca/Na, Ca/K and Ca/Mg ratios showed differential association with salt tolerance. Marked association was observed between proline accumulation and salinity tolerance.

SDS-protein profiles indicated the occurrence of unique bands associated with salt tolerance. Esterase, peroxidase and acid phosphatase isozymes patterns showed differential display which distinguish between the two sets of genotypes with respect to their salt tolerance.

A unique RAPD marker (2 kb) linked with salt tolerance was developed by bulked segregant analysis.

Key words: *Zea mays*, salt tolerance, yield-related traits, K/Na, Ca/Na, Ca/K, Ca/Mg, proline, SDS-PAGE, esterase isozymes, peroxidase isozymes, acid phosphatase isozymes, PCR, RAPD, bulked segregant analysis (BSA).

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