Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Fusarium proliferatum* Causing Crown and Stem Rot of *Echeveria desmetiana* in China

N. Liu,^{1,2,†} W. Q. Gao,¹ Q. Qu,¹ Q. Q. Zhang,¹ Z. Y. Cao,^{1,2} and J. G. Dong^{1,2}

¹ Mycotoxin and Molecular Plant Pathology Laboratory, Hebei Agricultural University, Baoding 071000, China

² Plant Protection College, Hebei Agricultural University, Baoding 071000, China

Plant Dis. 104:3260, 2020; published online as <https://doi.org/10.1094/PDIS-06-20-1232-PDN>. Accepted for publication 2 July 2020.

Echeveria desmetiana De Smet is an indoor ornamental succulent plant that belongs to the Crassulaceae. Cultivation of succulent plants is popular in China and has considerable market value. In June 2017, flowering *E. desmetiana* in a nursery located in Beijing developed symptoms of yellowing and leaf wilt followed by collapse of the leaf and stem within a few days. Some of the infected leaf bases were covered by white mycelium. This disease occurred in about 20% of *E. desmetiana* after the plants were transplanted for sale. Small pieces with a diameter of about 0.5 cm of wilted tissue were surface sterilized using 75% ethanol and 0.1% HgCl₂, plated on potato dextrose agar (PDA), and incubated at 25°C. A fungus was consistently isolated that had white mycelial growth and a pink or purplish tint on PDA. Sparse macroconidia produced on carnation leaf-piece agar were sickle and almost straight, 25.3 to 40.6 µm long, 2.1 to 4.1 µm wide, and three to five septate. Microconidia were elliptical or reniform, 5.0 to 9.7 µm long and 1.5 to 3.1 µm wide without septa. Genomic DNA was extracted from two isolates after subculturing single spores. RNA polymerase II subunit (RPB2) was amplified using universal primers RBP2-5F/RBP2-

7CR, and elongation factor-1α (EF-1α) was amplified using universal primers EF1/EF2 (Ida et al. 2016; Liu et al. 1999). Amplified products (1,147 and 714 bp) were purified and sequenced (GenBank accession nos. MT551187 and MT551186) for RPB2 and EF-1α, respectively. A BLASTn search revealed 100% sequence identity with *Fusarium proliferatum* available in GenBank (accession nos. MN245721.1 and MK952799.1). The morphology and DNA were consistent with *F. proliferatum* (Leslie and Summerell 2006). Pathogenicity tests were conducted twice with six replications per treatment. A conidial suspension (5×10^7 conidia/ml) was prepared by washing a culture on sterilized sorghum after growing for 15 days. Then the roots of *E. desmetiana* were wounded with a sterile needle and inoculated with 0.2 ml of the conidial suspension or sterile water for the negative control. Plants were incubated at $25 \pm 2^\circ\text{C}$ and a 16-h photoperiod. After 7 days, the bottom leaves became yellow, and 20 days later, typical wilted symptoms were observed on all the inoculated plants, but no symptoms were observed on the control plants. *F. proliferatum* was reisolated from three leaves of the diseased plants that had wilted and rotted 45 days after inoculation, completing Koch's postulates. *F. proliferatum* is reported as a widespread soilborne pathogen that causes wilt on several crops including maize, wheat, and garlic (Stepień et al. 2011). To our knowledge, this is the first report of wilt and blight caused by *F. proliferatum* on *E. desmetiana* in China.

References:

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The author(s) declare no conflict of interest.

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Keywords: *Echeveria desmetiana*, stem rot, *Fusarium proliferatum*

[†]Indicates the corresponding author.
E-mail: lning121@126.com (N.L.)