Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Postharvest Stem End Rot Disease on MD2 Pineapple Fruits Caused by *Neoscytalidium dimidiatum* in Malaysia

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Repeated sampling was conducted from December 2019 to March 2020, and fruit of pineapple (*Ananas comosus*) var. MD2 showing early stem end rot symptoms including brown and rotten fruit skin near the stem end region or darker skin with black discoloration indicated a consistent fungal infection. The samples (30 fruits from each location) were collected from storehouses in three farmers' fields with 60% disease incidence in Serdang, (3.0220°N, 101.7055°E), Selangor, West Malaysia. The pulp of infected fruits appeared watery with a characteristic spoilage odor. Symptomatic necrotic tissues from the stem end region and skin were cut into pieces (1 × 1 cm), surface sterilized, and plated onto potato dextrose agar amended aseptically with 0.5 g/liter of streptomycin sulfate. The plates were incubated at room temperature (28 ± 2°C) in natural light conditions. Five-day-old cultures were light gray in color and gradually turned dark brown to black with dense, deeply tufted mycelium as the culture aged. Conidial morphology was observed using a compound microscope (Olympus model BX-50F4, Tokyo, Japan) equipped with Dino-Eye. Branched mycelia with zero- to one-septate arthrospores were evident in 14-day-old cultures. Measured arthroconidia (5 to 10 × 3 to 4.5 µm) were ellipsoid to ovoid or round shaped, hyaline, with an acutely rounded apex, truncate base, initially aseptate, and arranged as a chain at

maturity. The pathogen was identified through PCR amplification of the internal transcribed spacer (ITS) region using ITS1 and ITS4 primers (White et al. 1990) and BLASTn homology search as *Neoscytalidium dimidiatum* based on 100% similarity to a reference sequence (accession no. KJ648577) that was previously deposited (Mohd et al. 2013). The sequence was deposited in GenBank (accession no. MW082810). A pathogenicity test was performed using the mycelial plug inoculation method and repeated twice with five replicates. Healthy MD2 pineapple fruits were surface sterilized with 1% NaOCl solution for 15 min, followed by washing with sterilized distilled water. A 1-cm-diameter PDA plug at the margin of actively growing 7-day-old culture was inserted in each of two inoculation wounds made on the skin and stem end of each fruit, and then the wounds were wrapped with moist cotton wool. Noncolonized PDA plugs were used to inoculate the control fruits. Fruits were incubated under 85% relative humidity at room temperature. Five days after inoculation, the fruits showed similar dark necrotic discoloration and were confirmed as *N. dimidiatum* by PCR. Koch's postulates were fulfilled by inoculation and reisolation of the fungal pathogen. This pathogen has also been reported previously to cause economic losses on a number of other hosts, such as pitahaya fruits in Israel and Malaysia (Ezra et al. 2013; Mohd et al. 2013) and almond in California (Nouri et al. 2018). To our knowledge this is the first report of *N. dimidiatum* causing postharvest stem end rot on MD2 pineapple in Malaysia. There may be the possibility to develop postharvest economic losses in the pineapple industry, if severely affected fruits with high population of the pathogen are left unattended in storehouses.

References:

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