Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Rosellinia necatrix* Causing White Root Rot on Avocado in Italy

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Avocado (*Persea americana* Mill.) is a versatile crop that could replace lemon, especially along the east coast of Sicily island, and it is suitable for cultivation in other temperate areas of southern Italy (Calabria). During November of 2020, a rapid decline, yellowing, and leaf wilting were observed on ~2,000 potted 10- to 12-month-old avocado cultivar Zutano seedlings grown in a farm located in Catania province (eastern Sicily). More than 8% of the seedlings showed disease symptoms including leaf yellowing and general wilting. Dark brown lesions were present at the base of the trunk, with white mycelia extending under the bark. The infected roots were necrotic and covered with a fine layer of white mycelia. Crown and root rotting tissues of five seedlings were surface disinfected for 1 min in 1.5% sodium hypochlorite solution, rinsed in sterile water, and placed on potato dextrose agar (PDA) amended with 100 mg/liter of streptomycin sulfate and incubated at 25°C for 7 days. Fungal cultures consistently isolated from infected tissues were purified by using the hyphal tip method. All cultures showed pyriform swellings at the base of the septa of the hyper mycelia, which is characteristic of the genus *Rosellinia* De Notaris. Young mycelia were initially white and cottony but turned brown or black with age. Conidia were solitary, one-celled, aseptate, hyaline, and elliptical. Mean of a total of 50 conidia was 3 to 5 µm long × 2.5 to 3 µm wide. For five representative isolates, the internal transcribed spacer (ITS) region of rDNA and actin were amplified with primers ITS5/ITS4 (White et al. 1990) and ACT-512F/ACT-783R (Carbone and Kohn 1999), respectively. The sequences of the isolates were deposited in GenBank (accession nos. MW582604, MW582605, MW582606, MW582607,

and MW582608 for ITS and MW620212, MW620213, MW620214, MW620215, and MW620216 for actin). Nucleotide BLAST analysis showed 100% identity with *Rosellinia necatrix* Prill. (MF611983) for ITS, and the same result was obtained with actin (MG273315). Pathogenicity tests were performed on 12 potted, healthy, 1-year-old seedlings of avocado cultivar Zutano. A piece of crown bark was removed with a 6-mm-diameter cork borer, and a mycelial plug of the same size was placed in the wound. Twelve control plants were inoculated with a sterile PDA plug. All avocado plants were kept in a growth chamber with a 12-h photoperiod at 25 ± 1°C and watered weekly. Pathogenicity tests led to identical symptoms to those observed in the field. After 5 weeks, all inoculated plants showed yellowing and wilting of the leaves. After 10 weeks all plants were dead. The presence of white mycelia was noticed in the soil around the crown roots. Control plants remained symptomless. *R. necatrix* were successfully reisolated from all symptomatic tissues and identified as previously described. White root rot is a serious threat in the Mediterranean area (Pliego et al. 2009), and it is considered the main cause of endemic root rot in Spain (López-Herrera et al. 1998). In southern Italy, previous studies revealed the importance of other fungal diseases on the avocado crop (Aiello et al. 2020; Guarnaccia et al. 2016, 2018; Vitale et al. 2012). Moreover, the presence of *R. necatrix* could be a relevant limiting factor to the Sicilian avocado industry. To our knowledge, this is the first report of white root rot on avocado in Italy.

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