Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Alternaria tenuissima* Causing Leaf Blight on Sugarcane in China

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Sugarcane (*Saccharum officinarum* L.) is the main sugar crop in China. Yunnan is the second largest sugarcane production province in China. In December 2018, leaf blight was first observed on almost every leaf of sugarcane ‘Huanan 54-11’, ‘Baimei’, and ‘Chongan’ in Kaiyuan (103.27° E, 23.72° N), Yunnan. In October 2019, during our survey in the field in Lingcang (100.08° E, 23.88° N), Yunnan, this disease was also observed on ‘ROC 25’. Symptoms of the disease initially appeared as wilting, which seemed to be caused by water stress. As the disease progressed, irregular straw-yellow and blighted lesions ran throughout the leaf lamina from the leaf tip to the entire leaf sheath, and many small black conidia formed in the dead leaf tissue under humid conditions. Symptomatic leaf tissues were surface sterilized with 70% ethanol for 30 s followed by 0.1% HgCl₂ for 1 min, rinsed with sterilized water three times, air dried on sterile filter paper, and plated on potato dextrose agar (PDA). Six isolates were obtained from six symptomatic leaf samples and were transferred onto potato carrot agar (PCA). Colonies on PDA were white with loose aerial hyphae at first and then turned to dark olive or dark. Colonies on PCA were grayish with sparse hyphae and then turned to dark gray. Conidiophores were brown, simple or branched, and produced numerous conidia in short chains. Conidia ($n = 50$) were obclavate to obpyriform or ellipsoid, brown to dark brown, with a cylindrical short beak at the tip (2.3 to 17.3 μm in length),

and 15.3 to 46.6 $\times$ 4.2 to 17.9 μm , with two to seven transverse septa and zero to three longitudinal septa. Morphologically, the isolates were identified as *Alternaria tenuissima* (Simmons 2007). Two representative isolates, C4 and C5, were selected for molecular identification. The internal transcribed spacers (ITS), histone 3 genes, and plasma membrane ATPase were amplified with primer pairs ITS1/ITS4, H3-1a/H3-1b, and ATPDF1/ATPDR1, respectively (Glass et al. 1995; Lawrence et al. 2013). The sequences were deposited in GenBank (ITS, MT679707 to MT679708; histone 3, MT710929 to MT710930; ATPase, MT833928 to MT833929). BLAST searches showed $\geq 99\%$ nucleotide identity to the sequence of *A. tenuissima* (ITS, 100% to MN822571; histone 3, 100% to MN481955; ATPase, 99% to JQ671875, 100% to MH492703, respectively). Thus, the fungus was identified as *A. tenuissima* based on morphological and molecular characteristics. For pathogenicity tests, five healthy 2-month-old potted sugarcane leaves were wounded with one sterile needle and inoculated with 20 μl of suspension of 10^6 conidia/ml, and five plants were inoculated with distilled water as the controls. Plants were placed in a greenhouse at 25 to 35°C. After 2 months, the leaf wound inoculated with the putative pathogen appeared blighted as those observed in the field, whereas the controls remained symptomless. The fungus was reisolated from symptomatic leaves with the same morphological and molecular traits as the original isolates. The fungus was not isolated from the control plants. Pathogenicity tests were repeated two times. *A. tenuissima* causing leaf blight on barley in China was reported in 2008 (Luo et al. 2008). Leaf spot disease of sugarcane caused by *A. tenuis* has been recorded in Maharashtra (Patil et al. 1974). To our knowledge, this is the first report on *A. tenuissima* causing leaf blight on sugarcane in Yunnan Province, China. Identification of the causes of the disease is important to develop effective disease management strategies.

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