PATHOLOGICAL STUDIES ON CROWN AND STEM ROTS OF EGYPTIAN CLOVER

By

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B.Sc. Agric. Sci. (Plant Pathology), Fac. Agric., Cairo Univ., 1999
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THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

In

Agricultural Sciences

(Plant Pathology)

Department of Plant Pathology
Faculty of Agriculture
Cairo University
EGYPT

2014

APPROVAL SHEET

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Date: / / 2014

SUPERVISION SHEET

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Title of Thesis: Pathological Studies on Crown and Stem rots of Egyptian clover.
Supervisors: Dr. Effat Abdel-Mageed Zaher
Dr. Khairy Abdel-Maksoud Abada
Department: Plant Pathology

Approval: 21/ 9 /2014

ABSTRACT

Isolation trials from the rotted crowns and stems of Egyptian clover plants were carried out. The isolated fungi were purified and identified as *Alternaria* spp., *Fusarium* spp., *F.solani*, *Macrophomina phaseolina*, *Pythium* spp., *Rhizoctonia solani*, *Sclerotinia sclerotiorum*, *S.trifoliorum*, *Trichoderma album*, *T.harzianum* and *T.viride*. No apparent infection by crown and stem rot diseases was observed on clover plants during October, November and May then the infection began to appear from December to April of the next year. The highest infection by crown rot occures during January and by stem rot during February. Pathogenicity test by soil infestation and stem inoculation revealed that all the tested fungi were able to infect clover plants except *Trichoderma* spp. *S. sclerotiorum* infected all the plants that belong to family Fabaceae, *i.e.* alfaalfa, bean, chick pea, Egyptian clover, faba bean, *etc*…as well as lettuce, safflower cantaloupe, cucumber, and potato and failed to infect barley and wheat. All the tested Egyptian clover cultivars were susceptible to infection by crown and stem rots. In addition, Fahl cv. was the lowest susceptible one. Meanwhile, Miskawy cv. was the highest susceptible one. The cardinal degrees of temperature of *S. sclerotiorum* were5, 20 and 25°C. Also, the fungus failed to form any sclerotia at 0.0 and 5°C. All of the four tested fungicides caused significant reduction to the radial growth of the tested fungus compared with control treatment. Tachigaren was the most effective fungicide. Culture filtrates of the tested eight *Bacillus* spp. and the fourteen *Trichoderma* spp. isolates resulted in different degrees of reduction to the radial growth and the germinated sclerotia of *S. sclerotiorum*.The preceding crop resulted in significant reduction to the natural infection by crown and stem rot. In addition, planting rice before Egyptian clover caused great reduction in the natural infection by crown and stem rots. Adding organic manure, *i.e.* balady old manure, chicken manure, compost and peat moss before sowing Egyptian clover in soil infested with *S. sclerotiorum* resulted in significant reduction in the severity of crown and stem rots with significant increase in the weight of green forage yield compared to control treatment. Meanwhile, balady fresh manure resulted significant increase in the severity of crown and stem rots with significant decrease in the weight of green forage yield compared to control treatment. The tested bioagents, *i.e. B. thuringiensis-1* and *T. harzianum-3* as well as soil solarization resulted in significant reduction in the severity of clover crown and stem rots with significant increase in the green forage yield compared to control treatment. The use of calcium cyanamide, compost and soil solarization, each alone or in combinations, resulted significant reduction in the severity of clover crown and stem rots with significant increase in the green forage yield compared to control treatment. The use of leaves powder of lemon grass, solarization and Tachigaren each alone or in combinations, resulted significant reduction to crown and stem rots severity as well as significant increase in the produced green forage yield compared to control treatment.

Key wards: Crown and stem rots, Egyptian clover, disease management, physiological studies, and *Sclerotinia sclerotiorum*.

DEDICATION

First many thanks for god and I would like to express my thanks and gratitude to my family members for their encouragement. Words cannot express how grateful I am to my mother, father, mother-in law, and my father-in-law, for all of the sacrifices that you've made on my behalf.

I dedicate this work to my mother, my husband, and my kids; Karim, Basim, and Ingy. I don't have enough words to say how grateful.

ACKNOWLEDGEMENT

I am deeply grateful to ***Prof. Dr. Effat Abdel-Mageed Zaher****, Professor of Plant Pathology, Faculty of Agriculture, Cairo University, for her kind supervision, suggesting the problem, appreciable advices, continuous encouragement as well as her constructive comments and kind help during all stages of the thesis. I am greatly indebted to* ***Prof. Dr. Khairy Abdel-Maksoud Abada****, Professor of Plant Pathology, Faculty of Agriculture, Cairo University, for his kind guidance, valuable advices, beneficial discussion and continuous support during the whole work.*

I also wish to express my Grateful appreciation and deep thanks to all staff members of the Plant Pathology Dept., Fac. Agric., Cairo University and everyone who helped and supported me to accomplish this work.

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