شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

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%

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

بعض الوثائق الاصلية تالفة

بالرسالة صفحات

لم ترد بالاصل

Breeding Studies on Rice

By

SABER EL-SAYED MOHAMED ABDOU SEDEEK

B.Sc.(Agronomy), Fac. of Agric., Kafr EL-Sheikh, Tanta Univ.,1996

M.Sc.(Agronomy), Fac.of Agric., Kafr EL-Sheikh, TantaUniv.,2001

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

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TANTA UNIVERSITY
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Date:-----/-----/2006

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Contents

INTRODUCTION

INDRODUCTION

Rice is the most important food crop in the world since it is the stable food for nearly 50% of the world population. Major advances have occurred in rice production as a result of the wide-scale adoption of improved rice varieties. However, demand for rice in low-income countries continues to increase because of increases in the population of rice consumers and improvements in living standards. It is estimated that the world will have to produce 50 % more rice by 2050. To meet this challenge, high yielding potential varieties are needed. Several approaches have been employed for developing rice varieties with high yielding potential, such as population improvement, ideotype breeding, heterosis breeding, wide hybridization, genetic engineering, and molecular breeding ,(Khush,1999).

Rice is considered the most popular and important field crop in Egypt for several reasons : as a staple food after wheat for the Egyptian population, as a second exporting crop after cotton, as a land reclamation crop for improving the productivity of the saline soils widely spread in North delta and coastal area, and finally it is a social crop in which all farmers family member could gain money during its growing season. Rice productivity and production have remarkably increased year after year according to the percentage replacement of the rice area with the modern varieties to realize a maximum yield average (9.9 t/ha) in the year 2004 against (5.7 t/ha) for the past period 1986-1988. Because adopting of the new short duration rice varieties, about 30% of the irrigation water consumption was saved every year, (Aidy and Maximos 2006).

In self pollinated crops such as rice, the good of abrades is to develop true breeding homogeneous population with superior agronomic

and other desirable characteristics. Accomplishment of this objectives would depend on the suitable choice of the parental material, nature of gene action controlling characters under consideration and rational choice of breeding method for bringing a out quick and maximum genetic improvement. This would imply that basic knowledge of the genetic behavior of the characters under improvement is a pre-request for breeder to manipulate the breeding material in order to isolate superior lines, (Hammoud, 1996).

The diallel analysis have been used in recent years by many breeders to evaluate parental materials before taking any decisions concerning the type of breeding system to be used in this concern. So, combining ability analysis is the most widely used biometrical tool for classifying lines in terms of their ability to combine in hybrid combinations. With this method the resulting total genetic variation is partitioned into general combining ability, measure of additive gene action and specific combining ability measure of non-additive gene action, (Hammoud, 2004)

The objectives of the present investigation are to :

1- Study the inheritance of some vegetative, yield and its components and some panicle characters;

2- Evaluate some breeding materials utilized in the local breeding program concerning combining ability effects (GCA, SCA), heterosis potentiality and heritability of the studied characters, and

3- Study the relationship between some vegetative characters and the yield and its components by estimating correlation coefficient between the mentioned characters.

REVIEW OF LITERATURE

2- REVIEW OF LITERATURE

This investigation was mainly focused on studing the inheritance and some genetical parameters of the morphological, physiological and agronomical characteristics of some rice varieties and their crosses. To confirm the results obtained in this study, the related literature are being review including the following topics :

1. Combining ability
2. Heterosis
3. Genetic parameters and heritability
4. Correlation coeficient

However, the literature of the mentional topics will include three groups of characters, i.e. vegetative characters, yield and its components and panicle characters.

1- Vegetative characters :

1- 1-Combining ability:

EL-Mawafi (1988), found that general and specific combining ability variance were highly significant for heading date and plant height.

Peng and Virmani (1990), found that general and specific combining ability variances were significant for dry matter production, days to heading and plant height.

Lokaprakash *et al.* (1991), reported that both general and specific combining ability variances were highly significant for plant height. Which, indicating the importance of both additive and non additive gene action with preponderance of additive gene action.