



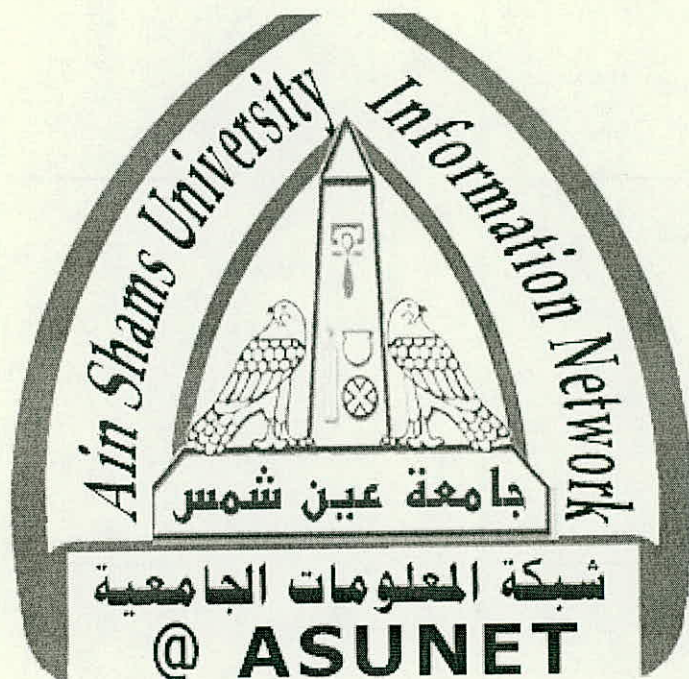
شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

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



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



شبكة المعلومات الجامعية

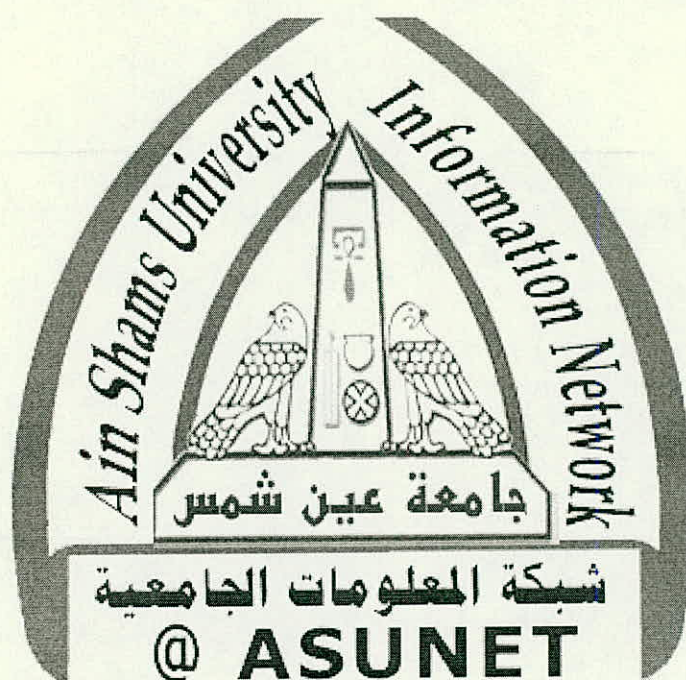


بالرسالة صفحات

لم ترد بالأصل



شبكة المعلومات الجامعية



بعض الوثائق الأصلية تالفة

STUDIES ON SOME INTERVARIETAL CROSSES AND HYBRID VIGOR IN TOMATO

By

SABRY MOUSA SOLIMAN YOUSSEF

B.Sc. Agric. (Horticulture) Ain Shams University 1992
A thesis submitted in partial fulfillment

of

the requirement for the degree of
Master of Science

In
Agriculture
(Vegetable Crops)

**Department of Horticulture
Faculty of Agriculture
Ain Shams University**

1997

B
70-7

APPROVAL SHEET

STUDIES ON SOME INTERVARIETAL CROSSES AND HYBRID VIGOR IN TOMATO

By

SABRY MOUSA SOLIMAN YOUSSEF

B.Sc. Agric. (Horticulture) Ain Shams University 1992

This thesis for M.Sc.Degree has been approved by :

Prof. Dr. Shamel Ahmed Shanan.....*S. A. Shanan*

Prof. of Vegetable Crops, Faculty of Agric., Al-Azhar
University.

Prof. Dr. Mohammed Abd El-Salam Rashed.....*M. A. Rashed*

Prof. of Genetics, Faculty of Agriculture, Ain Shams
University.

Prof. Dr. Khalifa Attia Okasha.....*K. A. Okasha*

Prof. of Horticulture, Faculty of Agric., Ain Shams
Univ., and Director of Horticulture Research Institute,
Agriculture Research Center (Supervisor)

Date of Examination 28 / 6 / 1997

STUDIES ON SOME INTERVARIETAL CROSSES AND HYBRID VIGOR IN TOMATO

By

SABRY MOUSA SOLIMAN YOUSSEF

B.Sc. Agric. (Horticulture) Ain Shams University 1992

Under Supervision of :-

Prof. Dr. Khalifa Attia Okasha

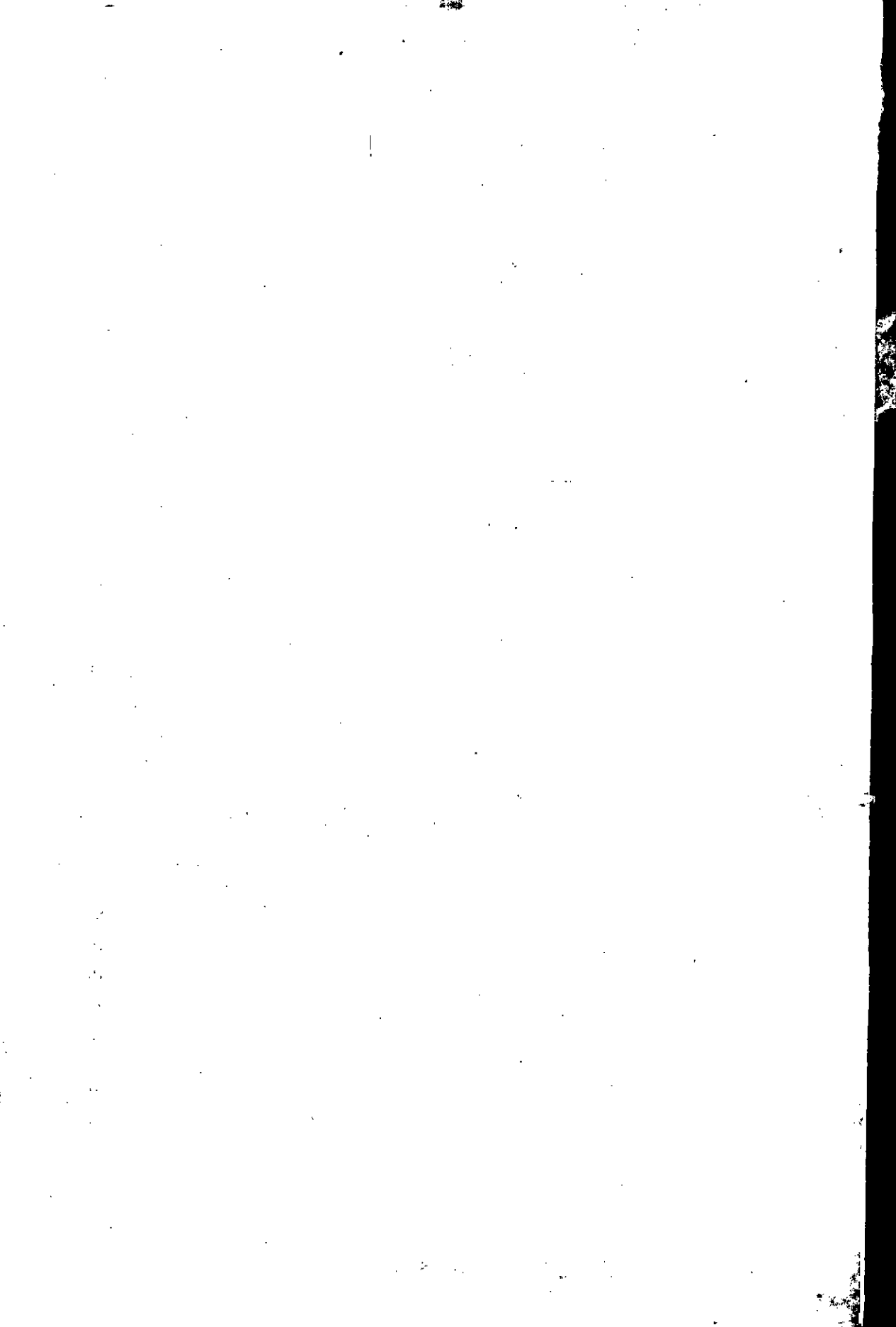
Prof. of Horticulture, Faculty of Agric., Ain Shams Univ., and Director of Horticulture Research Institute, Agriculture Research Center

Prof. Dr. Hosnia Mohamed Gomma

Prof. of Vegetable Crops, Ain Shams University.

Prof. Dr. Refaat Mohamed Helal

Prof. of Vegetable Crops, Ain Shams University.



ABSTRACT

Sabry Mousa Soliman Youssef. Studies on some intervarietal crosses and hybrid vigor in tomato. Unpublished Master of Agriculture Science, Ain Shams University, Faculty of Agriculture, Horticultural Department, 1997.

This study was carried out during 1994/1995 and 1995/1996 seasons at the Faculty of Agriculture, Ain Shams University. Five tomato cultivars and their possible 10 F_1 hybrids obtained by a half-diallel crosses were evaluated in a randomized complete block design with four replicates .

Data were recorded on : vegetative growth, flowering characteristics, yield components and fruit quality characters. Nature of inheritance and heterosis for the studied characters were determined. Moreover, estimates of general and specific combining ability and association between the studied characters were calculated. In addition, electrophoretic patterns of protein extracted from seeds of the studied genotypes was conducted.

Results of nature of inheritance showed complete dominance for tall plant, high fruit shape index, high total soluble solids, high titratable acidity and high ascorbic acid content, complete or even overdominance for high number of lateral branches/plant, complete or overdominance for earliness of flowering, high number of clusters/plant, high number of flowers/cluster and early yield, overdominance for great number of fruits/plant and total yield, partial dominance for small fruit weight, and partial or complete dominance for high number locules/fruit.

Positive heterosis over high parents was expressed in most crosses for number of clusters/plant, number of flowers/cluster, number of fruits/plant, early yield, total yield, total soluble solids, titratable acidity and ascorbic acid. Whereas, negative heterosis was found for plant height, number

of lateral branches/plant, fruit shape index, fruit weight and number of locules/fruit in most or all the obtained hybrids.

The results, generally, indicated that a particular tester cultivar can not be used to evaluate all the studied characters with equal efficiency.

Additive gene effects were more important than non-additive gene effects for plant height, number of lateral branches/plant, earliness of flowering, fruit shape index, fruit weight, number of locules/fruit and titratable acidity traits. On the other hand, it was found that non-additive gene effects played more important roles than additive gene effects for number of clusters/plant, number of flowers/cluster, number of fruits/plant, early yield, total yield, total soluble solids and ascorbic acid traits.

The results of the correlation showed that significant positive correlation was noticed between total yield/plant and number of clusters/plant, number of flowers/cluster, number of fruits/plant, early yield and total soluble solids.

The hybrid "Peto 86 X Strain B" was the best obtained hybrid for fresh market. Whereas, the F_1 hybrids "Ace 55 VF X Rossol VFN" and "Strain B X Rossol VFN" were the best obtained hybrid for processing.

Results of electrophoresis of protein showed that most F_1 hybrids were superior in increasing band number and band intensities compared with their respective parents as an indicator for heterosis.

KEY WORDS:

Tomato, Half diallel crosses, Intervarietal crosses, Inheritance, Heterosis, Combining ability, Association, Electrophoresis, SDS-PAGE.

GCA: General combining ability.

SCA : Specific combining ability.

T.S.S: Total soluble solids.

ACKNOWLEDGMENT

Firstly, my obedience, prayer, deepest thanks and praise to Allah, who has created us and conferred on us a lot of blessings which we can not enumerate them.

I would like to express the deepest thanks and gratitude to **Professor Dr. Khalifa Attia Okasha**, Professor of Horticulture, Faculty of Agriculture, Ain Shams University and Director of Horticulture Research Institute, Agriculture Research Center for his supervision, valuable help and continuous encouragement.

I wish to express the greatest appreciation to **Professor Dr. Hosnia Mohamed Gomma**, Professor of Vegetable Crops, Horticulture Department, Faculty of Agriculture, Ain Shams University for her supervision, true assistance and great help.

Deepest and sincere gratitude to **Professor Dr. Refaat Mohamed Helal**, Professor of Vegetable Crops, Department of Horticulture, Faculty of Agriculture, Ain Shams University for his supervision and patience in the preparation of this thesis.

Also, I wish to extend my appreciation and gratitude for **Professor Dr. Mohamed Abd El-Salam Rashed**, Professor of Genetics, Faculty of Agriculture, Ain Shams University for his great help, kind support and cooperation.

I would like to thank **Dr. Mohamed Imam Ragab**, Lecturer of Vegetable Crops, Department of Horticulture, Faculty of Agriculture, Ain Shams University for his great help, guidance and support.

I am particularly grateful to all the staff members and colleagues of Horticulture Department, Faculty of Agriculture, Ain Shams University for their cooperation.

My sincere thanks to members of the Strawberry and Non-Traditional Crops Center, Ain Shams University for their help and support.

CONTENTS

	Page
1.INTRODUCTION.....	1
2.REVIEW OF LITERATURE.....	3
2.1.Nature of inheritance and heterosis.....	3
2.1.1. Vegetative growth.....	3
2.1.1.1. Plant height.....	3
2.1.1.2. Number of branches per plant.....	4
2.1.2. Flowering characteristics	4
2.1.2.1. Earliness of flowering.....	4
2.1.2.2. Number of clusters per plant.....	5
2.1.2.3. Number of flowers per cluster.....	5
2.1.3. Yield components.....	6
2.1.3.1. Number of fruits per plant	6
2.1.3.2. Early yield.....	7
2.1.3.3. Total yield	7
2.1.4. Fruit quality	8
2.1.4.1. Physical characters.....	8
2.1.4.1.1. Fruit shape index.....	8
2.1.4.1.2. Fruit weight.....	9
2.1.4.1.3. Number of locules per fruit.....	10
2.1.4.2. Chemical characters.....	10
2.1.4.2.1. Total soluble solids.....	10
2.1.4.2.2. Titratable acidity.....	11
2.1.4.2.3. Ascorbic acid	11
2.2. General and specific combining ability.....	12
2.2.1. Vegetative growth.....	12
2.2.2. Flowering characteristics.....	12
2.2.3. Yield components.....	12
2.2.4. Fruit quality.....	13