Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Leaf Vein Spot Caused by *Corynespora cassiicola* on Castor Bean in China

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Castor bean (*Ricinus communis* L.) is an important oil crop. In July 2019, a new leaf vein spot disease was observed on castor bean in a field in Zhanjiang (21.17N, 110.18E), China, with an incidence of 30%. Initial leaf symptoms consisted of small dark brown spots along leaf veins or leaf midribs surrounded by yellow halos. The lesions eventually became necrotic and spread into triangle or irregular shapes with grayish-white centers. The spots were emerged in mesophylls also. Either in veins or mesophylls, the grayish-white centers were typical of the spots. Seven samples of symptomatic leaves were collected from seven diseased plants, surface disinfested with 75% ethanol for 30 s followed by 2% sodium hypochlorite (NaOCl) for 60 s, and rinsed three times with sterile water before isolation. Potato dextrose agar (PDA) was used to culture the pathogen at 28°C. Pure cultures were obtained by transferring hyphal tips to new PDA plates. Fourteen isolates were obtained and identified as the same fungus on the basis of morphological characteristics and molecular analysis. Therefore, a single representative isolate (RLT-1) was used for further study. The colony of isolate RLT-1 was about 7 cm in diameter at the seventh day on PDA culture. The side of the colony was light gray or green in color, and the center was gray or dark brown. Conidiophores were pale brown, simple, cylindrical, and septate with intermittent branching. Conidia were in chains, obclavate to cylindrical, straight to slightly curved, pale olivaceous to brown, 21 to 158 × 5 to 7.5 µm ($n = 40$). Morphological characteristics of colonies were consistent with the description of

Corynespora cassiicola (Berk. & M. A. Curtis) C. T. Wei (Ellis et al. 1971). Three regions of the internal transcribed spacer (*ITS*), translation elongation factor (*EF1-α*), and *β-tubulin* genes were amplified and sequenced with the primer pairs ITS1/ITS4, EF-1α-F/EF-1α-R (O'Donnell 2000), and Beta-F/Beta-R (O'Donnell and Cigelnik 1997), respectively. Analysis of the *ITS* (accession no. MN512631), *EF1-α* (MN512634), and *β-tubulin* (MN512637) sequences revealed a 99.82 to 100% identity with the corresponding *ITS* (LC485251), *EF1-α* (MH572687), and *β-tubulin* (MH763696) sequences of *C. cassiicola*. The phylogenetic analyses of the sequences using the neighbor-joining method clustered isolate RLT-1 with other *C. cassiicola* isolates. Based on the morphological and molecular data, RLT-1 was determined as *C. cassiicola*. A pathogenicity test was performed in a greenhouse with 80% relative humidity at 25 to 30°C. Twenty healthy plants of castor bean were grown in pots with one plant in each pot. Inoculation was conducted on leaves with mycelial plugs of RLT-1 or agar plugs (as a control). Three plugs were used for each leaflet. Ten plants were used in each treatment (five for wounded inoculation and five for unwounded inoculation). Disease symptoms, similar to those in the field, were observed on the RLT-1 inoculated plants 1 week following inoculation, whereas the control plants remained healthy. The fungus was reisolated from the symptomatic leaves and confirmed as *C. cassiicola* based on the morphology and *ITS* analysis. *C. cassiicola* caused leaf spot on various host plants, including castor bean (Karan 1966) and cotton (Salunkhe et al. 2019) in India, but was not reported on castor bean in China. Thus, this is the first report of *C. cassiicola* causing leaf vein spot on castor bean in China.

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