Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Powdery Mildew Caused by *Erysiphe euonymicola* on Wintercreeper (*Euonymus fortunei*) in China

D. L. Pei, M. Y. Chen, X. M. Ma, and Q. C. Hong[†]

Henan Provincial Engineering Research Center for Development and Application of Characteristic Microorganism Resources, Key Laboratory of Plant-Microbe Interactions, School of Biology and Food, Shangqiu Normal University, Shangqiu, Henan 476000, China

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Wintercreeper [*Euonymus fortunei* (Turcz.) Hand.-Maz.] is an evergreen shrub, a semiclimbing plant with very strong vitality. It can tolerate a broad range of environmental conditions from full sun to deep shade, so it is a good groundcover plant used for vertical greening. It is widely used in urban greening in China. In May 2021, severe powdery mildew signs were found on wintercreeper plants in a garden of Luohe city of Henan province, China. Approximately 40% of leaves on a plant were symptomatic, and about 60% of the plants were infected. Powdery mildew colonies appeared as white spots on the upper surface of the leaves and stems of the plants in the initial stage. Later, mycelial growth was amphigenous, thick, forming irregular white patches, and effused to cover the entire leaf surface. At last, leaves turned yellow and senesced. A representative voucher specimen was deposited at the herbarium of Shangqiu Normal University (SQNU), Shangqiu, Henan, China, under the accession number EF02. Conidiophores arise terminally from the mother cell, mostly central, erect, straight, 40.7 to 67.7 (average 49.1) × 6.1 to 8.5 (average 7.5) μm (*n* = 30), composed of three to four cells and producing conidia singly. Conidia are obovoid-ellipsoid, apex rounded, base subtruncate, ends truncate or subtruncate, length 26.1 to 36.4 (average 30.7) μm, and width 9.9 to 16.0 (average 11.8) μm (*n* = 30). No chasmothecium was observed. The morphological characteristics and measurements were consistent with those of *Erysiphe euonymicola* U. Braun (Braun and Cook 2012). The internal

transcribed spacer regions of EF02 were amplified using primers ITS1/ITS4 and sequenced directly. The obtained sequence of 648 bp was deposited in GenBank (accession no. OM304857). EF02 had similarities of 99.83% with *E. euonymicola* on *E. fortunei* var. *radicans* (KM361621 from Korea) (Lee et al. 2015), 99.23% with *E. euonymicola* on *E. fortunei* (MT510003 from the United States), and 99.23% with *E. euonymicola* on *E. japonicus* (LC270841 and LC270834 from Azerbaijan and AB250228 from Japan). The 619 bp sequence containing domains D1 and D2 of the 28S rDNA was obtained from EF02 with primer NL1/NL4, which was deposited in GenBank (OM302187). An NCBI BLAST search of the EF02 isolate showed 100% similarity with a 28S rDNA sequence of *E. euonymicola* on *E. japonicus* (AB250230 from Japan) (Limkaisang et al. 2006). The 28S phylogenetic tree analysis placed EF02 in the same branch with *E. euonymicola*. Pathogenicity was confirmed by gently pressing the infected leaves onto five healthy plants. Five uninoculated plants served as controls. Ten inoculated and noninoculated plants were placed in different growth chambers with a 14-h photoperiod at 22 ± 2°C and 60% relative humidity. After 11 to 13 days, powdery mildew colonies developed on inoculated plants. Noninoculated control plants did not show any symptoms. The fungus on inoculated leaves was morphologically identical to that first observed in the field. Although *E. euonymi-japonici* (synonym *E. euonymicola*) has been recorded on *E. japonicus* in China (Li et al. 2011), this is the first report of powdery mildew caused by *E. euonymicola* on *E. fortunei* from China. It could become a threat to the widespread planting of wintercreeper. A similar report was made in Korea (Lee et al. 2015).

References:

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[†]Indicates the corresponding author.
Q. C. Hong; hongquanchun@163.com