



Graduation Project



A Study of Stem Rot Disease Caused by Sclerotinia Sclerotiorum on Eggplants Grown in Plastic-houses and its Control

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July 1-2020

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Introduction :



Sclerotinia sclerotiorum de Bary is a Major of soil borne plant pathogen,

it belongs to the Order: *Helotiales* , Subclass : *Euascomycetes* , Class : *Ascomycetes*. This fungus is responsible for causing root, crown, and stem rot, Heavy planting and moist and cool environments (Optimum temperatures for growth range from 15 to 21 °C) will produce an abundance of mycelium and sclerotia (plant pathology / NNU2016)

Symptoms of infection are in the form of growths of cottony yarn? fungal white in color in the sites of injury, and then expand to include parts of the injury area. In addition to that, there is withering of leaves and their staying in contact with the affected branches, as well as attacking the fungus of the affected branch marrow and noticing the massive growth of fungal growths and the appearance of black stone bodies in the affected areas .

Control of disease on crops can depend greatly on cultural, biological, and chemical practices, Cultural practices include planting crops at lower densities and higher row spacing to promote air circulation and create microclimates, and use resistance cultivars.



Objectives of the study

The main objectives of this study are:

- 1) To study the symptoms of stem rot disease caused by *Sclerotinia sclerotiorum* on eggplants grown in plastic-houses.
- 2) To isolate and diagnose the causal agent of the disease .
- 3) To test the Pathogenicity of the causal agent in laboratory .
- 4) To control the disease under field conditions using fungicides .



Materials and Methods used in the Project



Test of germination of sclerotia of the disease causal agent using the following procedure

1. Treatments used in the test :

- Sterilized sclerotia .
- Unsterilized sclerotia.
- On filter paper.

2. Sterilization of sclerotia using 70% alcohol where sclerotia were immersed in 70% alcohol for 1 minute then rinsed 3 times in sterilized saline water solution (0.9%) then left to dry up under sterilized conditions (using laminar-flow hood).



3. Then each sterile sclerotia was transferred into plates of PDA .

4. The unsterilized sclerotia were directly transferred in to plates of PDA without sterilization .

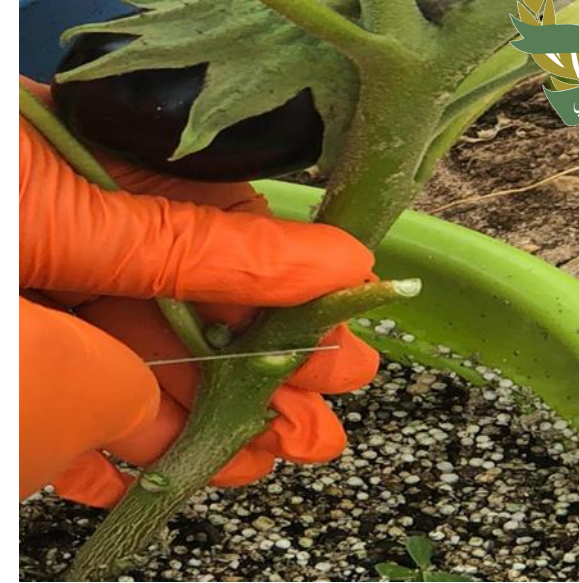
5. Incubation of all plates under an incubator at 20 ± 2 °C and 18 hours of light for 9 day to observe the germination of sclerotia .





Inoculation of eggplant grown in pots with *Sclerotinia Sclerotiorum*

1. Seedlings of potted eggplant (age :50 days at inoculation) were used for inoculation ,seedlings were transplanted at 24 March 2020 and inoculated at 13 May 2020.
2. Three treatments were used by placing Sclerotia in the soil around the plant stem making wound at the stem of plant the fixing the Sclerotia onto the wound made on stem of inoculated plates, and the control (un- inoculated with sclerotia).





3. Leaving the Sclerotia onto wounded stems for 15 days then separated from plants.

Irrigation of inoculated and un- inoculated as usual (1 time per day), Variety of eggplants is (Chantal), Checking plants daily for observing change in its growth Plants were kept to plastic house (average temp $30 \pm 10^{\circ}\text{C}$).





Results obtained in the project: Test of sclerotia germination



Table 1 :Germination time after patting sclerotia in petri-dishes

Test of germination	1day	2 day	3 day	4 day	5 day	6 day	7 day	8 day	9 day
On PDA(sterilized sclerotia)	-	-	-	-	-	+	+	+	+
On PDA(unsterilized sclerotia)	-	-	-	-	-	+	+	+	+
On filter paper	-	-	-	-	-	+	+	+	+

*(-) No germination

*(+) germination



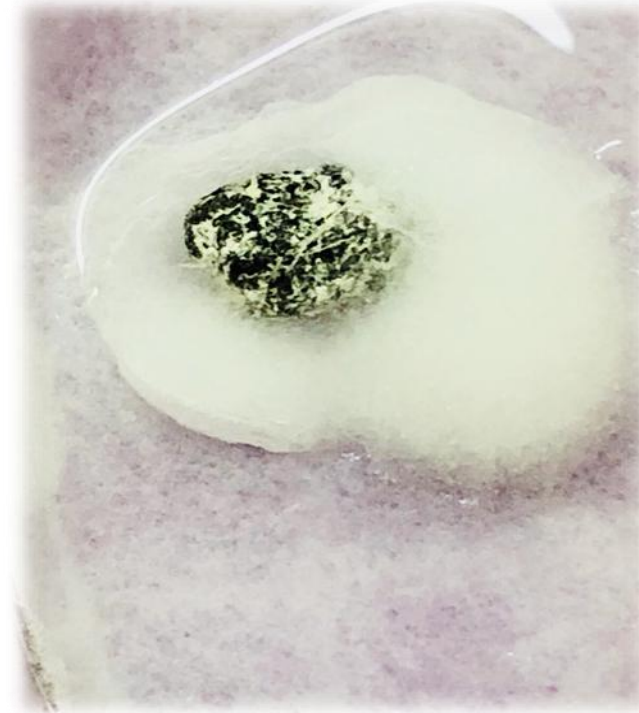
- Germination of sclerotia started on 6th day after putting sclerotia in petri-dishes and completed on all petri-dishes after 9 days



1



2



3



4



Incultation of eggplant seedlings in pots with *Sclerotinia Sclerotiorum*

Table 1 : The first reading for signs of growth after infection

	Height (in cm)	No.of branches from the main stem	Yield (in kg)
Control (un treated)	40	10	-
	43	10	-
	30	12	-
	55	15	-
	40	10	-
	Average =42	Average=11.5	Total yield = 1.015
Soil inoculation,	43	10	-
	30	8	-
	37	14	-
	55	12	-
	27	11	-
	Average=38.5	Average=11	Total yield=0. 485
Wounded stem	36	5	-
	38	8	-
	45	7	-
	30	8	-
	32	7	-
	Average=36	Average=7	Total yield=0.858



Table 2 :final readings for signs of growth after infection

	Height (in cm)	No.of branches from the main stem	Yield (in kg)
Control (un treated)	45	3	
	50	6	
	38	7	
	61	13	
	44	9	
	Average =47.5	Average =7.5	Total yield=,160
Soil inoculation,	50	6	
	40	9	
	40	5	
	54	11	
	35	6	
	Average=43.5	Average=7	Total yield=,160
Wounded stem	45	6	
	44	3	
	52	5	
	45	2	
	40	7	
	Average=45	Average=4.5	Total yield= ,255



Description of symptoms of infection with the disease:

As a general symptoms the most obvious & typical sypical? early symptoms is the appearance of white fluffy mycelia growth on infected plants.





2. On infected stems watery soft rot lesions appear on their bases than quickly covered with white cottony patches of fungal mycelium then it grows through the stem pith . the black sclerotia of the fungus could be clearly seen inside the stem pith of dead plant .

3. White cottony growths on their surfaces and the invaded tissues become soft and watery





Tabel 3: fungicides used for controlling Sclerotinia stem rot in the plastic-house (Faculty farm, Tulkarm).

Trade name of fungicide	Formulation of fungicide	Active ingredient and its concentration in the formulation	Concentration of fungicide used in controlling of the disease	Safety period in days after application
1. Mendazim 2. Score Dynone دلسان	Sp Ec مركز سائل مسحوق رطب	Carbendazim Difenoconazole Propamocarb Carbendazim	300cm ³ /Dm 100cm ³ /100 Liter 0.3cm ³ / seedling 0.3cm ³ /seedling	14day 15 day 1 month 14 day

*suspended powder

*Ec= مبيد مستحلب



Conclusions and recommendations of the project



1. The results from this study the germination of sclerotia started on 6th day in petri-dishes after 9 days
The number of branches in the eggplant planted in pots after planting fungus on the stem and in the soil has decreased .
In the green houses, the, soil sterilization can eliminate the pathogen from the soil ,this can inhibit sclerotia germination.
2. A Good control of the disease could be obtained by spraying infected plants with systemic fungicide such as Score or drenching them with the solution of these fungicides and we are used Mendazim .