
شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
@ ASUNET


# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

## يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

**To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%**

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
ASUNET

# بعض الوثائق الاصلية تالفة

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
@ ASUNET

# بالرسالة صفحات لم ترد بالاصل

٢٧٧٥

TANTA UNIVERSITY
FACULTY OF AGRICULTURE
KAFR EL-SHEIKH
Agronomy of Department

# STUDIES ON YELLOW CORN BREEDING

## Evaluation of some yellow hybrids corn (*Zea mays* L.) under different levels of plant densities and nitrogen fertilization

**By**

*Amany Mahmoud Mohamed Mohamed*

B. Sc. Agric. Tanta University, 1994

**Thesis**

**Submitted in Partial fulfillment of the requirements for the degree**

**OF**

**MASTER OF SCIENCE**

**In**

**(AGRONOMY)**

FACULTY OF AGRICULTURE,
KAFR EL-SHEIKH, TANTA UNIVERSITY,

(1999)

TANTA UNIVERSITY
FACULTY OF AGRICULTURE
KAFR EL-SHEIKH
Agronomy of Department

# STUDIES ON YELLOW CORN BREEDING

## Evaluation of some yellow hybrids corn (*Zea mays* L.) under different levels of plant densities and nitrogen fertilization

**By**
*Amany Mahmoud Mohamed Mohamed*
B. Sc. Agric. Tanta University, 1994

**Thesis**
Submitted in Partial fulfillment of
the requirements for the degree
of
MASTER OF SCIENCE
**In**
(AGRONOMY)

FACULTY OF AGRICULTURE,
KAFR EL-SHEIKH, TANTA UNIVERSITY,
(1999)

Aproved by :

*Prof. Dr.* M.H. El Hindi

*Prof. Dr.* M.S. EL Keredy

*Prof. Dr.* Y.S. Kalla

*Prof. Dr.* M.H. Ibrahim

*(Committee in Change)*

**Submitted to the Faculty Library:**
Date ...../ ..... 1999.

# ACKNOWLEDGEMENT

*The writer wishes to express his deep gratitude to* **Prof. Dr. Y.S. Katta,** *Professor of Crop Sci. and Statistics, Faculty of Agric., Kafr El-Sheikh, Tanta Univ. for suggesting the problem, his valuable guidance, supervision during the progress of the work, his help in statistical analysis, and the preparation of this manuscript.*

*Grateful appreciation is due to Prof.* **Dr. M.H. Ibrahim,** *Professor of Agronomy, Faculty of Agric., Kafr El-Sheikh, Tanta Univ. for his help, encouragement and scientific advice through the course of investigation.*

*Deep gratitude is due to* **Dr. M.S. Abdel-Aty** *Lecturer of Agronomy, Faculty of Agric. Kafr El-Sheikh, Tanta Univ. for his kind help during the progress of the work.*

*I wish to thank my family for their normal and inspiration during the tenure of my study.*

*Finally, I would like to express my sincere appreciation for everybody who contributed directly or indirectly in this study.*

# SUPERVISION COMMITTEE

***Prof. Dr. Y.S. Katta***

Professor of Agronomy,
Faculty of Agriculture, Kafr El-Sheikh,
Tanta University

***Prof. Dr. M.H. Ibrahim***

Professor of Agronomy,
Faculty of Agriculture, Kafr El-Sheikh,
Tanta University

***Dr. M.S. Abdel-Aty***

Lecturer of Agronomy,
Faculty of Agriculture, Kafr El-Sheikh,
Tanta University

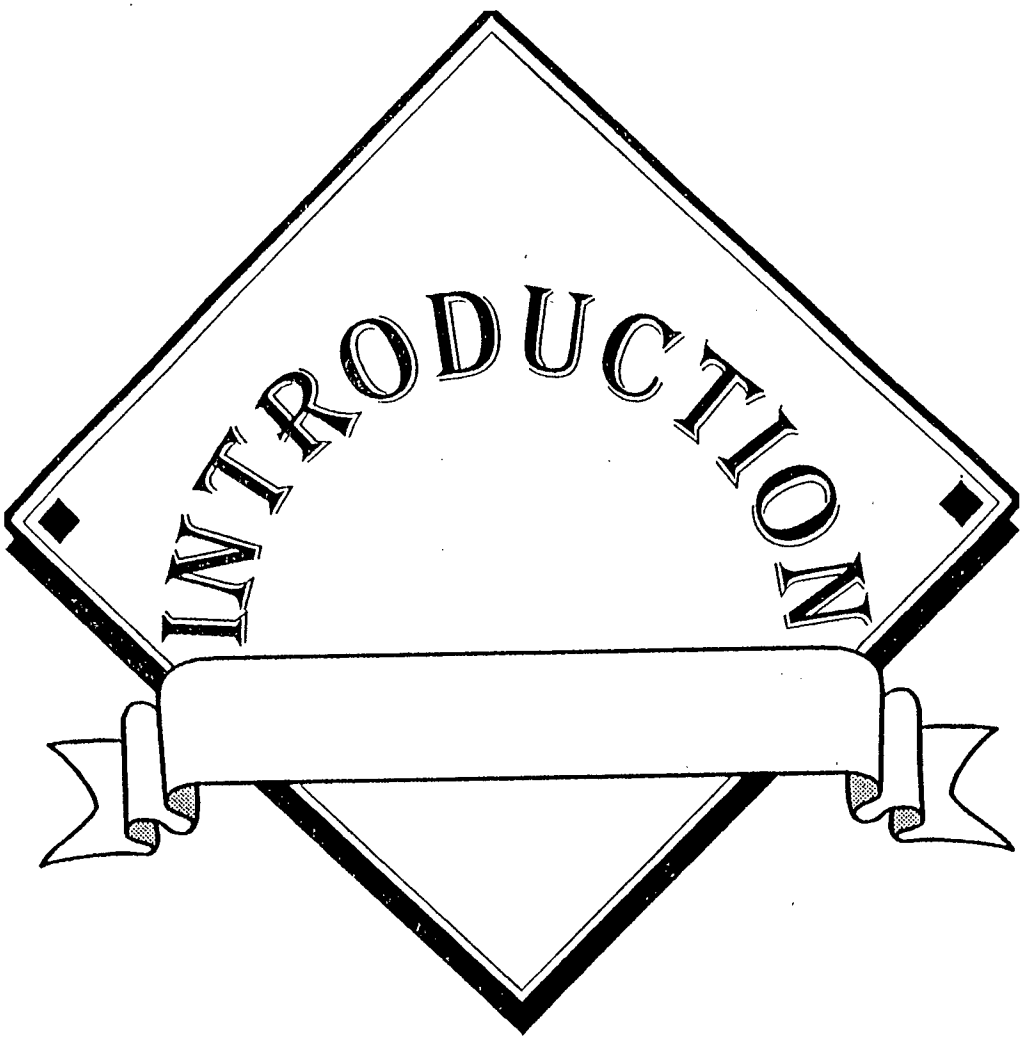
*To*

*My Mother, my father*

*and*

*my brothers*

# Contents


INTRODUCTION

# INTRODUCTION

Maize (*Zea mays* L.) is one of the most important cereal crops in Egypt and the world. Maize in the world ranks the third surpassed only by wheat and rice. It is a great importance for both human and animal feeding. Therefore, efforts are focused on increasing productivity of this crop by growing high yielding new hybrids under the most favourable cultural practices.

The growth and yield of maize depend on many factors. From the major factors are genotypes, plant population density, and nitrogen fertilization. The optimum level of both factors varied widely according to soil fertility, water supply, day length and planting patterns, **Duncan (1972)**.

Nitrogen fertilization is among the most important cultural practices, which control maize production (**Mandour 1977 and Balko and Russel 1980**). Provision for an adequate supply of nitrogen throughout the growing season is necessary and is one of the important functions of soil management.

Concerning the effect of plant density on maize yield and its components. **Galal *et al.* (1979), Sayfikar (1983) and Younis *et al.* (1989)** reported that high grain yield/fad. obtained with increasing plant density but in high densities provided less ear length (**Moursi *et al.*, 1970 and Alessi and Power 1974**), ear diameter (**Rathore *et al.* 1976**), rows number per ear (**Rutger and Crowder 1967**), grains number/ear (**Ewies**

**1980**), However high plant density increased ears number/fad. (**El-Tabbakh and Salem 1974**) as well as grain yield/fad.

Developing and releasing high yielding and more stable maize (*Zea mays* L.) hybrids is among the main objectives of the Egyptian Maize Research program. Many high yielding single and three-way cross hybrids were developed and released during the recent few years. The hybrids produce high grain yield under different environmental conditions. The estimate of the genotypic stability of new hybrids was needed in any successful breeding program. In this respect, **Freedman and Perkins (1971)** stated that the basic cause of the differences between genotypes in their yield stability is the wide occurrence of genotype × environment interaction (G×E interaction).

**Comostak and Moll (1963); Allard and Bradshaw (1964); Baker (1969); El-Nagouly *et al.*,(1980); Loffler *et al.* (1986), Westcott (1986) and Nassar and Huhn (1987)** mentioned that the genotype × environment interaction could be partitioned into predictable and unpredictable variations. The predictable ones is due, mainly, to the more permanent factors, while the unpredictable, variations as caused by different environmental stress factors like fluctuations in soil fertility and weather conditions, insect infestation, disease infection ..... etc.

The objectives of the present investigation could be summarized in the following aspects:

1- Evaluation of eight yellow hybrids corn (*Zea mays* L.) under four plant densities combined with three nitrogen levels.

2- The estimation of linear regression equation for grain yield under D×N interaction.

3- The determination the nature of genotype × environment interaction.

4- The estimation of the phenotypic stability parameters to identify the stable maize genotypes for grain yield under different environments.