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لم ترد بالأصل

SALWA AKL

Alexandria University
Faculty of Agriculture
Saba-Bacha
Plant Production Dept.

PHYSIOLOGICAL STUDIES ON BROAD BEAN

A THESIS

Submitted on Partial Fulfillment of the Requirements

for the degree of

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IN

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AGRONOMY

BY

SALWA EL-SAYED AMEIN HASSAN

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Alexandria University
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EXAMINER'S COMMITTEE: APPROVED

Prof. Dr. Fathalla I. Rehab.
Prof. of Agronomy, Fac. of Agric., Sab Bacha, Alexandria University.

F. Rehab.

Prof. Dr. Mohamed N. El-Banna.
Prof. of Agronomy and Head of Plant Prod. Dept., Fac. of Agric., Saba Bacha, Alex. Univ.

M. N. El Banna

Prof. Dr. Mahmoud A.Gomaa.
Prof. of Agronomy and Vicé Dean for Education and Students Affairs, Fac. of Agric., Saba Bacha, Alex. Univ.

M. A. Gomaa

Prof. Dr. Mohamed M. Tabl.
Prof. of Agronomy, Fac. of Agric., Kafr El-Sheikh, Tanta Univ.

M. Tabl

SUPERVISOR'S COMMITTEE

Prof. Dr. Mohamed Naguib El-BANNA

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Alexandria University

Prof. Dr. Mahmoud Abdel-Aziz GOMAA

Prof. of Agronomy and

Vice Dean for Education and Students Affairs,

Faculty of Agriculture, Saba Bacha,

Alexandria University

Dr. Hassan Abdel-Wahab GZAL

Director of Sabahia Research Station

Horticultural Research Institute

Agricultural Research Center.

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CONTENTS

INTRODUCTION

INTRODUCTION

Faba bean (*Vicia faba*, L.) is one of the most popular food legume in Egypt. It may be considered as one of the cheapest sources of plant protein. It is grown as a winter crop in about (417095) faddans, which produced 2382919 Ardab (369352.4 Tons) 1994*.

As in many other field crops which are grown for seeds, faba bean forms a larger number of flowers than mature pods. In fact, of the reasons why maximum yield is not obtained from this crop might be due to the abscission of many flowers and formation of immature pods.

Although the Egyptian yield levels are relatively high in comparison with the world average there is a pressing need to improve the national average yield and increase the total seed production.

Further increase in cultivated faba bean area is rather limited, the other option is to increase yield per unit area. This may be achieved by either improving the varieties or through improving the cultural practices, such as foliar spraying with micronutrients and macro-nutrients levels, optimum plant density per unit area, efficient irrigation regime, ... etc.

Pests decreasing yield are rust and the chocolate spot and the parasitic flowering plant and broom rape.

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* الاقتصاد الزراعي : نشرة يصدرها قطاع الشئون الاقتصادية ، ١٩٩٤ .

1 Ardab = 155 kg.
1 Faddan = 0.42 ha. = 1.038 acre

Accordingly, the main objective of the present work was to study several cultural treatments that may affect the productivity of faba bean These treatments were foliar spray with two growth regulators (gibberellic acid and naphthalene acetic acid) and foliar application with some micronutrients such as iron, zinc, manganese and boron, Sangral (macronutrients + trace elements) and phosphorus and their effect on growth, yield, yield components and some plant characters of faba bean. Similarly, important factor is the spraying date of nutrients and growth regulators, in an attempt to determine the highest possible total production of faba bean in Egypt.

REVIEW OF LITERATURE

The literature will be divided into two main topics as follows:

I. Effect of foliar spray of microelements and macronutrients on growth, yield and yield components.

II. Effect of foliar spray of growth regulators on growth, yield and yield components.

I. Effect of foliar spray of microelements and macro-nutrients on growth, yield and yield components.

Whittington (1957), sprayed faba bean plants with Bo solutions at the concentrations of 0.0-2.5 ppm. The results showed that the maximum seed yield of beans was obtained when the plants were sprayed with 0.5 ppm Boron concentration.

Ahmed (1960), found that the critical period for fertilization of *Vicia faba*, L. with P was that laying between the third and ninth weeks after sowing. Plants took up sufficient P for normal growth throughout their life and for seed production during this period. There was no increase of dry matter with addition of P after the ninth week.

Polar (1970), soaked seeds of 3 varieties of broad beans in Zn Cl_2 solution and then grew them in solution culture. Uptake of Zn by the seeds was constant and did not depend of the amount supplied.