DISEASE NOTE

FIRST REPORT OF XANTHOMONAS GARDNERI CAUSING BACTERIAL LEAF SPOT ON BURDOCK IN IRAN

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Common burdock (Arctium lappa) also called cockle button and stick button is a biennial weed species in the family Asteraceae. In 2012, angular leaf spots have been observed on this species in Firuzkuh. The symptomatic sample of burdock were collected and the causative bacterium was isolated on sucrose nutrient agar (NNA). The resulting circular, mucoid, yellowish colonies were subjected to biochemical tests in comparison with Xanthomonas gardneri IBSBF 1782. All isolates were Gram-negative and were positive for casein hydrolysis and Tween 80 hydrolysis. In addition, they utilized inulin, maltose and malate but not glutamate and myo-inositol (Schaad et al., 2001). DNA was isolated from the isolates by thealkalilysis method (Arabi et al., 2006) and used in PCR with gyrB primers (Young et al., 2008) to amplify a fragment of this gene. The amplified fragments were sequenced and the nucleotide sequences for isolate SLYZ-2 (Summerell et al., 2003). BLASTn analysis of the ITS gene (KT459352) with cognate sequences of the genus Xanthomonas. Pathogenicity tests to burdock and their hypersensitive reaction on geranium (pelargonium × bortorum) were proven. Leaves of burdock plants were inoculated by injection with bacterial suspensions, diluted to contain approximately 10⁶ colony-forming unit (cfu) per milliliter. All strains of the bacterium isolated from burdock induced leaf spot symptons while controls remained symptom free. The fungus could be re-isolated from symptomatic leaves but not from the controls. Its identity was further investigated by sequence comparison of the ITS (primers ITS1/ITS4), RPB2 (primers 5F/7CR) and TEF gene (primers EF1-728F/EF1-986R) of isolate SLYZ-2 (Summerell et al., 2003). BLASTn analysis of the ITS gene (KT459352) with cognate sequences available in the GenBank database revealed 99% sequence identity to Fusarium oxysporum but only 95.9% sequence identity to F. incarnatum-equiseti in the Fusarium-ID database. BLASTn analysis of the RPB2 (KX768542) and TEF gene (KX768543) revealed 99.66 and 100% sequence identity, respectively, to F. oxysporum in both GenBank and Fusarium-ID database. Therefore, both molecular and morphological observations indicated that the pathogenic fungus was F. oxysporum. F. oxysporum was reported to cause leaf twisting on Allium cepa var. ascalonicum in U.S.A. (Kuruppu, 1999) and leaf spot on Dracaena arborea cv. massangeana (Wu et al., 2015). To our knowledge, this is the first report of F. oxysporum on P. utilis from Yunnan, China as well as worldwide.

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DISEASE NOTE

FIRST REPORT OF FUSARIUM OXYSPORUM CAUSING REDDISH-BROWN LEAF SPOT DISEASE ON SCREW-PINE IN CHINA

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Common screw-pine (Pandanus utilis Bory) is a common ornamental tree in southwest China. Since April 2013, small and yellowish spots were observed on the leaf edge or base of common screw-pine grown in Yunnan Province, China. The lesions gradually increased in size and turned reddish-brown, then white and dry in the center but remaining reddish-brown at the margins. A fungus was consistently isolated from these lesions; on PDA, its macrospores were sickle-shaped, most 3 or 4 septate, 41 (40 to 42)×4.2 (3.2 to 5.1)µm; microspores were fusiform or obovoid, 0 to 1 septate, 8.5 (5.8 to 10)×4.0 (3.4 to 4.9)µm (n=50). Pathogenicity was confirmed by inoculating three leaves from each of three healthy adult plants with 60µl of a conidial suspension (1×10⁶ conidia/ml). Non-inoculated leaves were used as controls, all leaves were covered with a plastic bag and incubated at 20 to 29°C and relative humidity of 64 to 83%. Symptoms similar to those observed in the field developed on inoculated leaves, while controls remained symptom free. The fungus could be re-isolated from symptomatic leaves but not from the controls. Its identity was further investigated by sequence comparison of the ITS (primers ITS1/ITS4), RPB2 (primers 5F/7CR) and TEF gene (primers EF1-728F/EF1-986R) of isolate SLYZ-2 (Summerell et al., 2003). BLASTn analysis of the ITS gene (KT459352) with cognate sequences available in the GenBank database revealed 99% sequence identity to Fusarium oxysporum but only 95.9% sequence identity to F. incarnatum-equiseti in the Fusarium-ID database. However, BLASTn analysis of the RPB2 (KX768542) and TEF gene (KX768543) revealed 99.66 and 100% sequence identity, respectively, to F. oxysporum in both GenBank and Fusarium-ID database. Therefore, both molecular and morphological observations indicated that the pathogenic fungus was F. oxysporum. F. oxysporum was reported to cause leaf twisting on Allium cepa var. ascalonicum in U.S.A. (Kuruppu, 1999) and leaf spot on Dracaena arborea cv. massangeana (Wu et al., 2015). To our knowledge, this is the first report of F. oxysporum on P. utilis from Yunnan, China as well as worldwide.

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