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First Report of Incidence of *Botryis cinerea* the agent Gray Mold Disease on *Rosa damascene* Mill

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Abstract: The study was conducted to survey incidence of gray mold disease on *Rosa damascene* Mill caused by *Botryis cinerea*, in different nurseries. The gray mold disease was prevalent in all examined nurseries, the highest infection rate in Al-Tur nursery 43% and the in the Al-Hauraa nursery 12%. Seventeen isolates of the fungus were diagnosed *Botryis cinerea* from the leaves *Rosa damascene* showed symptoms of gray mold disease and were diagnosed through its phenotypic characteristics on the PDA and microscopic characteristics. The isolates ability to cause infection was tested on rose leaves showed variation, isolate T1 recorded the highest percentage of the infection 21.2% and the lowest percentage was in Z3 10.2% compared with the control.

Keywords: Rose, *Botrytis cinerea,* Gray mold, *Rosa damascene* Mill

Rosa damascene Mill, belongs to the Rosacea family of more than 200 species (Gudin 2000) and is cultivated mainly for the production of aromatic oils and rosewater from its flowers. Therapeutic properties of the *Rosa damascene* Mill plant and concluded that extracts have many beneficial health effects and have anti-bacterial, anti-oxidant and anti-inflammatory activity (Aridogan et al 2002, Boskabady et al 2006, Rusanov et al 2009). There are several studies of its chemical composition, containing 275 compounds (citronellol, geraniol, nerol phenethylalchol, linalool, farnesol, eugenol, methyl ether) essential components B-damascenon and B-ionone (Baydar et al 2004, Babaei et al 2007, Kiani et al 2008 and Rusanov et al 2009). Gray mold caused by *Botrytis cinerea* is an important disease affecting a number of plant families, including vegetable crops, fruit trees and ornamental plants (Brian 2007, Zitter 2011). The fungi is spread through the formation of abundant conidia and air and when it falls on the sensitive plant surfaces germinate the presence of water and penetrate the plant. The aim of this study is to uncover gray mold disease that affects *Rosa damascene* Mill in several nurseries and the reasons that led to the spread of this disease.

MATERIAL AND METHODS

Field survey: A field survey was carried out in randomly selected nurseries in Misan governorate, which were namely, Al-Tur, Al-Salam, Al-Zuhoor, Al-Hauraa, and Al-Rabee. *Rosa damascene* was carefully examined for symptoms of the disease and determine the extent of infection.

Isolating the pathogen *Botrytis cinerea:* The samples were brought to the laboratory, cut the infected plant parts with a length of 0.5-1cm and sterilized with sodium hypochlorite solution (Naocl 10%) for 2-3 minutes. The pieces of leaves were transferred to a sterile 9 cm diameter Petri dish containing PDA (200 g) potato (20 g) dextrose (20 g) agar, and added chloramphenicol (250 mg l^{-1}). The dishes were placed in the incubator at a temperature (27°C) for seven days.

Purification and diagnosis of *Botrytis cinerea*: Transferred the fungi tip to a petri dish containing the sterile PDA using a sterile needle then incubated for seven days, fungi were diagnosed depending on (Ellis 1971, Barnett and Hunter 1998).

Pathogenicity of *B. cinerea* isolates: The pathogenicity of *Botryis cinerea* isolates was studied on some leaves of *Rosa damascene* Baranski and Klocke (2006). A collection of free from infection plant leaves were collected with distilled water and then dried. The leaves were placed in Petri dishes containing sterile filter paper and one to leaf in each dish, and sprayed with water to ensure humidification. Transfer a disk with a diameter of 5 mm from the colony at the age of 7 days and place it in the areas of dissection of the plant-based leaf in a sterile petri dish and then incubate the dishes at a temperature of 25 m for a period of ten days, then the amount of fungi spinning growth was measured, and left a treatment compared to spraying the paper with sterile distilled water Only, the percentage of the infection zone was calculated according to the following formula: Percentage of injury area = length of injury area / total length of leaves x 100.

Field experiment: The pathogenicity of fungi isolates was tested by preparing infection-free seedlings of *R. damascene* plants, The seedlings were contaminated by spraying with spore suspension for each fungus Prepare the spore

suspension spores by mixing 10 ml of distilled water in a 9 cm diameter Petri dish containing a pure fungus farm and mixing well then transfer them to a beaker and complete the volume to 250 ml. Sprinkle plants with this spore suspension at a concentration of 3 x 10^{-6} spores ml^{-1} and leave the treatment compared to spraying the plants with sterile distilled water only, and leave the plants until symptoms appear.

RESULTS AND DISCUSSION

The maximum highest infection was in the nursery Al-Tur 43% and the lowest in Al-hauraa 12%. The spread of the disease in all nurseries may be due to the high humidity caused by the heavy irrigation of the plants and the contact of the leaves of the plants because of the proximity of the seedlings to each other as well as the wounds resulting from pruning plants. The fungus germs need high moisture or free water to sprout and grow the yarn and the germs germinate in a wide range of temperatures (Sosa et al 1995).

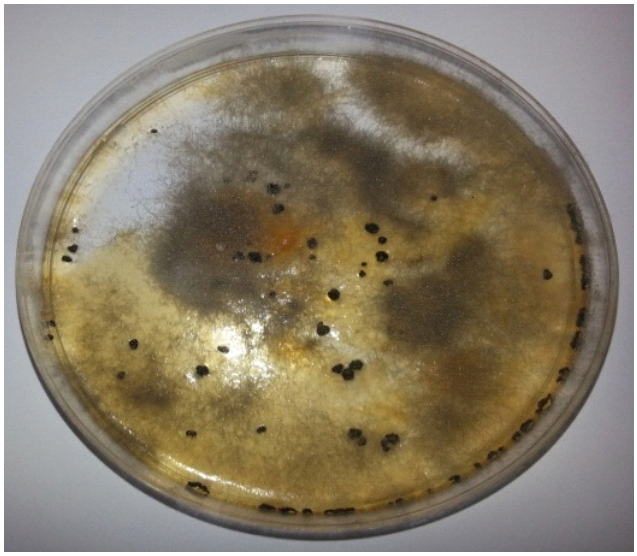
Isolation and diagnosis: Six isolates were obtained from Al-Tur (T) nursery, five isolates from Al-Salam (S) nursery, three isolates from Al-Zuhoor (Z) nursery, two isolates from Al-Hauraa (H) nursery and Al-Rabee (R) nursery. Pathogenic fungi were diagnosed by growing on the PDA by forming gray colonies into small sclerotia structures, mycelium septate

Table 1. Percentage of infestation of *Rosa damascene* with *Botrytis cinerea*

Name of nursery	Infection rate (%)
Al-Tur	43
Al-Zuhoor	22
Al-Salam	35
Al-Hauraa	12
Al-Rabee	18
LSD (0.05)	3.02

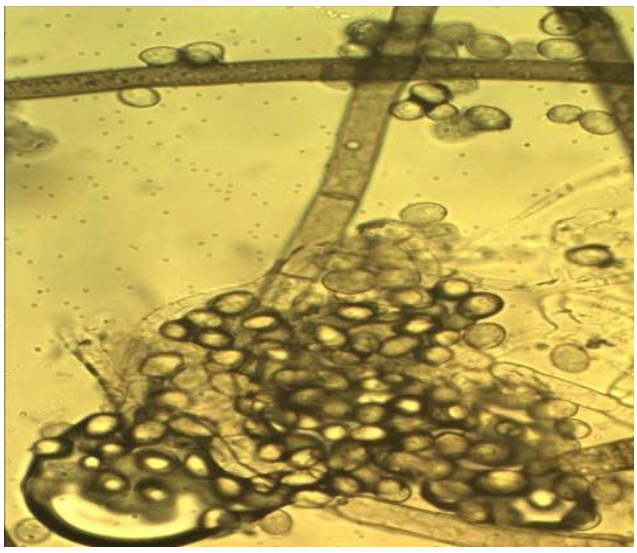
Table 2. Effect of *Botryis cinerea* isolation on leaves of *Rosa damascene*

Symbol of isolation	Percentage of infection area
T1	21.2
T2	20.5
T3	18
T4	15.6
T5	14.2
S1	15.3
S2	19.8
S3	19.4
S4	20.9
S5	14.7
Z1	10.4
Z2	17.1
Z3	10.2
H1	14
H2	15
R1	14.1
R2	15.5
Control	0
LSD (0.01)	4.5



A

The sclorotia of the fungus *Botrytis cinerea* on the PDA



B

Botrytis cinerea fungus and the conidiophore on 40X magnification

and branched conidiophore carriers carrying oval-shaped conidias (Fig. 2). The fungus grows on the cultivated medium PDA and forms gray to brown colonies and has small black stone bodies and the fungal spinning is divided and long and branched sporoid holders bearing spores that are ovoid in the form of grape clusters.

Pathogenesis of fungi *Botrytis cinerea:* Isolation T1 recorded the highest percentage of the infection area at 21.2% and the lowest percentage on the infection area of isolation Z3 was 10.2% compared with 0.00% in the control treatment of. The high pathogenicity of *B.cinerea* may be due to its production of mycotoxins and enzymes that break down plant cell walls such as pectinase, cellualses, xylanasas, lipase and protase (Manteau et al 2003). After three weeks of contamination, the symptoms of yellowing, wilting, and gray mildew were seen on the flower buds and no symptoms were seen in control treatment.

CONCLUSION

The prevalence of gray rot caused by the fungus in all nurseries included in the study, and may be due to the presence of plant remains in nurseries and repeated irrigation leads to increased humidity and thus increased infection The presence of plant residues in nurseries and frequent irrigation leads to increased humidity and thus increased infection.

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