Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Powdery Mildew Caused by *Podosphaera xanthii* on *Cuphea hyssopifolia* (Lythraceae) in China

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Cuphea hyssopifolia (Mexican heather) is a popular evergreen perennial shrub used for ornamental and medicinal purposes. Due to its high ornamental value, it is often used as a ground cover in parks and gardens in China. During February and March 2019 and 2020, powdery mildew was observed on *C. hyssopifolia* in the districts of Minhou and Jinshan of Fuzhou, China. Disease incidence was 70% but of low severity, with only a few older leaves showing yellowing and wilting. Sparse irregular patches of white superficial powdery mildew were observed on both sides of mature and young leaves. The powdery mildew fungal appressoria that occurred on epigenous hyphae, were indistinct to nipple-shaped, hyaline, and smooth. Conidiophores were erect, smooth, 80 to 210 µm long × 10 to 12 µm wide, and produced two to eight crenate-shaped conidia in chains. Foot cells of conidiophores were straight, cylindric, and 30 to 65 µm long × 10 to 12 µm wide. Conidia were hyaline, smooth, ellipsoid-ovoid to barrel-shaped, 25 to 38 µm long × 16 to 20 µm wide, with distinct fibrosin bodies. Germ tubes were simple to forked and were produced from the lateral position of the germinating conidia. No chasmothecia were observed on the surface of infected leaves. Based on the morphology of the imperfect state, the powdery mildew fungus was identified as *Podosphaera xanthii* (Castagne) U. Braun & N. Shishkoff (Braun and Cook 2012). To confirm this identification, total DNA was extracted

(Mukhtar et al. 2018) directly from epiphytic mycelia on infected leaves collected from both districts. Internal transcribed spacer (ITS) regions and the partial large subunit (LSU) rDNA were amplified using ITS1/ITS4 and LSU1/LSU2 primers (Scholin et al. 1994; White et al. 1990) respectively, and the resulting sequences deposited in GenBank (ITS: MW692364, MW692365; LSU: MW699924, MW699925). Fungal ITS and LSU sequences were 99 to 100% identical to those of *P. xanthii* deposited in GenBank (ITS: MT568609, MT472035, MT250855, AB462800; LSU: AB936276, JX896687, AB936277, AB936274). Koch's postulates were completed by gently pressing diseased leaves onto leaves of five healthy potted *C. hyssopifolia* plants that were held in a greenhouse at 24 to 30°C without humidity control. Five noninoculated plants served as controls. Inoculated plants developed symptoms after 6 to 10 days, whereas the controls remained symptomless. The morphology of the fungus on the inoculated leaves was identical to that observed on the originally diseased leaves. *Podosphaera* sp. and *P. xanthii* have been reported on *C. rosea* and *C. hyssopifolia* from the United Kingdom (Beales and Cook 2008) and Taiwan (Yeh et al. 2021), respectively. To our knowledge, this is the first report of powdery mildew caused by *P. xanthii* on *C. hyssopifolia* in mainland China. Our field observations suggest that the *P. xanthii* infections would be a potential threat to the health of *C. hyssopifolia* in China.

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