Diseases Caused by Fungi and Fungus-Like Organisms

First Report of White Mold Caused by *Sclerotinia sclerotiorum* on Everlasting Flower in Italy

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Everlasting flower (*Helichrysum bracteatum*) belongs to the family Asteraceae and is grown as an ornamental potted plant in northern Italy. The colorful inflorescences with straw-like bracts make this species suitable for the production of dried flowers. During January 2020, symptoms of white mold were observed on about 2% of 5,000 3-month-old potted plants of *H. bracteatum* grown in a nursery located in Albenga (northern Italy). Initial symptoms consisted of yellowing and withering of affected leaves, which successively wilted and collapsed. Under high relative humidity, a white cottony mycelium covered the affected tissues and the surface of potted soil. The mycelium produced spheroidal to elongated dark gray sclerotia measuring 3 to 5 mm. Affected leaves and stems were sterilized for 10 s in 1% sodium hypochlorite. Then, small fragments (about 3 × 3 mm in size) were excised from the margin of affected tissues and plated on potato dextrose agar (PDA) amended with 25 mg/liter of streptomycin sulfate. Several white, fluffy, cottony fungal colonies were obtained that produced spheroidal to elongated dark gray sclerotia, measuring 3 to 6 mm after 7 days of growth in vitro. Signs observed on affected plants and morphological characteristics of the isolates described above were typical of *Sclerotinia sclerotiorum* (Mordue and Holliday 1976). The DNA of the isolate DB20GEN02 was extracted using the E.Z.N.A. Fungal DNA Mini Kit (Omega Bio-Tek, Darmstadt, Germany). The internal transcribed spacer region of rDNA was amplified using the primers ITS1/ITS4 (White et al. 1990) and sequenced. BLAST analysis of the 518-bp segment (GenBank accession no. MT101751) showed 100% identity with the sequence of *S. sclerotiorum* CP017820 of the reference isolate 1980 UF-70 listed in Derbyshire et al. (2017), confirming the morphological identification. The

pathogenicity of isolate DB20GEN02 was confirmed by inoculating three 4-month-old healthy plants of *H. bracteatum* that were transplanted in pots containing 3 liters of steamed disinfested soil. The inoculum consisted of mycelium with sclerotia grown for 10 days in sterilized wheat kernels that were mixed with the soil (2.5 g in 1 liter of soil). Three plants treated with sterilized kernels without the fungus served as controls. All the plants were closed in moist plastic bags for 7 days and maintained at temperatures ranging between 21 and 25°C. About 10 days after the inoculation, the first symptoms of yellowing and withering appeared on inoculated plants, followed by leaf wilting. A white, soft mycelium developed on affected leaves, producing dark sclerotia within 8 days, and *S. sclerotiorum* was reisolated from the affected tissues. Finally, inoculated plants died about 20 days after the inoculation. Controls remained symptomless, and the attempt to reisolate the pathogen from them gave no results. The pathogenicity test was carried out twice with the same results. *S. sclerotiorum* was previously reported on *H. bracteatum* in some other countries such as China (Tai 1979), Taiwan (Anonymous 1979), Japan (Takeuchi and Horie 1999), Argentina (Cúndom and Cabrera 2002), and Brazil (Duarte and Barreto 2009). To our knowledge, this is the first report of *S. sclerotiorum* on *H. bracteatum* in Italy. In northern Italy, the cultivation of *H. bracteatum* is limited to small local growers, and the spread of this disease may become a serious limiting factor and discourage them from producing this species.

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