

بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الالكتروني والميكرونيلم





جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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BIJTCT

HETEROSIS AND COMBINING ABILITY FOR EARLINESS AND YIELD COMPONENTS IN COMMON WHEAT

(Triticum aestivum L.)

BY

rania hamed ghanem

B.Sc.Agric. (Agronomy) Cairo University, 1995

THESIS

Submitted in the partial Fulfillment of the Requirements for the degree

OF MASTER OF SCIENCE

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SUPERVISION SHEET

HETEROSIS AND COMBINING ABILITY FOR EARLINESS AND YIELD COMPONENTS IN COMMON WHEAT

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By

RANIA HAMED GHANEW

B.Sc.Agric. (Agronomy) Cairo University, 1995

Supervision Committee:

Prof. Dr. Mohamed Ali Al-Kady

Professor of Agricultural Botany (last). Fac. of Agric., Cairo University.

Prof. Dr. Abd El-Hamid Ali Mohamed

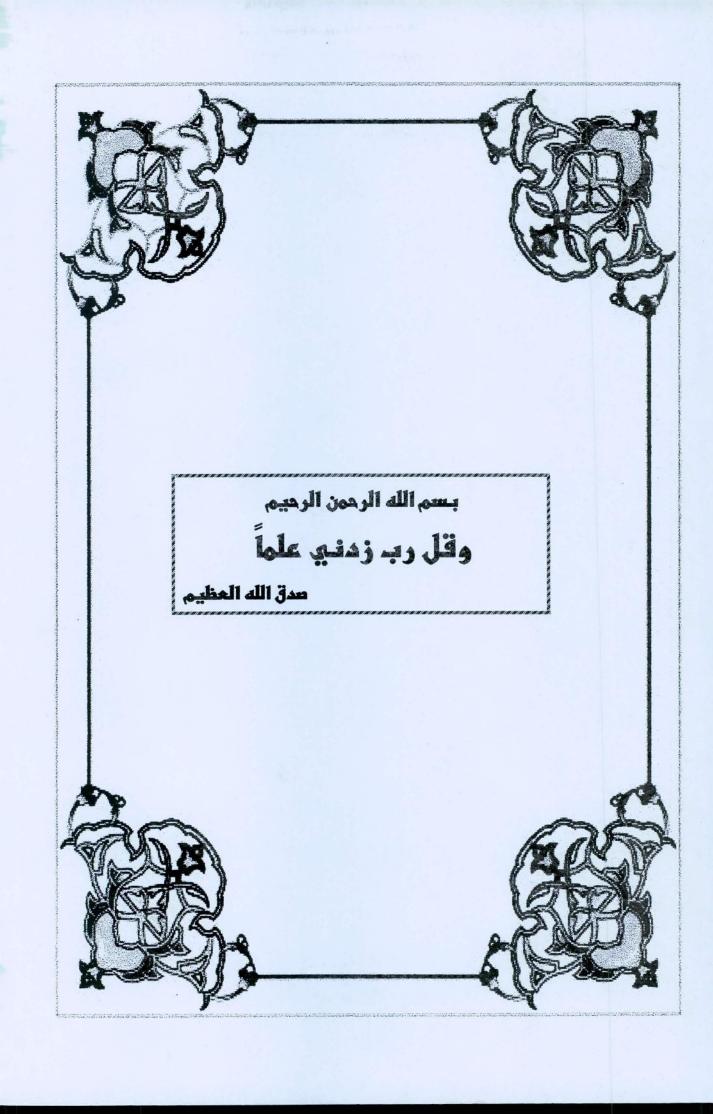
Assistant Professor of Agricultural Botany. Fac. of Agric., Cairo University.

Dr. Enayat Hassan Ghanem

Former Director of Wheat Section. Field Crop Research Institute, ARC.

Department of Agricultural Botany
Faculty of Agriculture

Cairo University



APPROVAL SHEET

HETEROSIS AND COMBINING ABILITY FOR EARLINESS AND YIELD COMPONENTS IN COMMON WHEAT

(Triticum aestivum L.)

By

RANIA HAMED GHANEM

B.Sc.Agric. (Agronomy) Cairo University, 1995

This Thesis For M.Sc. has been Approved by:

Prof. Dr. Ramadan Korany Harb

Professor of Agricultural Botany Fac. of Agric., Cairo University.

Dr. Abd El-Salam Ahmed Gomaa

Former Director of ARC. Field Crop Research Institute, ARC.

Prof. Dr. Abd El-Hamid Ali Mohamed

Assistant Professor of Agricultural Botany. Fac. of Agric., Cairo University.

A.A. Mahamod

(Committee in charge)
Date (1 / 11 / 2001)

Dedication

All Thanks And Grateful
To
ALLAH

AND

My Mother
The greatest Mean of Motherhood

The Soul of my Dearest Father

My Sister AND My Brother

FOR

All who offer their effort and help to me

RANTA HAMED GHANEM

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ARABIC SUMMARY

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Mohamed and Prof. Dr. Enayat Hassan Ghanem.

Department: Agricultural Botany.

Branch: Approval:

ABSTRACT

The present investigation aimed to identify desirable parents and crosses as well as to gather information on genetic behavior of earliness and yield components traits in between six parents (Yacora, Ciano, Sakha 69, Giza 164, Sids 1, Sids 2) excluding reciprocals. The field trials were carried out in Agricultural Research Center at Al-Giza station during two successive seasons 1997/1998 and 1998/1999. The results of heterosis revealed that, none of the hybrids combinations was significantly earlier than the earliest parents (Yacora, Ciano), while it was interest to find heterotic effect for earliness over both (M.P) and (B.P) in the combination GZ164 X SD1 (moderate X late). The same heterotic effect was observed for grain yield, number of kernels in main spike and 1000 k.w. The results of general combining ability were highly significant for heading, anthesis, maturity, 1000 K.W, number of kernels in main spike, number of spike/plant, grain yield and biomass yield. The best combiner parent was GZ164 (for grain yield, number of kernels in main spike and 1000 K.W) and Yacora for heading and anthesis, indicating the importance of additive gene action in the expression of these traits. The importance of none-additive gene action expressed by the significance of specific combining ability effects for all traits except number of spikes / plant. The results of correlation coefficient showed that rp and rg were in general higher than re, indicating that expression of the studied traits was weakly affected by environmental factors. Moreover, rp and rg were having almost the same positive near values, indicating that the relation between the studied traits was mainly due to genetic factors.

1- INTRODUCTION

Wheat is the world's most important strategic food crop. In Egypt it's the main winter cereal crop as it occupies approximately 2.5 million feddan producing 6.6 million tons. Moreover, wheat is the primary stable food source of the most Egyptian population, it's straw is an important fodder.

Since 1970,s attempts have been made to develop high yielding wheat cultivars aiming to decreasing its imports and to meet the consumption of the rapid growing population. These great challenges stimulated the Egyptian scientists to define several adapted wheat genotypes with desirable characteristics and high yield potential (Abdel-Ghani *et al.* 1994). In fact the great impact of this research improvement has reflected unprecedented wheat productivity since 1987 by a quantity larger than in all of Egypt's history prior to the date (Gomaa ,1993).

This dynamic transformation was also reflected in wheat imports, which reached a maximum level of around 7.5 million tons in 1987 and dropped to around 5.2 million tons by 2000.

Development of high – yielding stable cultivars is a key toward the future improvement of wheat productivity. Besides, high-yielding potentiality, early maturing cultivars are required nowadays for more crop intensification as the cultivated land and irrigation water are limited.

The long term strategic plan of wheat research program in Egypt is aiming to select among introductions and regionally collected germplasm that possess good adaptation to the variable conditions and good tolerance to the major pests (Enayat H.Ghanem, 1993).

The development of high -yielding varieties of wheat depends upon the recovery of desirable segregates from crosses between high-yielding cultivars or those of genetically diverse origin.