Diseases Caused by Fungi and Fungus-Like Organisms

First Report on *Colletotrichum siamense* Causing Anthracnose of Castor Bean in Zhanjiang, China

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Castor bean (*Ricinus communis* L.) is an important oil crop. Anthracnose lesions were observed on leaves of castor bean at the stage of budding and fruiting in a field (21°17'51"N, 110°18'16"E), Zhanjiang, Guangdong Province, China, in August 2019. The incidence rate was approximately 40% ($n = 600$ investigated plants). Early symptoms were yellow spots appearing from the edge or the tip of the leaves. Later, the spots gradually expanded and became dark brown, which coalesced into larger irregular or circular lesions. Seven diseased leaves were collected from seven plants. Margins of the diseased tissue were cut into 2 × 2-mm pieces. The surfaces were disinfested with 75% ethanol for 30 s and 2% sodium hypochlorite for 60 s. Thereafter, the samples were rinsed three times in sterile water, placed on potato dextrose agar (PDA), and incubated at 28°C. Pure cultures were obtained by transferring hyphal tips to new PDA plates. A single-spore isolate (RLC-1) was used for further study. The colony of isolate RLC-1 on PDA was white to gray in color with cottony mycelia in 6 days at 28°C. Conidia were one-celled, hyaline, cylindrical, clavate, obtuse at both ends, and measured 14.2 to 18.5 × 3.8 to 5.5 μm ($n = 50$). Appressoria were oval to irregular in shape, dark brown, and were 7.3 to 10.5 × 5.7 to 6.5 μm ($n = 20$). Morphological characteristics of isolate RLC-1 were consistent with the description of *Colletotrichum siamense* (Prihastuti et al. 2009; Sharma et al. 2013). DNA of the isolate RLC-1 was extracted for PCR sequencing using primers for the

rDNA ITS (ITS1/ITS4), *GAPDH* (GDF1/GDR1), and *ACT* (ACT-512F/ACT-783R) (Weir et al. 2012). Analysis of the ITS (accession no. MN880199), *GAPDH* (MN884048), and *ACT* (MN891766) sequences revealed 99 to 100% identity with the corresponding ITS (JX010250), *GAPDH* (KX578786), and *ACT* (JX009541) sequences of *C. siamense* in GenBank. A phylogenetic tree was generated on the basis of the concatenated data from sequences of ITS, *GAPDH*, and *ACT* that clustered the isolate RLC-1 with *C. siamense* with the type strain ICMP 19118. Morphological characteristics and phylogenetic analysis identified the isolate RLC-1 associated with anthracnose of castor bean as *C. siamense*. A pathogenicity test was performed in a greenhouse at 24 to 30°C with 80% relative humidity. Twenty healthy plants of Zi Bi No. 5 castor bean (2 months old) were grown in pots with one plant in each pot. Inoculation was conducted on leaves with mycelial plugs of RLC-1 or agar plugs (as a control). Three plugs were considered for each leaflet. Ten plants were used in each treatment (five for wounded inoculation and five for unwounded inoculation). Anthracnose lesions as earlier were observed on the leaves after 2 weeks, whereas the control plants remained healthy. The pathogen reisolated from all inoculated leaves was identical to the isolate RLC-1 by morphology and ITS analysis, but it was unsuccessful from control plants. *C. siamense* causes anthracnose on various plant hosts, including mango in Colombia (Pardo-De la Hoz et al. 2016) and *Rosa chinensis* in China (Feng et al. 2019) but not previously including castor bean. To the best of our knowledge, this study is the first to report *C. siamense* causing anthracnose on castor bean. Thus, this work provides a basis for focusing on the management of the disease in future.

References:

- Feng, F. S., et al. 2019. Plant Dis. 103:1422.
- Pardo-De la Hoz, C. J., et al. 2016. Plant Pathol. 65:227.
- Prihastuti, H., et al. 2009. Fungal Divers. 39:89.
- Sharma, G., et al. 2013. Fungal Divers. 61:117.
- Weir, B. S., et al. 2012. Stud. Mycol. 73:115.

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