Disease Note

Diseases Caused by Fungi and Fungus-Like Organisms

Occurrence of *Colletotrichum siamense* Causing Leaf Spots on Soursop (*Annona muricata*) in Mexico

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Soursop (*Annona muricata* L.; Annonaceae) is a small tropical fruit tree native to South America (Pinto 2005). The flesh of its fruits is widely used as a main ingredient in pastries, and even unripe fruits are used as a vegetable. In June 2022, leaf spots symptoms were observed on 50 soursop plants in a commercial nursery located in Juan José Ríos (25°45′20″N, 108°50′21″W), Ahome, Sinaloa State. The incidence of the disease was 75%, while the severity was 12%. Symptoms were round, small, black, necrotic spots that grew up to 6 mm in diameter with brown or gray color at the center. Fungal isolation was done on potato dextrose agar (PDA), and *Colletotrichum*-like colonies were obtained. Five isolates were recovered and purified by single-spore culture, and only a single morphotype was observed. One random isolate was selected for pathogenicity tests and morphological and molecular characterization. The isolate was deposited in the Culture Collection of Phytopathogenic Fungi of the Biotic Products Development Center at the National Polytechnic Institute under accession number IPN 13.0102. Colonies in PDA at 25°C grow at a rate of 9.0 to 14.0 mm/day. After 14 days, the colony was olive to gray with orange conidial masses, and conidia (n = 100) were hyaline, aseptate, cylindrical, and straight with rounded ends, measuring 11.5 to 18.5 and 3.5 to 5.5 µm. Appressoria were melanized and circular or oval in shape, measuring 6.0 to 4.0 µm (n = 20). According to the morphological characteristics observed, the isolate was placed tentatively within the *C. gloeosporioides* species complex (Weir et al. 2012). For molecular confirmation, genomic DNA was extracted, and the internal transcribed spacer (ITS) region (White et al. 1990), partial sequences of actin (ACT) (Weir et al. 2012), and glyceraldehyde-3-phosphate dehydrogenase (GAPDH) genes were amplified and sequenced. Sequences were deposited in GenBank under the following accession numbers: ITS, OQ606966; ACT, OQ617292; and GAPDH, OQ617293. A phylogenetic tree including published sequences of the *C. gloeosporioides* species complex was constructed according to Talhinhas and Baroncelli (2021), and the isolate IPN 13.0102 was grouped in a clade with the ex-type culture of *Colletotrichum siamense* (ICMP18578) and *C. pandanicola*. However, *C. pandanicola* was recorded only as an epiphytic fungus occurring on leaves of *Pandanus* sp. (Pandanaceae) (Tibpromma et al. 2018), and there are no additional reports of this fungus as a plant pathogen on *Pandanus* sp. or any other plants. Therefore, the isolate IPN 13.0102 corresponds to *C. siamense*. Pathogenicity was demonstrated by spraying a conidial suspension (1×10^5 conidia/ml) onto four healthy soursop plants, while two control plants were sprayed using sterile distilled water. All plants were kept in a wet chamber for 48 h at 28 ± 2°C and 85% relative humidity. The characteristic symptoms of the disease were observed 14 days after inoculation, whereas the control plants remained healthy. The pathogenicity test was repeated twice, obtaining the same results. The morphology of the recovered fungus was consistently identical to that originally isolated from diseased leaves, fulfilling Koch's postulates. *C. siamense* has been previously reported on *Annona* spp. in Brazil (Costa et al. 2019). To our knowledge, this is the first report of *C. siamense* causing leaf spots on *A. muricata* in Mexico. Further studies for monitoring and control strategies of leaf spots on soursop are required.

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