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Page 821
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DISEASE NOTES

First Report of Botrytis Blight Caused by *Botrytis cinerea* on Purple Coneflower (*Echinacea purpurea*) in Italy

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Purple coneflower (*Echinacea purpurea* L.) is an herbaceous perennial plant in the Asteraceae family, originating from North America, of interest as an ornamental in private and public gardens, for the cut-flower market, and as a medicinal herb. From June to September 2017, symptoms of a previously unknown blight were observed on 6- to 10-month-old plants grown in a private garden located near Biella (northern Italy), 900 m a.s.l. (45°36′00″N 8°03′00″E). About 20 to 30% of the 80 to 100 plants grown in the garden were affected, with 40 to 60% of leaves infected at the flowering stage between July and September. Affected leaves had irregular, water-soaked spots that became brown and necrotic. Petioles, stems, and flowers also developed tan to brown lesions. Severely infected tissues eventually completely rotted, and later desiccated. A soft, gray mycelium was observed on symptomatic tissues. Ten samples of affected leaves were collected throughout summer to perform isolations. Affected tissues were immersed in 1% sodium hypochloride for 10 s, rinsed in sterile water, and immediately plated on potato dextrose agar (PDA) medium amended with 25 mg/liter of streptomycin sulfate. After 7 days at 23°C and a 12 h photoperiod, a fungus with abundant mycelium was consistently isolated. Within 10 days, massive amounts of conidia were produced on branched conidiophores with enlarged apical cells. Conidia (n = 40) were smooth, ovoid to elongate, light ash-colored, unicellular, measuring 6.9 to 14.2 × 5.2 to 9.8 (avg. 7.4 × 10.4) µm. Sclerotia were not observed. These morphological characteristics are typical of those described for *Botrytis cinerea* (Ellis and Waller 1974). The internal transcribed spacer (ITS) region of rDNA of the monoconidial isolate IT11/17, selected as representative, was amplified using the primers ITS1/ITS4 (White et al. 1990). The PCR product was purified and sequenced using the sequencing services BMR Genomics (Padova, Italy). BLASTn analysis (Altschul et al. 1997) of the 458-bp product showed a 100% similarity with the sequence of *B. cinerea*(GenBank accession no. KY364366.1). The nucleotide sequence was deposited with the GenBank accession number MF945557. Pathogenicity tests were carried out in September with temperatures between 13 and 27°C. Five 6-month-old healthy *E. purpurea* plants in 20-liter pots were sprayed with an aqueous suspension of 1 × 10^5 conidia/ml prepared from 10-day-old PDA culture. Five plants sprayed with water served as controls. Plants were covered with

plastic bags for 5 days after inoculation. Symptoms of leaf necrosis were observed on leaves 7 to 10 days after inoculation, while control plants remained healthy. The pathogenicity test was carried out twice with the same results. *B. cinerea* was consistently reisolated from affected leaves in both tests. This pathogen was previously reported on *E. pallida* var. *angustifolia* in Canada, showing typical symptoms of Botrytis blight on artificially inoculated plants of *E. purpurea* (Chang et al. 1997) and it is, at present, a common disease of purple coneflower in North America. To our knowledge, this is the first report of *B. cinerea* on *E. purpurea* in Italy and probably in Europe. According to our observations, the severity of the disease is limited under dry conditions, especially on plants grown in sunny exposures but symptoms developed rapidly under humid conditions. Moreover, its importance might rise due to the increased use of this species in private and public gardens.

***References*:**

Altschul, S. F., et al. 1997. Nucleic Acids Res. 25:3389. https://doi.org/10.1093/nar/25.17.3389 [Crossref] [ISI] [Google Scholar]

Chang, K. F., et al. 1997. Plant Dis. 81:1461. https://doi.org/10.1094/PDIS.1997.81.12.1461C [Abstract] [ISI] [Google Scholar]

Ellis, M. B., and **Waller, J. M.** 1974. CMI descriptions of pathogenic fungi and bacteria, No. 431. Kew, Surrey, England. [Google Scholar]

White, T. J., et al. 1990. Page 315 in: PCR Protocols: A Guide to Methods and Applications. **M. A. Innis**, et al., eds. Academic Press, San Diego. [Crossref] [Google Scholar]