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DISEASE NOTE

First report of *Fusarium oxysporum* associated with apple crown and root rot in Turkey

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In June 2022, symptoms of apple tree decline were observed on six years-old apple trees (*Malus domestica* L.) in a commercial orchard in Tuşba distinct of Van province, Turkey (38°29'13.6"N 43°22'50.9"E). It had an incidence of upto 4% of the trees belonging to Scarlet Spur, Fuji, and Golden Reinders cultivars. The symptoms included crown and root rot, wilting, deciduous foliage and growth retardation. Small pieces of wood from crown of four symptomatic trees were collected, superficially disinfected with 1% NaClO for 2 min, placed onto potato dextrose agar (PDA) and incubated at 24 °C. A total of 13 isolates resembled to *Fusarium*. Cultures were white to pink with aerial mycelium on PDA. Macroconidia were hyaline, straight or slightly curved, usually 3-septate with a curved and tapering apical cell and a foot-shaped basal cell, 25.4–39.5 × 6.7–9.4 µm ($n = 30$), while microconidia were elliptical, one-septate, 6.9–13.5 × 3.4–5.3 µm ($n = 30$) and formed on short monophialides in false heads. Chlamydospores were produced terminal or intercalary in hyphae. According to Leslie and Summerell (2006), the fungus was identified as *Fusarium oxysporum*. The translation elongation factor 1-α (EF1-α) and the second largest subunit of RNA polymerase II (RPB2) gene regions of the representative isolate A3 were amplified (Liu et al. 1999; Geiser et al. 2004) and deposited in GenBank under accession numbers OR757269 and OR757270, respectively. BLASTn search revealed 100% sequence identity with those of the strain CBS 242.59 of *Fusarium oxysporum.* The phylogenetic analysis of the combined sequence dataset verified the identification. To confirm the pathogenicity, the roots of five apple seedlings were wounded and dipped in 50 ml of the conidia suspension of 1×10^6 spores/ml from a 15-day-old culture. The inoculated seedlings were cultivated in a growth chamber at 25 °C. Controls were inoculated with sterile distilled water. After five weeks, the pathogen caused brown to red discolored areas on crown and root of apple seedlings. The pathogen was re-isolated and re-identified. No symptoms were observed in the control. To our knowledge, this is the first report of apple crown and root rot caused by *F. oxysporum* in Turkey.

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Declarations

Ethical statement This article does not contain any studies with human participants or animals.

Conflict of interest All authors declare that they have no conflict of interests.

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