

First report of powdery mildew of *Ageratum houstonianum* in India

Pankaj Baiswar^{A,B}, Satish Chandra^A and S. V. Ngachan^A

^AICAR Research Complex for NEH Region, Umiam 793103, Meghalaya, India.

^BCorresponding author. Email: pbaiswar@yahoo.com

Abstract. In November 2007, a severe outbreak of powdery mildew disease was observed on a weed species *Ageratum houstonianum*. Based on the morphological characters the pathogen was identified as a *Podosphaera* species. This is the first report of this organism causing powdery mildew on *A. houstonianum* in Meghalaya, India.

Ageratum houstonianum belongs to the Asteraceae, is native to South and Central America and extends as a common weed ~20° north and south of the equator (Johnson 1971). This species has been reported from 36 different crops in 46 countries (Holm *et al.* 1977; IRRI 1989). *Ageratum* species are also important as an alternate host of several economically important crop pathogens and nematodes. They are symptomless carriers of *Pseudomonas solanacearum*, bacterial wilt pathogen in India (Sunaina *et al.* 1989), some viruses (Logan *et al.* 1984) and of the root knot nematode, *Meloidogyne javanica*, in many parts of the world (Mamaril and Alberto 1989).

During November 2007, a severe outbreak of powdery mildew on *A. houstonianum* was observed in Barapani, Meghalaya, India. Powdery mildew symptoms were more severe on plants present in shady places. Disease symptoms included greyish white irregular patches consisting of epiphytic mycelia and conidia on both surfaces of the leaves (Fig. 1). Symptoms were also present on stems. Infected leaves later turned necrotic. A voucher specimen (HAL 2230 F.) has

been deposited in Martin-Luther-Universität, Institut für Biologie, Bereich Geobotanik Herbarium, Germany.

Conidia were harvested by dislodging them from infected tissue onto a strip of clear tape, using a camel hairbrush. The tapes were mounted on microscopic slides (Correll *et al.* 1987). Morphological characteristics of the pathogen such as location of mycelia on the host, shape of appressoria, presence of dimorphic conidia, size and shape of conidia and branching of conidiophores were recorded. Hyphae were up to 4.6–6.4 µm wide with simple appressoria (sometimes nipple shaped). Conidiophores were mostly erect, 96.4–158.8 × 16.4–28.8 µm, the foot cells were 38.6–74.3 µm, conidia were cylindrical in shape, 28.2–37.4 × 12.2–18.6 µm, and produced in chains (Fig. 2). Fibrosin bodies were present in conidiophores and conidia. Based on these morphological characters the fungus was identified as a powdery mildew belonging to the genus *Podosphaera* (Cook *et al.* 1997). No perfect stage (chasmothecium) was found. Pathogenicity was confirmed by dusting conidia on healthy plants of *A. houstonianum* and non-inoculated plants served as controls. Inoculated plants developed symptoms after a week whereas control plants remained healthy.

To our knowledge, this is the first record of powdery mildew of *A. houstonianum* caused by a *Podosphaera* species in India.



Fig. 1. Symptoms of powdery mildew on *A. houstonianum*.



Fig. 2. Conidiophore and conidia of *Podosphaera* sp. on *A. houstonianum*. Bar = 20 µm.

There is a possibility of involvement of this weed species as alternate host of powdery mildews infecting other plants.

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