



First report of *Alternaria* sp. causing leaf blight disease on parthenium weed in India

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Congress grass, *Parthenium hysterophorus* (Asteraceae), is known as a notorious weed in India and around the world (Kaur *et al.*, 2014). From 2012 to 2014, a survey on the occurrence of the natural fungal pathogens of *P. hysterophorus* was conducted in Haryana state, India. During the survey, a severe leaf blight disease was regularly reported on parthenium leaves in different parts of the Kurukshetra district of Haryana (Fig. 1). A fungus was isolated from the infected leaves that yielded grey colonies on potato dextrose agar (PDA). Mycelium was septate and hyaline; conidia were solitary, dark brown, muriform with a tapering long beak and chlamydospores were produced abundantly in chains and clusters (Fig. 2). Conidia (17.5-62.5 x 10-17.5 µm) had one to six transverse septa and none or up to two longitudinal septa, with beak in the size range 0-20 x 5-7.5 µm. The conidial morphology showed that the pathogen belongs to the genus *Alternaria* (Ellis, 1971) as confirmed by CABI UK (IMI No. 503549). Molecular analysis of the ITS1-5.8S-ITS2 rDNA region carried out at CABI UK confirmed the pathogen as *Alternaria* sp. but failed to provide identification to species level. Subsequently, however on submitting the pathogen isolate to Macrogen Inc., Korea, sequence analysis (GenBank Accession No. KM213867) showed 99-100% similarity with *A. macrospora* strain B isolated from cotton (DQ156342). Unfortunately it is not clear whether this isolate was *A. macrospora* Zimm. or should be referred to other taxons (e.g. *A. macrospora* (Sacc.) Mussat) that are synonyms of *A. brassicae*.

In vitro pathogenicity of the *Alternaria* sp. isolate was demonstrated by placing seven-day-old mycelial plugs (5 mm) of the pathogen on detached parthenium leaves that produced symptoms from which the same *Alternaria* sp. was re-isolated. To confirm the *in vivo* pathogenicity of this isolate, a spore suspension of 2×10^5 spores/ml was sprayed on parthenium plants in pothouse conditions. Typical disease symptoms were observed on leaves and the inoculated pathogen was re-isolated, thus confirming pathogenicity to *Parthenium hysterophorus* and fulfilling Koch's postulates.

There are reports of *A. alternata* and *A. zinniae* attacking parthenium from Venezuela and India respectively (Urutiaga, 1986; Sharma & Gupta, 2008) but our isolate does not match either of these species descriptions (Ellis, 1971). However, this is the first record of another species of *Alternaria*, possibly *A. macrospora*, on parthenium weed. *A. macrospora* is known to be pathogenic to cotton and some malvaceous weeds (Walker & Sciombato, 1981). Work to date on this isolate (isolate MKP2) has shown that it is not pathogenic to cotton, wheat or sugarcane, suggesting potential for this isolate as a biocontrol for parthenium weed (Kaur *et al.*, 2014).

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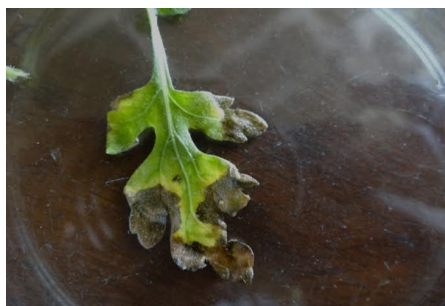


Figure 1



Figure 2



Figure 3

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