

**INTEGRATED MANAGEMENT OF CUCUMBER
ROOT ROT**

BY

HEBA MOHAMED AHMED YOUSEF

B.Sc. Agric.Sci. (Plant Pathology), Fac. Agric., Fayoum Univ., 2016

A thesis submitted in partial fulfillment
of the requirements for the Degree of

MASTER OF SCIENCE

In

Agricultural Sciences

(Plant Pathology)

Agric. Botany Department

Faculty of Agriculture

Fayoum University

Egypt

2022

SUPERVISION SHEET

**INTEGRATED MANAGEMENT OF CUCUMBER
ROOT ROT**

M.Sc. Thesis in Agric. Sci. (Plant Pathology)

By

HEBA MOHAMED AHMED YOUSEF

B.Sc. Agric.Sci. (Plant Pathology), Fac. Agric., Fayoum Univ., 2016

SUPERVISION COMMITTEE:

Prof. Dr. Mohamed Ahmed Ali Hassan

Prof. of Plant Pathology, Botany Dept., Fac. Agric., Fayoum Univ.

Dr. Hoda Mohamed Hussein

Lecture of Plant Pathology, Botany Dept., Fac. Agric., Fayoum Univ.

Prof. Dr. Said Mohamed Kamel

Head Researcher, Plant Pathology Research Institute, Agric. Res.
Center, Giza, Egypt.

Prof. Dr. Osama Yousef Shalaby

Prof. of Plant Pathology, Botany Dept., Fac. Agric., Fayoum Univ.

Date:...../...../.....

APPROVAL SHEET

**INTEGRATED MANAGEMENT OF CUCUMBER
ROOT ROT**

M.Sc. Thesis in Agric.Sci. (Plant Pathology)

BY

HEBA MOHAMED AHMED YOUSEF

B.Sc. Agric.Sci. (Plant Pathology), Fac. Agric., Fayoum Univ., 2016

APPROVAL COMMITTEE

Prof. Dr. Nagy Yassin Abdel Ghaffar Ahmed

Prof. of Plant pathology, Plant Pathology Dept., Fac. Agric., Ain-Shams Univ.

Prof. Dr. Abd El-Radi Taher Bakeer

Prof. of Plant Pathology, plant pathology Dept., Fac. Agric., Fayoum Univ.

Prof. Dr. Saied Mohamed Kamel

Head Researcher, Plant Pathology Research Institute, Agric. Res. Center,
Giza, Egypt.

Prof. Dr. Mohamed Ahmed Ali Hassan

Prof. of Plant Pathology, plant pathology. Dept., Fac. Agric., Fayoum Univ.

Date:...../...../.....

Name: Heba mohamed ahmed

Degree: M.Sc.

INTEGRATED MANAGEMENT OF CUCUMBER ROOT ROT

Department: Agricultural Botany

Approval: / /2022

Abstract

Damping-off and root rot is a serious disease infecting cucumber on both seedling and adult stages under protected cultivation causes severe losses in the cucumber yield. A survey was conducted in five countries at fayoum governorate during the growing seasons 2017/ 2018. Over all averages of disease incidence and disease severity were 30.06 and 57.37% respectively. 237 fungal isolates were isolated from cucumber plants and identified. The pathogenicity test of 19 isolates were chosen to represent all the surveyed districts of Fayoum governorate. Pathogenicity tests revealed that four isolates (*R. solani*, *M. phaseolina*, *F. oxysporium* and *F. solani*) caused the highest damping-off and root rot disease incidence of cucumber. Five cucumber cultivars have been used to determine is susceptibility to infected by the tested fungi. The tested fungi were retested on eight plant species belong to four plant families: Cucurbitaceae, Fabaceae, Brassicaceae, and Apiaceae to determine host range. *In vitro* inhibitory of six *trichoderma* isolates, five antagonistic bacterial isolates, two *Streptomyces* isolates, three humic substance and six resistance inducers were evaluated against the tested pathogenic fungi. The highest average percentage of growth reduction recorded by *T. asperillum* TA1 (86.85%), *B. subtilis* B1 (75.46%), *P. fluorescens* PF1 (72.87%) and *Streptomyces spp* St1 (64.44%). The inhibitory effect of

humic substances and resistance inducers significantly reduced the average mycelium growth of tested fungi. The highest growth reduction of tested fungi was for humic substances at concentration 200 μ L, chitosan and H₂O₂ at 150 mg and 20 mM concentration respectively, Salts and antioxidant at concentration 15 mM, by salicylic, citric and ascorbic acid While, potassium iodide at concentration 5 mM. Under greenhouse integrated efficacy of the best treatments from laboratory experiments were studied against cucumber root rot disease as individual treatments and mixed treatments for the best results with individual treatments. All the selected treatments individually or in combination reduced the percentage of cucumber damping off and root rot incidence compared to the control in both fayoum and giza experiments. Most all the tested treatments led to an increase in growth parameters such as plant height, wet, dry weight, yield and the total chlorophyll. Also, gave the best results for increasing in oxidative enzymes activity and total phenol in roots of cucumber plants compared to the control. The best treatments improve in the roots anatomic structure of the treated cucumber plants compared to the untreated plants.

Key words: Cucumber, Damping off, root rot, *F. oxysporium*, *F. solani*, *M. Phaseolina*, *R. solani*, Bioagents, Humic substances, resistance inducers, enzymatic activity.

