New Disease Reports

First report of *Choanophora* sp. causing twig blight of *Boerhavia diffusa* in India

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Boerhavia diffusa, commonly known as punarnava in Sanskrit, is a herbaceous member of the family Nyctaginaceae. It is widely distributed in the tropics and subtropics. It has a long history of uses by indigenous and tribal people and in Ayurvedic or natural herbal medicines (Dhar *et al.,* 1968). The worldwide use of *B. diffusa* roots to treat liver disorders was validated when researchers demonstrated that its root extract had antihepatotoxic properties (Chandan *et al*., 1991; Rawat *et al.,* 1997).

During a survey at Herbal Park in Jaipur, India, plants of *B. diffusa* were found infected with twig blight. The disease begins as foliar infections which then spread and kill twig tissues. When the fungus invades young twig tissue, terminals and branches distal to the point of infection become light green and finally red-brown. Small branches are generally girdled by the disease. Leaves in between the infected twigs are also infected, giving a blighted appearance. When a side shoot was infected, it progressed to the main branch (Fig. 1). It was noticed that infection increased after rains. Severe infection on the main shoot led to plant death. When roots of dead plants were examined, a small main root, completely devoid of secondary roots was observed. The disease caused significant reduction in weight and volume of roots, the plant part bearing the medicinal value. Twig blight lesions were surface sterilised (1% NaOCl) for one minute, rinsed in sterile water, and placed on potato dextrose agar. A fungus that produced cottony, white mycelium and black spore masses was consistently isolated from diseased tissue. The fungus was identified as *Choanephora* sp. based on morphology and colony characteristics using standard monographs and taxonomic keys (Kirk, 1984). The mycelium was non-septate, unbranched and hyaline. Secondary vesicles bore conidia that were smooth-walled, light brown, about 2.4 µm in diameter and typically obovate. Sporangiophores were non-septate 5-13 mm high, straight but not swollen and roughened at the base.Sporangia were numerous in culture measuring 20-45 x 150-200 µm in diameter, bearing few to many sporangiospores, that were ellipsoid in shape and brown to pale brown in colour, measuring 15-21 x 10-13 µm. The identity was further confirmed by the Fungal Identification Service, Mycology and Plant Pathology Group, Agharkar Research Institute, Pune, India (Accession No. ARIFCC 1015).

To test pathogenicity of the fungus, a monosporous sporangial suspension was prepared from culture media, and the sporangial concentration was adjusted to 3 x 10^5/ml using a haemocytometer. Twenty plants were inoculated by spraying 10 ml of the spore suspension per plant and then covering with polythene bags for 48 hours under greenhouse conditions. The same number of plants sprayed with sterile distilled water served as controls. Typical symptoms of twig blight appeared five days after inoculation. The symptoms that developed on the inoculated plants were similar to those observed at Herbal Park. Koch's postulates were fulfilled by re-isolating the fungal pathogen, which was identified as *Choanephora* sp. *Choanephora cucurbitarum* causing wet rot on *Capsicum annuum* has been reported in India (Prabhavathy & Reddy, 1995). However, *C. curbitarum* differs from the reported fungus on *B. diffusa* by sporangiophore characteristics and size of sporangia.To our knowledge and on the basis of the literature, this is the first report from India and worldwide showing that *Choanephora* sp. infects *B. diffusa.*

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Figure 1

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