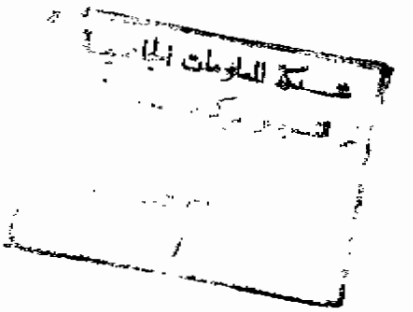
STUDIES ON NATURE OF SALT TOLERANCE IN OKRA



By

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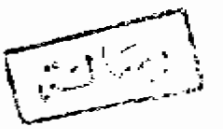

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APPROVAL SHEET

STUDIES ON NATURE OF SALT TOLERANCE IN OKRA

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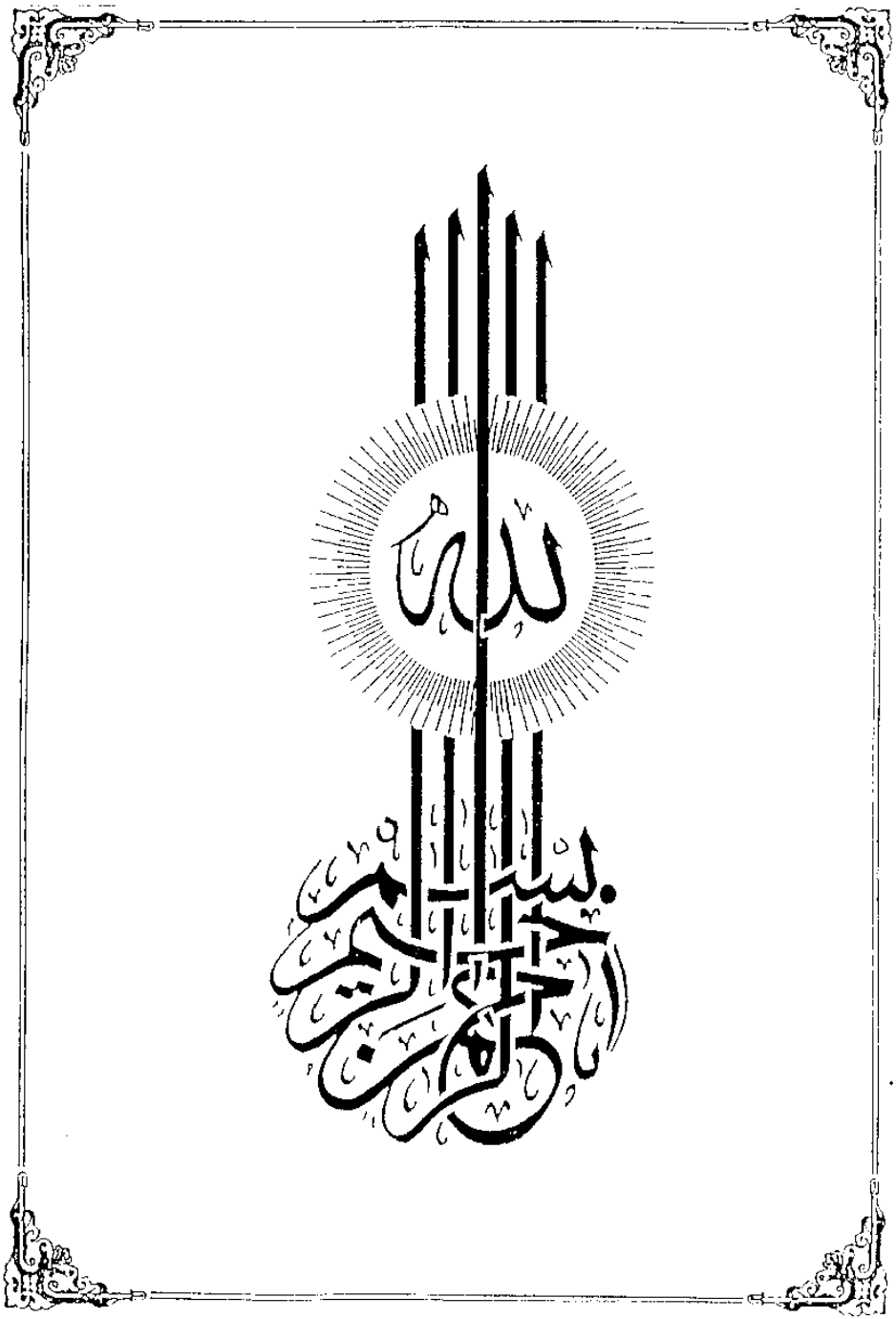

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ABSTRACT

Salt tolerance of four okra cultivars namely: White Velvet; Gold Coast; Balady and Eskandarani, were investigated during three different stages of plant development namely: seed germination, seedling and reproductive stages. At both first and second stages of plant development, various concentrations of sea water (diluted with tap water) were used for irrigation while at the third stage, various saline water with different electric conductivities were used for irrigation.

Results of these studies revealed that salinity reduced and delayed seed germination. At this stage, White Velvet cv. appeared to be tolerant to salinity. At the seedling stage, salinity generally reduced fresh weight of plant for all tested cultivars and Gold Coast was the least affected one. At the reproductive stage, salinity reduced plant growth and total yield/plant but with different degrees depending upon cultivar. In this respect, yield of both Gold Coast and Balady was not greatly reduced at the high level of salinity.

Results of Na, K, K : Na, Cl and amino-nitrogen as contributing factors for salinity tolerance, revealed that high accumulation of Na^+ and Cl^-, slight reduction in K content, low K : Na ratio, and low values of amino-nitrogen were noticed in leaves of both Gold Coast and Balady cultivars under high level of salinity.

The anatomical studies showed that salinity reduced xylem and phloem elements in okra roots depending upon both salinity level and cultivar.

Generally, the obtained results suggest that both Gold Coast and Balady Okra cultivars can be considered as tolerant genotypes to salinity and recommended for cultivation in both arid and semi-arid lands where salinity is considered a potential problem.

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INTRODUCTION

I. INTRODUCTION

Okra (Abelomoschus esculentus) is an important vegetable crop in many countries. In A.R. Egypt, it is of great importance where it is grown for market and processing. The area devoted to okra in 1991 was 11115 Feddans with an average 5.9 ton/Feddan*.

The increasing demands of the expanding population for food and energy necessitate the increase of arable land by exploiting marginal areas such as arid and semi arid lands. Such areas are characterized by high salinity in the soil and in the major water resources.

The improvement of salt tolerance in agricultural species has been promoted as an agronomic approach to the exploitation of large areas of saline soils and the efficient use of the relatively abundant water supplies that currently have little agricultural value.

Salt tolerance is not a constant character in plants but it varies with environment and plant development.

It can be measured by a number of criteria such as survival at high salt concentrations, the determination of growth response under saline conditions and a relative reduction in yield as a function of increasing soil salinity.

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