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DISEASE NOTE

First report of *Macrophomina phaseolina* causing charcoal rot on common sage (*Salvia officinalis*) in Turkey

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Common sage (*Salvia officinalis* L.) is a perennial herb or sub-shrub native to the eastern Mediterranean. In July 2020, symptoms of chlorosis, wilting, and root rot appeared in 25% of two-year-old *S. officinalis* cv. Elif plants in two fields (N 36°53'42.457", E 38°55'34.777"; N 36°53'27.236", E 38°55'38.618") in Şanlıurfa, Turkey. Abundant black microsclerotia were observed on cortex and in vascular tissues of the symptomatic roots of plants sampled. Fungal colonies with similar cultural characteristics were consistently isolated from fragments of infected tissues on potato dextrose agar after superficially disinfection and incubation for 5 days in the dark at 26 °C. Mp-So01 and Mp-So02 isolates representing the two fields were identified as *Macrophomina phaseolina* (Tassi) Goid. (Smith and Wyllie 1999) by the presence of fluffy dark-grey mycelia and dark, smooth, and oblong-shaped microsclerotia (80-119 µm in diameter, $n = 50$). To confirm the morphological identity, the ITS region was sequenced with universal primers ITS1/ITS4 (White et al. 1990). BLASTn search of the sequences (GenBank Accession Nos. MZ379259-MZ379260) showed 100% homology with the sequence of *M. phaseolina* strain CBS 227.33 (KF531825). Pathogenicity of Mp-So01 and Mp-So02 was confirmed on three-month-old *S. officinalis* cv. Elif seedlings by inserting the colonised toothpicks into the stem of each plant with six replications. The control seedlings were inoculated using the same procedure with sterile toothpicks. Plants were maintained in a growth chamber at 26 °C with 16-h photoperiod. Root rot symptoms include wilted leaves were observed on all seedlings inoculated in three weeks; however, control seedlings remained asymptomatic. The same fungus was re-isolated from inoculated tissues to confirm Koch's postulates. To our knowledge, this is the first report of charcoal rot caused by *M. phaseolina* on *S. officinalis* in Turkey, and common sage is a new host for *M. phaseolina* worldwide (Farr and Rossman 2021).

Declarations

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

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

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

References

Farr DF, Rossman AY (2021) Fungal Databases, U.S. National Fungus Collections, ARS, USDA. https://nt.ars-grin.gov/fungaldatabases/. Accessed 12 June 2021

Smith GS, Wyllie TD (1999) Charcoal rot. In: Hartman GL, Sinclair JB, Rupe JC (eds) Compendium of soybean diseases, 4th ed. APS Press, St. Paul, MN, pp 29–31

White TJ, Bruns T, Lee S, Taylor J (1990) Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. In: Innis MA, Gelfand DH, Sninsky JJ, White TJ (eds) PCR protocols: a guide to methods and applications. Academic Press, San Diego, pp 315–322

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