

127, 17 27, 17 (20) 77, 17 (20









جامعة عين شمس

التوثيق الالكتروني والميكروفيلم



نقسم بللله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأفلام قد اعدت دون آية 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 %



ثبكة المعلومات الجامعية





Information Netw. " Shams Children Sha شبكة المعلومات الجامعية @ ASUNET بالرسالة صفحات لم ترد بالأص



Studies On Root Rot Disease Of Soybean (*Glycine Max.*) In Upper Egypt

By

Heidi Ibrahim Gaber Abo-Elnaga B.Sc.Agric. (Plant Pathology), 1990 M.Sc. Agric.(Plant Pathology), 1995 Faculty of Agriculture, Assiut University

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

In Plant Pathology

Plant Pathology Department
Faculty of Agriculture
Assiut University

2002

Supervised by:

Prof. Dr. F.G.M.Fahmy

Prof. D. Gerhard A. Wolf

Dr. A.D.A. Allam

Dr. K.M.H. Abd-El-Moneem

Examined by:

Prof. Dr. Z.El-Shennawy

Prof. Dr. F.G.M.Fahmy

Prof. Dr. M.S. Abo-El-Seoud

Dr. K.M.H. Abd-El-Moneem

31.440



APPROVAL SHEET

Major field

: Plant Pathology.

Title of Thesis

: Studies on root rot disease of soybean

(Glycine max.) in Upper Egypt

Name

: Heidi Ibrahim Gaber Abo-Elnaga

This thesis for the degree of Doctor of Philosophy has been examined and approved by:

Prof. Dr.

Z. W. S. A. Ena. a. w.y.

Prof. Dr

M. S. Abou Elsewell

Prof. Dr.

Keinowi M. H. Abd-El Moneem

(Committee in charge)

Date :21/11/ 2002

ACKNOWLEDGMENT

The author wishes to express her deepest grateful thanks and sincere to *Prof. Dr. F.G. M. Fahmy*, Professor of Plant Pathology, and Head of the Plant Pathology Department, University of Assiut, for suggestion of the problem, guidance, valuable advice and helpful criticism throughout this study.

Thank is also due to *Prof. Dr. Gerhard A. Wolf*, Institute of Plant Pathology and Plant Protection, George-August. University, Göttingen, Germany, for his valuable supervision, encouragement, advice, and help during this study.

Thanks are also due to *Dr. A.D.A. Allam*, Associate Prof. of Plant Pathology, University of Assiut, who spent so freely much of his time for guiding this study to success.

Thanks are also due to *Dr. K.M.H Abd-El-Moneem*, Associated Prof. of Plant Pathology, University of Assiut, for his advice and help during the course of this study.

Lastly, thanks are also due to all the staff members of Plant Pathology Department for their help and cooperation.

CONTENTS

CONTENTS

Subjects	Page
INTRODUCTION.	1
REVIEW OF LITERATURE	4
MATERIALS AND METHODS	25
EXPERIMENTAL RESULTS	44
1- Isolation and Identification of the causal pathogens	44
2- Pathogenicity tests	46
3- Some factors affecting the disease incidence of soybean root rot disease.	53
3.1. Soybean varieties	53
3.1.1. Reaction of certain soybean varities and genotypes	53
to root rot disease	
3.1.2. <i>In vitro</i> effect of root exudates of certain soybean	57
varieties on the causal pathogens	
3.1.2.1. Amino acids contents of soybean root exudates	59
of certain soybean varieties	
3.1.2.2. <i>In vitro</i> effect of threonine and isoleucine amino	65
acids on growth of the causal pathogens	
3.2. Preceding crops	67
3.2.1. Effect of certain preceding crops on the incidence	67
of root rot disease of soybean	
3.2.2. Effect of certain preceding crops on microbial	
population in soybean rhizosphere	71
3.2.3. <i>In vitro</i> effect of Mint and Garlic root exudates on	
the growth of soybean root rot causal	74
pathogens	

Subjects	Page
4. Control of soybean root rot disease	76
4.1. Soil solarization	76
4.1.1. Effect of soil solarization on soil temperature	76
4.1.2. Effect of soil solarization on populations of the	78
causal pathogens of soybean root rot disease	
4.1.3. Effect of soil solarization on the incidence of root	80
rot disease of soybean	
4.1.4. Effect of soil solarization on the growth and yield of soybean plants	85
4.2. Effect of seed stratification on incidence of soybean root	80
rot disease	89
4.3. Biological control	92
4.3.1. Plant extracts	92
4.3.1.1. In vitro effect of aqueous plant extracts on	92
growth of the causal pathogens of soybean root	92
rot disease	
4.3.1.2. In vitro effect of atropine, one of the active	
component of Datura metel on the causal	94
pathogens of soybean root rot disease	
4.3.1.3. Effect of atropine, one of the active component	
of Datura metel on the incidence of soybean	0.6
root rot disease under greenhouse conditions	96
4.3.1.4. Effect of aqueous plant extracts of certain	
medicinal plants on the incidence of soybean	98
root-rot disease under greenhouse conditions 4.3.2. Biocontrol agents	101

Subjects	Page
4.3.2.1. Antagonistic effect of isolated microorganisms	101
against the causal pathogen of soybean root-rot	101
In vitro	
4.3.2.2. Effect of Trichoderma viride and Pseudomonas	
fluorescens on the incidence of root-rot disease	107
and growth of soybean plants	
DISCUSSION	116
SUMMARY	130
LITERATURE CITED	136
ARABIC SUMMARY	-

INTRODUCTION

INTRODUCTION

Soybean (Glycine max. L., Merrill), is considered one of the most important leguminous crops in Egypt and also for many other countries in the world. It is extensively cultivated and highly valued as human food and animal feed as well as medicine to treat a number of human disorders (Sinclair and Backman, 1993).

Soybean in some other countries is considered as an oil seed crop rather than a forage crop. On the other hand, soybean and soybean products constitute the chief source of protein for hundreds of millions of Orientals and play a much greater role in the nutrition of these people than wheat (Mostafa, 1982).

Soybean manufacturing has stepped widely resulting in soybean products including different types of flour, proteins, meet industries, vegetable milk and other wide varieties of products (Markley, 1950).

Some natural and non- toxic substances called isoflavones, such as: Diazein and Genistein were found in soybean, these isoflavones have antioxidant activity and protect against cancer (Matsuo, 2001).

Therefore, special attention has been given to increase the cultivated area of this crop throughout Egypt in which the total area that cultivated with this crop were 12687 feddans, produced 14885 tons of soybean (according to the statistical report of Ministry of Agriculture and land Reclamation of, A.R.E, 2001).

As soybean average has expanded, diseases have increased in number and severity. It is subjected to relatively large numbers of