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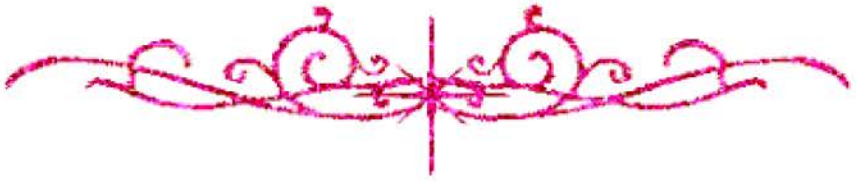

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لم ترد بالأصل

HOSSAM MAGHRABY

Minia University
Faculty of Agriculture
Agronomy department

INHERITANCE OF SOME YIELD TRAITS IN BREAD WHEAT

By

Mahmoud Shamroukh Mohamed Mahmoud
B.Sc. Agric. (Agron.) Assiut University, 1992

THESIS

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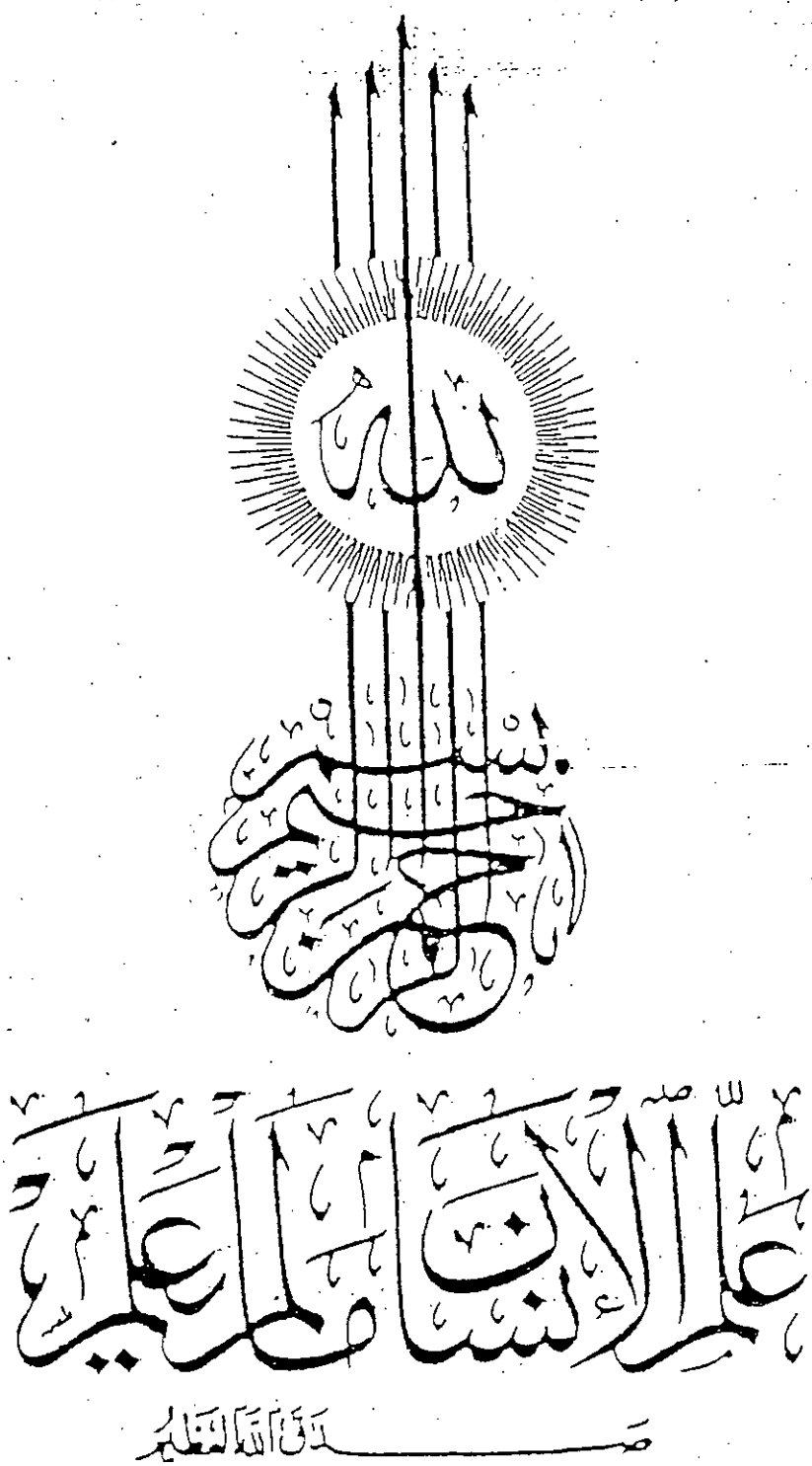
Prof. Dr. Mostafa Saad El-Ashmooney
Agronomy Department Minia University

Prof. Dr Mousa Gergis Mosaad
Wheat Department Agricultural Research Center

Dr. Samy Abd-El Mawla AtaAllah
Agronomy Department Minia University



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Title: INHERITANCE OF SOME YIELD TRAITS IN BREAD WHEAT

Name: MAHMOUD SHAMROUKH MOHAMED MAHMOUD

This thesis for the M.Sc. degree has been approved by:

Ossama El Bagouri

Eman M. Taha

Mostafa S. El Ashmouny

.....

(Committee in charge)

Date: 15 / 5 / **1999**

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Introduction

INTRODUCTION

Wheat has maintained its position as the first basic food crop worldwide. In several development countries, increasing wheat production is an important national goal to reduce imports, save foreign currency and provide enough food to meet the increasing domestic food demands. However, population pressure on limited land and water resources had hindered the progress.

In Egypt low wheat production means failure to achieve self-sufficiency in food due to the high increase in population size every year which in turn made Egypt the third largest importer country of wheat in the world.

Efforts have been made to minimize the gab between production and consumption through improving productivity of the unit area through breeding programs.

The utilization of heterosis in various crops through the world has tremendously increased the productions of human food. The choice of parents in breeding programs is very important to develop the high yielding wheat varieties. The development of diallel cross analysis as a technique for studying quantitative characters inheritance is important to study the direct genetic control of the characters to be measured.

There is a basic information regarding combining ability because the information on the relative importance of general versus specific combining ability in wheat is meager and few. The genotypic variance is partitioned into general combining and specific combining ability, GCA is due to additive gene action, while SCA is due to non-additive gene action, i.e. dominance and epistasis.

In order to make progress in selection for complex character as yield in wheat, the breeder must know the portion of the total variation observed in segregating populations that is due to the genetic composition and the best method of selection. Such information


REVIEW OF LITERATURE

REVIEW OF LITERATURE

The literature dealing with the inheritance of some yield traits in bread wheat could be reviewed under the following heading.

I- Heterosis.

II- Combining ability.

III- Simple correlation coefficients.

I- Heterosis:

Heterosis or hybrid vigor can be regarded as the converse of the deterioration that accompanies inbreeding. The beneficial effect of crossing is however a more widely recognized phenomenon than inbreeding depression because it is observed in nearly all F1 crosses between parents that are neither closely nor distantly related. Plant breeders recognize the heterosis as the superiority in performance of hybrid individuals compared with their parents. Mid-parent heterosis is the performance of a hybrid compared with the average performance of its parent. High-parent heterosis is a comparison of the performance of the hybrid with that of the best parent in the cross.

Lupton (1961), recorded that hybrid vigor obtained from yield trials of diallel wheat cross was 44% more than the better yielding parent. On the other hand, some of F1's yielded less than either parents. He added that heterosis for 1000-kernel weight was expressed in some of the F1 wheat crosses.

Briggle *et al.*, (1964), reported that heterosis for grain yield per plant in two wheat crosses was 18.2% more than high parent. Some

for each of the yield components as well as the relationship between the components and yield would help in determining the type of selection program to follow to obtain higher varieties of wheat.

The main objectives of this study was to:

I- Investigate the extent of heterosis present in wheat crosses.

II- Estimate general and specific combining ability.

III- Study the correlation between the studied characters.