Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Fusarium ipomoeae* Causing Peanut Leaf Spot in China

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Funding: Funding was provided by the National Natural Science Foundation of China (31801711), Agricultural Science and Technology Innovation Project of Shandong Academy of Agricultural Sciences (CXGC2021A42), Agricultural Science and Technology Innovation Project (CXGC2018E21, CXGC2016B11), Shandong Agriculture Research System (SDAIT-04-07), and Major Scientific and Technological Innovation Projects in Shandong Province (2019JZZY010702). Plant Dis. 105:3754, 2021; published online as <https://doi.org/10.1094/PDIS-01-21-0226-PDN>. Accepted for publication 3 May 2021.

Peanut (*Arachis hypogaea* L.) is one of the most economically important crops as an important source of edible oil and protein. In August 2020, circular to oval-shaped brown leaf spots (2 to 6 mm in diameter) with well-defined borders surrounded by a yellow margin were observed on peanut plant leaves in Laixi City, Shandong Province, China. Symptomatic plants were randomly distributed in the field, the incidence was approximately 5%. Leaf samples were collected consisted of diseased tissue and the adjacent healthy tissue. The samples were dipped in a 70% (v/v) ethanol solution for 30 s and then soaked in a 0.1% (w/v) mercuric chloride solution for 60 s. The surface-sterilized tissues were then rinsed three times with sterile distilled water, dried, and placed on Czapek-Dox agar supplemented with 100 µg/ml of chloramphenicol. The cultures were incubated in darkness at 25°C for 3 to 5 days. Fungal colonies were initially white and radial, turning to orange-brown in color, with abundant aerial mycelia. Macroconidia were abundant, four to seven septate, with a dorsiventral curvature, and were 3.3 to 4.5 ×

18.5 to 38.1 µm ($n = 100$) in size; microconidia were absent; chlamydospores were produced in chains or clumps, ellipsoidal to subglobose, and thick walled. The morphological characteristics of the conidia were consistent with those of *Fusarium* spp. To identify the fungus, an EasyPure Genomic DNA Kit (TransGEN, Beijing, China) was used to extract the total genomic DNA from mycelia. The internal transcribed spacer region (ITS rDNA) and the translation elongation factor 1- α gene (*TEF1*) were amplified with primers ITS1/ITS4 (White et al. 1990) and EF1/EF2 (O'Donnell et al. 1998), respectively. Based on BLAST analysis, sequences of ITS (MT928727) and *TEF1* (MT952337) showed 99.64 and 100% similarity to the ITS (MT939248.1) and *TEF1* (GQ505636.1) of *Fusarium ipomoeae* isolates. Sequence analysis confirmed that the fungus isolated from the infected peanut was *F. ipomoeae* (Xia et al. 2019). The pathogenicity of the fungus was tested in the greenhouse. Twenty 2-week-old peanut seedlings (cv. Huayu20) grown in 20-cm pots (containing autoclaved soil) were sprayed with a conidial suspension (10^5 ml⁻¹) from a 15-day-old culture. Control plants were sprayed with distilled water. The experiment was conducted as a randomized complete block design and was placed at 25°C under a 12-h photoperiod with 90% humidity. Symptoms similar to those in the field were observed on leaves treated with the conidial suspension 10 days after inoculation, but not on control plants. *F. ipomoeae* was reisolated from symptomatic leaves but not from the control plants. Reisolation of *F. ipomoeae* from inoculated plants fulfilled Koch's postulates. To our knowledge, this is the first report of *F. ipomoeae* causing peanut leaf spot in China. Our report indicates the potential spread of this pathogen in China, and a systematic survey is required to develop effective disease management strategies.

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The author(s) declare no conflict of interest.

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Keywords: peanut, leaf spot, *Fusarium ipomoeae*

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