

**(Scientific Report)****First Report of *Macrophomina phaseolina* Causing Crown and Root Rot of Strawberry in Tripoli, Libya****Mohammed A. E. Abied and Haifa M. Duzan**

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**Abstract:** *Macrophomina phaseolina* has been reported for the first time in three areas of strawberry production in east Tripoli (Al-Nasheh, Bir Al-Turki, Eslaisla). 90 percent of tested strawberry plants (cv. Fortuna) showed symptoms of wilting and collapse compared to control treatments. Morphological and pathogenicity tests confirmed that *Macrophomina phaseolina* is the causal agent of strawberry crown and root rot.

Strawberry (*Fragaria* × *ananassa*) is a newly introduced fruit crop in Libya. However, an increase in the death rate of strawberry plants has been recently observed in many important strawberry-growing areas such as Al-Nasheh, Bir Al-Turki, and Eslaisla fields in east Tripoli (Fig. 1). In the current study, nine sampling sites, each of one ha each, were selected to conduct the survey during the period from February to October 2020 in order to determine the main pathogen agent causing this serious problem. Crown and root sections of the infected plants showing symptoms of necrotic tissues and brown-red to dark brown discoloration of the vascular ring were collected (Fig. 2). The surface of the infected tissue fragments were sterilized with sodium hypochlorite (1%) for 2 min, rinsed twice with sterile distilled water, transferred to Petri dishes

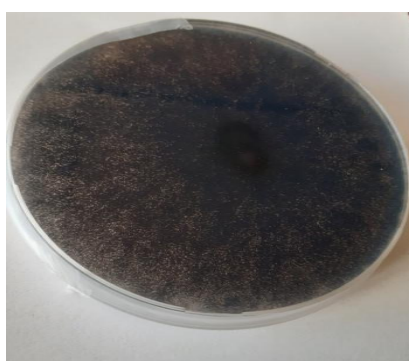
containing potato dextrose agar (PDA) and incubated at  $25 \pm 2^\circ\text{C}$ . Dark gray colonies with dark oblong-shaped sclerotia were recorded in 7-day-old cultures (Fig. 3). Inoculum was prepared by inoculating the pathogen in sterile wheat seeds for 21 days at  $24^\circ\text{C}$ . Ten pots of 1 kg capacity were filled with sterile fertilized soil and wheat at a rate of 5 g per pot and transplanted after four days with strawberry seedlings (cv. Fortuna). Control treatment of ten pots was prepared using inoculum-free sterile fertilized soil transplanted with strawberry. All treatments were grown in the greenhouse. Observations showed that ninety percent of strawberry plants had wilting and collapse symptoms a month after planting date, while no symptoms were observed in control plants.



**Figure (1):** Symptoms of charcoal rot in strawberry cv. Fortuna: wilted leaves that turn grey-green in colour (A), Plant death in later stages (B)



**Figure (2):** Photo shows the natural infected strawberry seedlings from which *M. phaseolina* was isolated and identified (C and D)



**Figure (3):** Colonies of *M. phaseolina* on PDA isolated from infected strawberry crowns incubated at  $25 \pm 2^\circ\text{C}$  for Seven days

Study indicated that the re-isolated fungus from affected plants was morphologically and culturally identical to the inoculated isolates in the sterilized wheat seeds. Morphological and pathogenicity tests confirmed that *Macrophomina phaseolina* is the main agent causing crown and strawberry root rot. Crown rot disease caused by *M. phaseolina* has been recently reported on strawberry in Tunisia (Hajlaoui *et al.*, 2015), Italy (Gerin *et al.*, 2018) and Pakistan (Qamar *et al.*, 2019). Due to the favorable climatic conditions, *M. phaseolina* is potentially will cause considerable loss in strawberry production in Tripoli. Although *M. phaseolina* was previously described on other crops in Libya, to our knowledge, this is the first report of *M. phaseolina* causing crown rot disease on strawberry in Tripoli, Libya.

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#### (تقرير علمي)

#### التقرير الأول لـ *Macrophomina phaseolina* المسبب لمرض تعفن ساق وجذور الفراولة في طرابلس، ليبيا

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تم تسجيل النوع *Macrophomina phaseolina* لأول مرة في ثلاث مناطق من إنتاج الفراولة في شرق طرابلس (النشة، بير التركي، إسلايسلا). أظهرت 90% من نباتات الفراولة المختبرة صنف فورتونا، أعراض الذبول والانهييار مقارنة بمعاملة الكنترول. أكدت الإختبارات المورفولوجية والمرضية أن *Macrophomina phaseolina* هو العامل المسبب لمرض تعفن ساق وجذور الفراولة.