

**EFFECTIVENESS OF OLIVE TRANSPLANTS RHIZOSPHERE  
BIOAGENTS, INDUCE RESISTANCE CHEMICALS AND SOIL  
AMENDMENTS ON ROOT ROT DISEASE MANAGEMENT**

**BY**

**OLA ALI EID Ali**

B.Sc. Agric.Sci. (Plant Pathology), Fac. Agric., Fayoum Univ., 2015

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**

**Name:** Ola Ali Eid Ali

**Degree:** M.Sc.

**EFFECTIVENESS OF OLIVE TRANSPLANTS  
RHIZOSPHERE BIOAGENTS, INDUCE RESISTANCE  
CHEMICALS AND SOIL AMENDMENTS ON ROOT ROT  
DISEASE MANAGEMENT**

**Department:** Agricultural Botany

**Approval:** / /2022

**Abstract**

Root rot is one of the most important diseases of olive causing losses up to 25% in commercial nurseries and fields in Fayoum governorate. A survey was conducted in fifteen commercial nurseries of five Counties at Fayoum Governorate during 2018-2019 experimental trails. Over all averages of disease incidence and disease severity were 22.59% and 44.02% respectively. 118 fungal isolates were isolated and identified. The pathogenicity test for fungal isolates was proved by soil drenching. On the bases of pathogenicity test Twenty-one isolates were chosen to represent all the surveyed districts of all counties. Four fungal isolates recorded the highest root rot severity of olive transplants i.e., *Macrophomina phaseolina*, *Botrydiploia theobromae*, *Fusarium solan* and *Rhizoctonia solani*. Seven olive cultivars susceptibility were tested for pathogenesis with selected pathogenic fungal isolates. The antagonistic activity of five Trichoderma isolates, five antagonistic bacterial isolates and four Streptomyces isolates recorded the highest average percentage of growth reduction also, increased the average of inhibition zone against mycelial growth of pathogenic fungal isolates. The highest average percentage of growth reduction recorded by *T. harzianum* TH1 (93.60%); *B.subtilis* B6 (45.80% and 13.75 mm); *P.fluorescens* P1 (45.05% and 14.33mm), and *Streptomyces muensis* (S1), 42.22% and 12.58mm. The inhibitory effect of seven induce resistance compounds and two soil amendments on linear growth reduction of pathogenic fungal isolates significantly reduced the average of mycelium growth of tested fungi. Fungal growth decreased significantly as the concentrations of induce resistance compounds and soil amendments were increased. Propionic acid, Salicylic acid (15 and 25 mM), and 25 mM of Benzoic acid and Sorbic acid were completely prevent the growth of all tested pathogenic fungi and 100%. The compost tea, at a concentration of 15%, completely inhibited the growth of all of the fungi tested. Under greenhouse integrated efficacy of various treatments against root-rot disease on olive transplants were studied. All the selected treatments individually or in combination significantly reduced the percentage of olive root rot infection and severity in 2019 and 2020 growing seasons than the control. Most all various treatments with tested were more effective statistically in increasing values of growth parameters such as shoot length, fresh weight and dry weight also, gave the best results for increasing in oxidative enzymes activity in roots of olive transplants compared to the control.