DIVERSITY OF *SCLEROTIUM ROLFSII* ISOLATES INFECTING SOME OIL CROPS

By

HUDA ZAKARIA AHMED ZOHER

B.Sc. Agric. Sc. (Plant Pathology), Ain Shams University, 2003

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ABSTRACT

Huda Zakaria Ahmed: Diversity of *Sclerotium rolfsii* isolates infecting some oil crops. Unpublished M.Sc. Thesis, Department of Plant Pathology, Faculty of Agriculture, Ain Shams University, 2010.

The fungus *Sclerotium rolfsii Sacc.* causes severe root rot to peanut and sunflower plants, pathogenicity tests of *S. rolfsii* 21 isolates on peanut were realized. All isolates from different hosts affect peanut plants, with different degrees. Pathogenicity tests of 21 isolates of *S. rolfsii* on peanut (Giza 6) and sunflower (hybrid 109) were carried out. All isolates from different hosts and locations were pathogenic to peanut and sunflower. Mycelial growth on natural media was higher than that on synthetic media. The best mycelial growth was obtained on PDA and Br media. For sclerotial formation, isolates varied in the number production on different media according to the type of media and isolate. The highest mycelial growth was recorded at 30ºC and the least was recorded at 15ºC. While, there was no clear differences found between isolates grew on different carbon sources, a great variation was obtained on sclerotia formation on media amended with different carbon sources. Peptone as a nitrogen source was the best for growing *S.rolfsii* isolates while medium consisted of sodium nitrate gave the lowest growth. Total of 441 combinations only 76 isolates (17.2%) showed compatible reactions. Based on mycelial compatibility seven groups were identified among the different isolates. MCG 7 was a unique group consist only one isolate isolated from guar plant. There was no correlation between host, geographic locations and members in certain MCG. The genetic relationships among 12 isolates of *S. rolfsii* showed various reactions by using 4 primers. High degree of genetic similarity was obtained between isolates P2 and P6 isolated from peanut from Giza and Behira when using the three primers1, 2 and 3. These two isolates were also compatible and gave the same trend of disease incidence. Isolates from the same host showed variability in their genetic characters. The isolates were varied in their ability to produce oxalic acid. Isolate P3 produced the highest

amount of oxalic acid, (150µg/mg), also, this isolate was the high virulence one. *Trichoderma harzianum* was the best bioagent used inhibiting mycelial growth and sclerotia formation *in vitro*. Comparing with two bioagents and two fungicides (Moncut and Rizolex T) in controling the disease, fungicides were more effective in suppressing the disease incidence (pre-emergence damping off). All treatments completely suppressed the disease in post-emergence damping off.

Key words: *Sclerotium rolfsii*, rot root, mycelial compatible group, random amplified polymorphic DNA markers, biological control, and chemical control

CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

BAM	Basel agar medium
Cz	Czpek's
MCG	Mycelial compatibility groups
mg	mycelial growth
PCR	Polymerase chain reaction
PDA	Potato dextrose agar
PDB	Potato dextrose broth
RAPD	Random Amplified Polymorphic DNA markers
Red	Reduction
Sn	Sclerotial number
BAM	Basel agar medium

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