

Disease Notes

Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Rust Caused by *Coleosporium campanulae* on *Campanula trachelium* in Italy

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Nettle-leaved bellflower (*Campanula trachelium*) is a hardy plant belonging to the Campanulaceae, cultivated in gardens for its large and showy flowers. During September 2020, symptoms of a rust were noted on about 90% out of around thirty 7- to 8-month-old plants of *C. trachelium* growing in a private garden located in the Biella province (northern Italy; 45°36'00"N, 8°03'00"E). Symptoms consisted of leaf chlorosis and round pustules typical of rusts on the abaxial leaf surfaces of infected plants. The percentage of infected leaves was about 70%, whereas the disease severity on affected leaves ranged from 5 to 20%. Orange uredinia were circular to elliptical and were 0.2 to 0.5 mm in diameter. Urediniospores were orange in color, ovoid to ellipsoid, and measured 16.2 to 30.0 × 14.1 to 23.2 (average 23.7 × 18.8) μm (*n* = 50). Teleutospores were not observed. On the basis of its morphology, the causal agent of the disease was determined to belong to the genus *Coleosporium* (Cummins 1978). The urediniospores of the pathogen were gently collected from affected leaves, and the DNA of the fungus was extracted using the E.Z.N.A. Fungal DNA Mini Kit (Omega Bio-Tek, Darmstadt, Germany). PCR was performed with primers ITS1/ITS4 (White et al. 1990), obtaining a 578-bp sequence (GenBank accession no. MW056179). The BLASTn analysis of this sequence showed 99.48%

similarity with *Coleosporium campanulae* (KY810468). Pathogenicity was confirmed through inoculations by gently pressing diseased leaves onto leaves of three healthy 6-month-old plants of *C. trachelium*. Three noninoculated plants served as a control. All plants were covered by plastic bags for 7 days and maintained at temperatures ranging from 15 to 25°C. About 10 days after inoculation, typical rust symptoms developed on inoculated plants, whereas controls did not show symptoms. The pathogenicity test was carried out twice, obtaining the same results. The rust DNA on newly affected plants was identified as *C. campanulae* by using primers ITS1/ITS4, obtaining a 625-bp sequence (GenBank accession no. MW337297). *C. campanulae* is reported in several countries, on many host plants including *C. trachelium* (Farr and Rossman 2020). In Italy, this pathogen has been recently detected on *C. rapunculoides* (Garibaldi et al. 2017). To our knowledge, this is the first report of rust caused by *C. campanulae* on *C. trachelium* in Italy. The spread of *C. campanulae* to *Campanula* spp. complicates the management of this disease, discouraging the use of these ornamentals in public gardens, where their cultivation is increasing, especially for mixed borders in low-maintenance gardens. Voucher specimens are available at the Agroinnova Collection, University of Torino.

References:

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