Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Colletotrichum capsici* Causing Anthracnose on *Alocasia macrorrhizos* in China

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Alocasia macrorrhizos (Linnaeus) G. Don is a perennial herb in the Araceae family. It is native to South Asia and the Asia-Pacific and has long been cultivated as it is an economically important medicinal and ornamental plant. During July 2012 and 2013, severe outbreaks of leaf spot and stem rot disease on this plant occurred in a greenhouse of Shunyi district, in Beijing, China (117°05'E, 40°13'N). The disease incidence was greater than 30%. The leaf spots first appeared as yellow dots. As lesions expanded, the symptoms were circular to subcircular, light brown lesions with darker brown edges. Around the lesions the leaf tissue was chlorotic, causing the formation of a yellow halo. Initial symptoms on the stems were brown, round or fusiform spots. As the disease progressed, lesions enlarged and merged together. When humidity was high, black acervuli with gray-brown cirrus of conidia were rapidly produced in lesions. Infected plants eventually withered or collapsed from the stem rot. Infected tissues were surface sterilized in 1% NaOCl for 1 min, washed three times with distilled water, and placed on potato dextrose agar (PDA). Colonies on PDA, grown at 25°C in darkness, showed grayish brown and gray-brown conidial masses produced from acervuli with black seta. Acervuli ($n = 30$) were dark brown to black and approximately round, 121 to 210 μm in diameter, averaging 166.5 μm .

Setae ($n = 30$) scattered in acervuli, black, septate, 94.4 to 128.4 $\times$ 3.4 to 4.7 μm , base inflated, and narrower toward the top. Conidiophores ($n = 50$) were phialidic, hyaline, and unicellular. Conidia ($n = 50$) were hyaline, monosporal, falcate, base obtuse, apices acute, and 20.5 to 24.7 $\times$ 2.8 to 3.4 μm . Six monoconidial isolates were made, and the morphological characteristics of the fungus were similar to those of *Colletotrichum capsici* (Syd.) Butler & Bisby (Mordue 1971). In the greenhouse (25 to 30°C, relative humidity 98%), pathogenicity tests were conducted by spraying a 10^6 spores/ml suspension on leaves and stems of 10 healthy potted *A. macrorrhizos* plants (3 years old). A control was included that consisted of 10 plants sprayed with sterile distilled water. After 12 days, all inoculated leaves and stems appeared with typical anthracnose symptoms, whereas control plants remained healthy. The fungus was reisolated from diseased tissues, fulfilling Koch's postulates. The ITS region of a representative isolate was amplified and sequenced using the primers ITS1/ITS4 (White et al. 1990). The obtained ITS sequence (GenBank accession no. KJ018793.1) showed 100% similarity to *C. capsici* (accession nos. HQ271469.1 and DQ454016.1). *C. capsici* is synonymous to *Colletotrichum truncatum*. *C. capsici* is a major phytopathogen with a broad host range that causes anthracnose disease. The first report of *C. capsici* as a pathogen of *A. macrorrhizos* was reported in India in 1979 (Mathur 1979). To our knowledge, this is the first record of *C. capsici* causing anthracnose on *A. macrorrhizos* in China.

References:

- Mathur, R. S. 1979. Page 460 in: The Coelomycetes of India. Bishen Singh Mahendra Pal Singh, Delhi, India.
- Mordue, J. E. M. 1971. CMI Description of Pathogenic Fungi and Bacteria. Commonwealth Mycological Institute, Kew, U.K.
- White, T. J., et al. 1990. Page 315 in: PCR Protocols: A Guide to Methods and Applications. Academic Press, San Diego, CA.

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