Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Fusarium commune* Causing Leaf Spot of Wax Gourd (*Benincasa hispida*) in China

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Wax gourd (*Benincasa hispida*) is an important vegetable widely cultivated in China. In May 2018, symptoms of leaf spot were observed on approximately 20% of wax gourd in Nanning, China. Typical symptoms first appeared as small, dark-brown water spots on the leaf surface, which later enlarged and turned yellowish-brown with small black particles in the center and a yellow ring on the edge. Ultimately, the affected leaves often cracked and withered. Symptomatic tissues were surface sterilized and placed onto potato dextrose agar (PDA) medium at 25°C for 4 days. Fungal colonies showing morphological characteristics of *Fusarium* spp. were subcultured on synthetic low nutrient agar for identification (Skovgaard et al. 2003). Aerial mycelia were abundant, densely floccose to fluffy, and pink to light violet on PDA plates. Macroconidia were typically three or five septate, fusiform, with a slightly curved apical cell and foot-shaped basal cell, measuring 29.7 to 49.5 × 3.0 to 5.1 µm. Microconidia were produced in false heads, elliptical or reniform in shape, measuring 5.3 to 13.1 × 2.8 to 4.3 µm. Chlamydospores were 9 to 15 µm in diameter, smooth, and intercalary or terminal. Species identification was also

confirmed by partial sequences of the translation elongation factor gene (*TEF1-α*) using EF1 and EF2 primers, the mitochondrial small subunit gene (*mtSSU*) using NMS1 and NMS2 primers, and the nuclear ribosomal intergenic spacer gene (*IGS*) using CNS1 and CNL12 primers (Zhu et al. 2014). All sequences (MT185580 to MT185582) showed 99 to 100% identity to those of *Fusarium commune*. In a neighbor-joining phylogenetic analysis based on the combination of *TEF1-α*, *mtSSU*, and *IGS* sequences, two isolates (DGYB-1-1 and DGYB-1-2) grouped in the same clade with sequences of *F. commune*. Further confirmation was made by amplification of the *F. commune*-specific fragments using primers effFc100F and effFc385R (Stewart et al. 2012), which yielded target bands of 295 bp for both isolates DGYB-1-1 and DGYB-1-2, whereas no band was obtained from the negative control. Pathogenicity tests were performed on leaves of wax gourd cultivar Guishu No. 6 for nonwound inoculation. Briefly, mycelial plugs and sterile agar plugs were applied to 20 leaves, each with six plugs for the inoculation treatment and negative control, respectively. The plants were kept in a greenhouse with 80% relative humidity at 25°C. Seven days after inoculation, the same symptoms as those on naturally infected plants were observed on leaves inoculated with mycelium, whereas the leaves inoculated by agar plugs remained asymptomatic. *F. commune* was reisolated from each symptomatic tissue. In China, *F. commune* was also reported to cause root rot diseases in different plants such as sugarcane (Wang et al. 2018) and maize (Xi et al. 2019). To our knowledge, this is the first report of *F. commune* as a pathogen on wax gourd in China.

References:

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