Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Diaporthe eres* Causing Branch Canker on *Cinnamomum camphora* (Camphor Tree) in Jiangxi Province, China

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In September 2019, approximately 75 to 90% of camphor trees (*Cinnamomum camphora*) were observed with cankers and branch dieback symptoms in Anyi (N28°32'54", E115°37'52") and Xinyu (N27°37'38", E114°50'25") counties (Jiangxi Province, China). The symptoms included dark brown to dark, oval-shaped canker lesions, sunken and cracked longitudinally, cracked and evenly swelling, or reddish brown. Samples were collected from symptomatic branches and were cut into small pieces (approximately 0.5 × 0.5 × 0.5 cm). Sections were surface sterilized as described by Zhang et al. (2020) and then placed on potato dextrose agar (PDA) amended with 0.01% penicillin and 0.015% streptomycin sulfate and incubated in the laboratory at 25°C in darkness. After 3 to 5 days, mycelium growing out from tissues was transferred onto PDA medium. In total, 68 fungal isolates including 22 isolates of *Diaporthe* sp. were obtained from cankers and then were classified into five categories based on morphological characteristics and sequencing of the ITS for morphological representative strains. Pathogenicity tests were conducted in the greenhouse and field. Branches were surface sterilized and inoculated as described by Prencipe et al. (2017). In the greenhouse, a total of 13 representative isolates (including six isolates of *Diaporthe*

sp., two isolates of *Neofusicoccum* sp., two isolates of *Botryosphaeria* sp., and three isolates of *Colletotrichum* sp.) were selected and evaluated using 2-year-old seedlings of camphor tree in pots with five replicates per isolate, for which three isolates of *Colletotrichum* sp. had no pathogenicity. Then, two isolates of *Diaporthe* sp. (Z4 and Z7) were selected for a field experiment. In field tests, the same method was used as in the greenhouse. The inoculated and control branches were collected 40 days after inoculation, and the fungi were isolated and placed on PDA plates to recover the inoculated fungi and complete Koch's postulates. Both isolates of *Diaporthe* sp. produced canker symptoms on the branches. Isolate Z4 caused discoloration also on the branch without wounding. Both isolates produced pycnidia scattered in PDA plates supplemented with stems of alfalfa, were dark brown to black, globose to subglobose. Alpha conidia were cylindrical, 5.72 to 9.98 µm (mean 7.64 µm) × 2.15 to 3.13 µm (mean 2.69 µm) (*n* = 30), whereas beta conidia were biguttulate, one-celled, hyaline, nonseptate, and 16.21 to 25.52 µm (mean 21.60 µm) × 0.76 to 1.65 µm (mean 1.14 µm) (*n* = 30). Five isolates (Z4, S-Z4, P-Z4, Z7, and S-Z7) including those used for pathogenicity test were selected for multilocus phylogenetic analyses of ITS (White et al. 1990), TEF1- α , and TUB2 (Glass and Donaldson 1995) gene sequences, for which the accession numbers were MW036358 to MW036362 for ITS, MW052267 to MW052271 for TEF1- α , and MW052276 to MW052280 for TUB2. Based on the phylogenetic tree analysis using IQ-TREE 2, all five isolates were identified as *D. eres*. *D. eres* has been reported to cause canker on many different woody plants, such as almond (Holland et al. 2021), peach (Prencipe et al. 2017), hazelnut (Wiman et al. 2019), and so on. However, this is the first report worldwide of *D. eres* causing disease on *C. camphora* in China.

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