



First report of *Verticillium dahliae* causing Verticillium wilt on avocado (*Persea americana*) in Turkey

Fatih Mehmet Tok¹ · Sibel Derviş²

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Avocado (*Persea americana* Mill.) is an expanding crop in Turkey grown on 949 ha, yielding 4,209 tons of fruit annually (FAO 2021). In June 2021, 5% of 220 5-year-old trees of cv. Hass grafted onto the rootstock Fuerte (36°06'25.6"N 35°59'16.7"E) in Samandağ district of Hatay showed symptoms of twig and branch dieback with brownish black leaf and bark discoloration. Vascular tissues of branches bearing blackened dead twigs were sampled from five trees. Tissues were surface disinfected in 1% NaOCl for 2 min, rinsed with sterile distilled water (SDW), dried, placed on potato dextrose agar, and incubated at 25 °C. After 7 days, a slow-growing fungus was consistently recovered. Colonies were identified as *Verticillium dahliae* Kleb. on the basis of the presence of black microsclerotia (35.2 to 160.8 × 20.3 to 68.5 µm), verticillate conidiophores, and hyaline, elliptical, single celled conidia (2.9 to 7.3 × 2.2 to 3.8 µm) (Pegg and Brady 2002). Identification was confirmed by sequencing the internal transcribed spacer region (ITS) of rDNA amplified from one single-conidial isolate (AvVd01 deposited in the plant pathogenic fungal collection of the first author's institution) using universal ITS1/ITS4 primers. BLAST analysis of the amplicon sequenced (GenBank accession No. MZ664289) showed 100% identity with a sequence of *V. dahliae* from kiwifruit in Turkey (MK287620.1). To fulfill Koch's postulates, 15 healthy 1-year-old *P. americana* 'Hass' seedlings were inoculated by submerging trimmed roots in a conidial suspension of 10⁷ conidia/ml for 5 min

using AvVd01. Ten control plants were dipped in SDW in the same manner. Inoculated plants showed symptoms identical to those of naturally infected plants within a month. *V. dahliae* was reisolated from inoculated plants but not from controls. To our knowledge, this is the first report of *V. dahliae* causing wilt on avocado in Turkey (Farr and Rossman 2022). It is expected to cause more problems in avocado plantings previously dedicated to vegetable crops.

Declarations

Informed consent This manuscript is new and not being considered elsewhere. All authors have approved the submission of this manuscript.

Research involving human participants and/or animals The authors declare that no human participants and animals were involved in this study.

Conflict of interest The authors declare that they have no conflict of interest.

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✉ Fatih Mehmet Tok
ftok@mku.edu.tr

¹ Faculty of Agriculture, Department of Plant Protection, Hatay Mustafa Kemal University, Antakya, Hatay 31034, Turkey

² Department of Plant and Animal Production, Mardin Artuklu University, Vocational School of Kızıltepe, Mardin 47000, Turkey