Crown rot on pomegranate caused by *Coniella granati* in Turkey

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Abstract Crown rot symptoms were observed on *Punica granatum* from Aydın, Denizli, Manisa and Muğla provinces, Aegean region. *Coniella granati* was identified as the causal agent based on disease symptoms, morphological characteristics and pathogenicity tests. To our knowledge, this is the first report of crown rot on pomegranate caused by *Coniella granati* in Turkey.

Keywords *Punica granatum* · *Coniella granati* · Pomegranate · Crown rot

There are approximately 9946216 pomegranate (*Punica granatum* L.) trees in Turkey. The majority of these trees are grown in the Aydın, Denizli, İzmir, Manisa and Muğla provinces of the Aegean region, although there are pomegranate plantations in other areas in southern Turkey.

In early summer 2011, plants of pomegranate (*Punica granatum* L.) cv. Hicaz with symptoms of wilting and dieback of the branches were observed in some orchards of Aydın, Denizli and Manisa provinces. Close examination of these plants revealed distinct symptoms of crown rot. The symptoms were very similar to *Phytophthora* crown rot (insert reference describing *Phytophthora* crown rot).

Potential pathogens were isolated from the lower margins of the necrotic area by plating tissues of approximately 3 mm diameter onto potato dextrose agar. Plates were incubated at

25 °C for 7 days. The pathogen was identified as *Coniella granati* (Saccardo) Petrak & Sydow (synonym *Pilidiella granati* Saccardo) based on morphological characteristics. Yellowish cream-coloured fungal colonies with abundant dark brown to black spherical pycnidia (average 171.5–245 µm) were consistently isolated (Fig. 1). Hyphae were septate. Ellipsoid to fusiform single-celled hyaline conidia (average 10–17.5×2.5–5 µm) were observed (Fig. 2. Bar=20 µm). The isolate was stored in the CBS Fungal Biodiversity Centre (Netherlands) fungal collection as CBC 132860.

Koch's postulates were completed in the laboratory by inoculating 6 branches (8 mm in diameter) of three 2-year-old plants of pomegranate cv. "İzmir 1513". Using a 4-mm-diameter cork borer, a wound was created in the middle of each branch by removing the bark. A 4-mm-diameter agar plug bearing mycelia from a 7-day-old culture of *C. granati* was inserted into each wound. The wound was covered with transparent tape to prevent desiccation. Four branches (7–8 mm in diameter) of 2 trees were inoculated with sterile potato dextrose agar plugs to serve as controls. All plants were incubated at 22 °C for 17 days, at which time necrosis was observed on inoculated plants (Fig. 3). Koch's postulates were satisfied after reisolating the fungus from inoculated plants. Control plants produced no symptoms of disease. The disease, crown rot of pomegranate was also determined in Greece by Thomidis and Exadaktylou (2011).

Phytophthora spp. and *Armillaria mellea* (Anonymous 2008) also cause crown rot, wilting symptoms and dieback of the branches of pomegranate trees in Turkey. *Coniella granati* has been previously reported as a cause of postharvest decay of pomegranate (Yildiz and Karaca 1973) in Turkey. To our knowledge, this is the first report of *C. granati* causing crown rot of pomegranate plants in Turkey.

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Fig. 1 Fungal growth of *Coniella granati* on PDA

Fig. 2 Pycnidia and conidia of *Coniella granati*

Fig. 3 Pathogenicity test of *Coniella granati* on pomegranate cv. 'İzmir 1513' (left: inoculated plant; right: non-inoculated plant)

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