



First report of leaf spot of *Aloe vera* caused by *Curvularia spicifera* in Pakistan

Roshan Ahmed¹ · Muhammad Naveed Aslam¹ · Anam Moosa¹ · Muhammad Taimoor Shakeel¹ · Ambreen Maqsood¹

Received: 3 February 2023 / Accepted: 20 April 2023 / Published online: 3 May 2023
© The Author(s) under exclusive licence to Società Italiana di Patologia Vegetale (S.I.Pa.V.) 2023

Keywords *Aloe vera* · *Curvularia spicifera* · Leaf spot

Aloe vera is a perennial, succulent, drought-tolerant plant that grows to a height of 60–100 cm. Its leaves are made up of rind, juice, and gel. During 2021–2022 a field survey of the botanical gardens of Bahawalpur, (29°22'13.7" N, 71°45'53.6" E) Punjab, Pakistan was conducted. On the upper leaf surface of *A. vera*, grey-black spots, 5 to 8 mm in diameter were observed on 125 plants with 95% disease incidence. Thirty infected leaves from 30 different plants with the same symptoms were collected and processed for isolation. Infected leaves were cut into 4 mm and surface sterilized with 2% NaOCl and rinsed thrice with distilled water. These pieces were placed on potato dextrose agar (PDA) medium and malt extract medium and incubated for five days at 25 °C ± 2. The resulting colonies had velvety, dark greyish-black mycelium. The conidia were ellipsoidal, elongated, light grey-black with four septations varying in size 18.2–30.7 × 7–11.6 µm, and narrower toward the ends. Based on morphological features the fungus was identified as *C. spicifera* (Aslam et al. 2020). For molecular identification, DNA extraction was done by CTAB method (Maqsood et al. 2020). The (internal transcribed spacer (ITS) genes, and translation elongation factor (TEF) were amplified and sequenced. Blast analyses of the respective isolate AVCS-1 (ITS GenBank accession No. OP365099), AVCS#2 TEF GenBank accession No. OQ108510) showed 100% similarity with the GenBank accession No. MN173125 and MN173002. The isolate AVCS-1 was submitted to Mycology culture bank of Department of Plant pathology, Bahawalpur. Pathogenicity was confirmed by injecting conidia

(10⁵ cfu/ml) of *C. spicifera* on young leaves. Untreated plants were used as the control. To prevent inoculum from spreading to control plants, the inoculated and uninoculated plants were placed in the separate greenhouse at 25 to 28 °C (> 80% humidity). Symptoms appeared after 5–7 days later and were comparable to those seen on naturally infected plants. AVCS-1 was re-isolated to confirm Koch's postulates. According to our knowledge, this is the first report of *C. spicifera* being found on *A. vera* plants in Punjab, Pakistan.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s42161-023-01396-z>.

Declarations

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

Research involving human participants and/or animals This article does not contain studies with human participants or animals.

Conflict of interest The authors declare no conflict of interest.

References

- Aslam HMU, Ali S, Atiq M, Mansha MZ, Aatif HM, Anwaar HA, Naveed K (2020) First report of brown leaf spot of rice caused by *Curvularia spicifera* in Pakistan. *J Plant Pathol* 102:939–940
- Maqsood A, Wu H, Kamran M, Altaf H, Mustafa A, Ahmar S, ..., Chen JT (2020) Variations in growth, physiology, and antioxidative defense responses of two tomato (*Solanum lycopersicum* L.) cultivars after co-infection of *Fusarium oxysporum* and *Meloidogyne incognita*. *Agronomy* 10(2):159

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ Ambreen Maqsood
ambreen.maqsood@iub.edu.pk

¹ Department of Plant Pathology, Faculty of Agriculture, The Islamia University of Bahawalpur, Bahawalpur, Pakistan