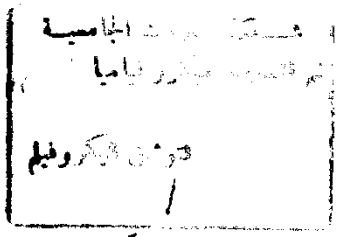
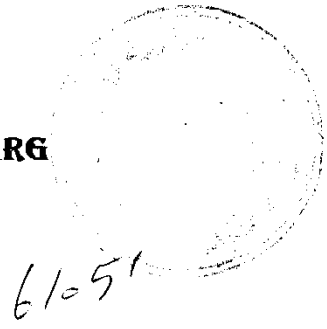


EFFECT OF SOME ENVIRONMENTAL FACTORS ON CERTAIN METABOLIC PRODUCTS IN *VICA FABA* SEEDS DURING THEIR DEVELOPMENT AND PROCESSING.

A THESIS
SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE
OF
THE REQUIREMENTS FOR THE MASTER DEGEREE (M.SC.)
IN
ENVIRONMENTAL SCIENCE
DEPARTMENT OF AGRICULTURE
BY

IMAN ABD ALLA ABD EL-HAMED FARG
(B. SC.)



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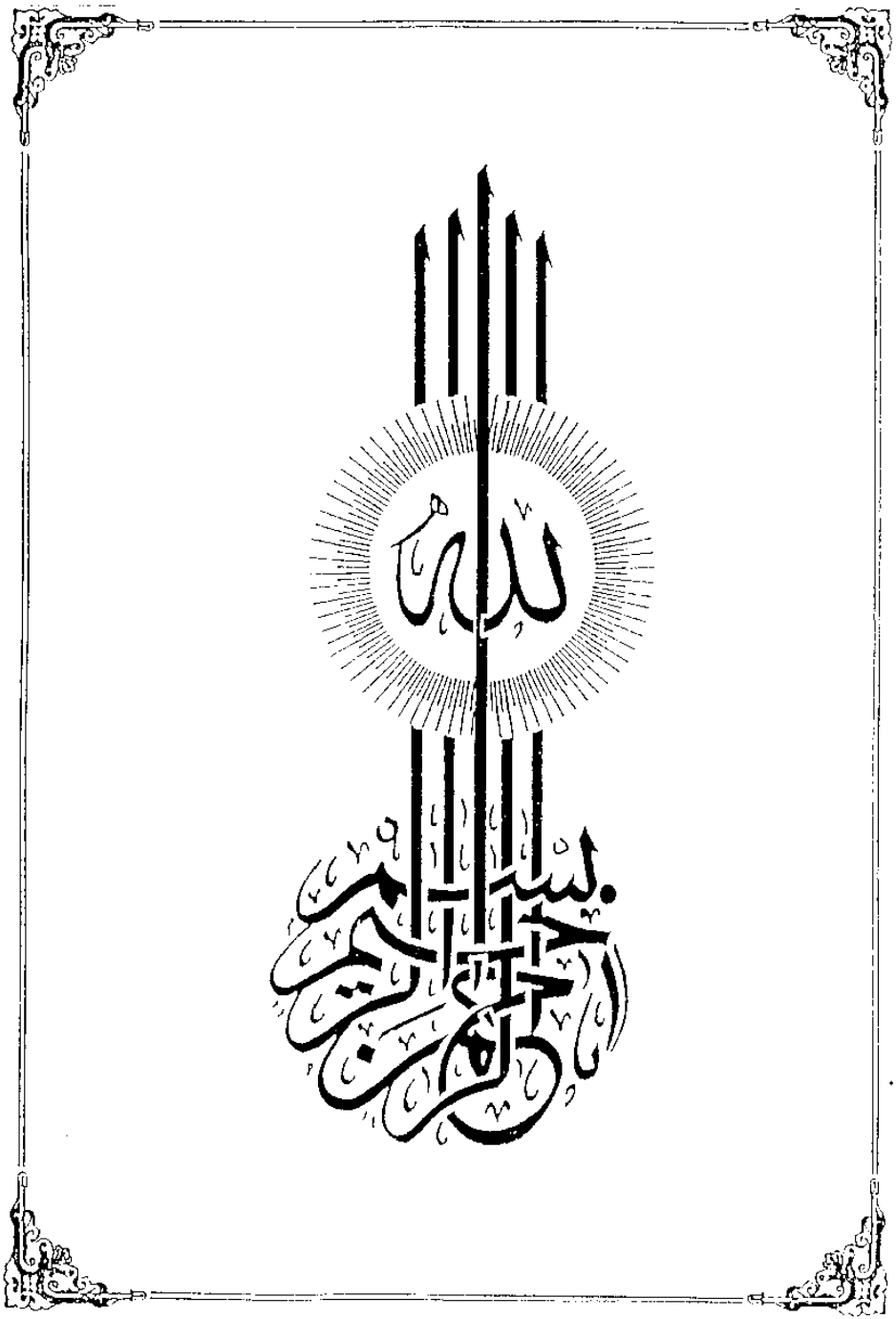
1996



APPROVAL SHEET

Title of Dissertation	:	**Effect of some environmental factors on certain metabolic products in *Vica faba* seeds during their development and processing.**
Degree	:	**M.Sc.**
Name of student	:	**Iman Abd Alla Abd El-hamed Farg**

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Date of Examination : 24/7/1996

ACKNOWLEDGMENT

I wish to express my deepest gratitude and sincerest appreciation to Prof. Dr. M.A. Abd-Alla, Prof. of Food Science Ain Shams Univ., Fac. of Agric., Food Sci, Dept. and Dean of Faculty of Specific Education for his continuous efforts through supervising and reviewing the thesis.

I also acknowledge with sincere thanks to Prof. Dr. Raifa A. Hassanein Prof. of Plant Physiology Faculty of Science, Ain Shams University for her deepest interest through supervising, writing, reviewing the thesis and discussion of the results.

I express also my thanks and gratitude to Prof. Dr. M.T. Sharabash head of Biotechnology Dep. National Center for Radiation Research and Technology for his encouragement, supervision and the facilities offered through the work.

Contents

INTRODUCTION

Introduction

The International Atomic Energy Agency (IAEA) is one of specialized agencies within the united nations family which "foster the exchange of scientific and technical information", around the world. The "IAEA" is also aimed to encourage and assist research on, and development the practical application of atomic energy for peaceful uses.

Nuclear safety fundamentals have undergone considerable development since the early 1980s. The international dimensions of nuclear safety have been strongly recognized POST-CHERNOBYL and International Nuclear Safety convention based on the safety fundamentals now exists to use the "γ" rays for food preservation up to 10 Kgr.

During the last ten years food irradiation was the subject of many discussions in many countries. Some organizations have expressed their opposition to this new techniques of food preservation while others accepted it and approved the usage of such method. All around the world the fight against food losses is continuos. Whether losses coming from biological action or from physical and chemical deteriorations.

However, FAO / IAEA / WHO consider that the appropriate ionizing rays to be used for food irradiation are :

- Gamma rays from Cobalt 60 or Cesium 137.
- "X"rays with an energy level equal or less than 5 MEV (Ml electron volt)
- Electrons with an energy level equal or less than 10 MEV.

Legume Grains are now well consider to be of traditional customs in Egyptian diets and faba bean is the main leguminous pulse crop in Egypt from the

view point of local consumption as it forms an important part of food habits. The higher demand of this highly nutrition foodstuff has been faced by the fear that its consumption could lead to favism, a disease that causes hemolytic anemia in certain glucose 6-phosphate dehydrogenate deficient individuals.

As long as 1870, vicine was isolated by Ritthausen and Kreusler from *Vicia sativa* seeds by a method involving extraction with dilute H_2SO_4 and precipitation with $HgSO_4$;the final yield of the crystalline material was about 0.35%;(Ritthausen, 1876).

Vicine was subsequently found in other species of vicia including *Vicia faba*, beet juice, and peas (Schulze, 1891; Bendich and Clements, 1953). They confirmed the formulation of vicine as to be 2,6-diamino-4,5-dihydroxyprimidine 5-(B.D glucopyranoside).

Convicine was also discovered by Ritthausen (1881) in *Vicia sativa*. It was identified as a B-glycoside of isouramil and its configuration was confirmed by Bien *et. al.* (1968) to be 2 ,4 ,5 - Trihydroxy - 6 - amino pyrimidine 5 - (B - D - glucopyranoside).

The aim of study was to investigate the effect of selected enviromental factors on each of growth attributes, yield and yield components, vicine and convicine of faba bean with such view in mind five gamma irradiation doses, namely 0 , 5 , 10 , 20 and 40 Gry as well as three phosphorus fertilizer levels i.e. 0 , 15.5 and 31.0 kg P_2O_5/Fad. were considered. Chemical composition of green seeds, over all samples i.e. 60 , 75 and 90 days after sowing was determined. The effect of roasting and stewing of seeds after harvest was also investigated. On the aforementioned bases, raising both quantity and quality of faba bean throughout gamma irradiation and phosphorus fertilization treatments was the main objective of such study.

REVIEW