Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Pestalotiopsis microspora* Causing Leaf Blight of Banana in Bangladesh

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Banana (*Musa* sp.) is one of the most important fruit crops in the world. It is also a very popular fruit crop and cultivated widely in Bangladesh. Banana diseases are one of the limiting factors for its production. Recently, a new banana leaf blight was detected in various districts of Gazipur, Bangladesh, with an incidence of 5 to 10% in June 2020 and 15 to 20% in January 2021. The initial symptoms of the disease were narrow, dark-brown lesions (2 to 5 by 5 to 12 mm) that later became irregular brown spots (10 to 15 by 5 to 7 mm). The lesions gradually spread from the middle of the leaf to the margin, and dark-brown spots appeared on the diseased leaves. There was a clear golden-yellowish boundary around the spot. Blighted tissue often covered one-third to one-half of the infected leaves. To isolate the pathogen, 100 diseased leaves were collected from five different locations in Gazipur, Bangladesh. Small pieces (5 by 5 mm) were cut from the margins of lesions and surface sterilized with 75% ethanol for 30 s followed by 1% NaClO for 1 min. The samples were then rinsed three times with sterile distilled water,

dried on sterilized filter paper, and placed on 1% water agar at 25°C for 7 days. Hyphal tips were then excised, placed on PDA, and incubated at 25°C for 7 days. From the 20 isolates obtained, the colony characteristics and conidial morphology of three isolates (BLS_BU1, BLS_BU2, and BLS_BU3) were examined. The colony of all of three isolates was white, cottony, and circular in growth. The acervuli were black and covered the entire culture plate. Conidia of all of the isolates were five-celled, fusiform, and wider in the middle than the apical and basal cells. The three internal cells were olivaceous, concolorous, and slightly constricted at the septae; the terminal cells were hyaline (Shi et al. 2015). The conidium measured 20.3 ± 1.2 to 22.7 ± 1.8 by 7.2 ± 0.6 to 8.6 ± 0.4 μm . The mean lengths of the two to four hyaline apical appendages were 20.5 to 30.25 μm and the hyaline basal appendage was 6.1 to 7.6 μm (Han et al. 2019). DNA was extracted from the fungal colony using a DNeasy Plant Mini Kit (Qiagen). PCR was performed with primer pair ITS1/ITS4 ITS region and Sanger sequenced by Macrogen (Seoul, Korea) (White et al. 1990). Isolates BLS_BU1 (MH707065), BLS_BU2 (MH707065), and BLS_BU3 (MH712283) had a sequence similarity of over 99% with GenBank reference *Pestalotiopsis microspora* (MH707065) of the NCBI database. The reconstructed phylogenetic tree also confirmed their phylogenetic position. To assess pathogenicity, the leaves of four 2-month-old healthy plants were needle wounded and inoculated with a spore suspension (10^6 spores/ml) harvested from 10-day-old cultures of isolate BLS_BU1. As a control treatment, five leaves of two healthy plants were inoculated with sterile distilled water. Treated plants were maintained in the field with average temperature ranging from 28 to 30°C and relative humidity from 75 to 80%. After 2 weeks, all inoculated leaves produced characteristic symptoms similar to those observed in the field. However, the control plants did not develop any symptoms. *P. microspora* from the inoculated leaves was successfully reisolated, thus confirming that *P. microspora* was the cause of leaf blight of banana. To our knowledge, banana appears to be a new host of *P. microspora*. This is the first report of leaf blight of banana caused by *P. microspora* in Bangladesh.

References:

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