Disease Note

Diseases Caused by Fungi and Fungus-Like Organisms

Occurrence of *Curvularia pisi* and *C. muehlenbeckiae* Causing Leaf Spot on Guar (*Cyamopsis tetragonoloba*) in Mexico

J. M. Tovar-Pedraza,[1] G. Márquez-Licona,[2] D. Bárcenas-Santana,[3] K. Y. Leyva-Madriga,[1,4] G. A. Mora-Romero,[5] G. Llaven-Valencia,[6] and E. García-León[7,†]

[1] Centro de Investigación en Alimentación y Desarrollo, Coordinación Regional Culiacán, Laboratorio de Fitopatología, Culiacán 80110, Sinaloa, Mexico
[2] Instituto Politécnico Nacional, Centro de Desarrollo de Productos Bióticos, Yautepec 62731, Morelos, Mexico
[3] Universidad Estatal de Sonora, Unidad Navojoa, Navojoa 85875, Sonora, Mexico
[4] Universidad Autónoma de Occidente, Unidad Regional Los Mochis, Departamento de Ciencias Naturales y Exactas, Los Mochis 81223, Sinaloa, Mexico
[5] Universidad Autónoma de Occidente, Unidad Regional Los Mochis, Unidad de Investigación en Ambiente y Salud, Los Mochis 81223, Sinaloa, Mexico
[6] Posgrado en Recursos Genéticos y Productividad, Campus Montecillo, Colegio de Postgraduados, Texcoco 56230, Estado de México, Mexico
[7] Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Campo Experimental Valle del Fuerte, Guasave 81110, Sinaloa, Mexico

Plant Dis. 107:565, 2023; published online as https://doi.org/10.1094/PDIS-04-22-0858-PDN. Accepted for publication 13 June 2022.

Cyamopsis tetragonoloba (Fabaceae family), known as guar or clusterbean, is a drought-tolerant annual legume cultivated on a commercial scale focused on industrial gum production. In September 2021, symptoms of leaf spot were observed on guar plants in several commercial fields located at Guasave, Sinaloa, Mexico. Symptoms included round to oval, light brown lesions with dark margins. The disease incidence was estimated to be up to 30% in five fields. *Curvularia*-like colonies were consistently isolated, and 12 monoconidial isolates were obtained. Two representative isolates were selected to use downstream and were deposited in the Culture Collection of Phytopathogenic Fungi of the Faculty of Agriculture of Fuerte Valley at the Sinaloa Autonomous University under accessions FAVF643 and FAVF645. On potato dextrose agar, colonies of both isolates FAVF643 (pale brown margin) and FAVF645 (lobate edge) were dark brown. Conidiophores of both isolates FAVF643 (paler toward the apex and 76 to 191 × 3.5 to 5.2 µm) and FAVF645 (80 to 260 × 3.9 to 5.1 µm) were mostly straight, pale brown to dark brown, septate, and simple to branched. Conidia of both isolates FAVF643 (19.9 to 33.3 × 8.8 to 13.5 µm) and FAVF645 (18.5 to 27.1 × 9.1 to 13.1 µm) were curved, rarely straight, brown, with apical and basal cells paler than middle cells being pale brown, and 3-distoseptate. Morphology of both isolates FAVF643 and FAVF645 was consistent with that described for *Curvularia* (Marin-Felix et al. 2017, 2020). For phylogenetic identification, total DNA was extracted and PCR products sequenced from ITS5/ITS4 primers for the internal transcribed spacer (ITS) region (White et al. 1990) and GPD1/GPD2 for partial sequences of glyceraldehyde-3-phosphate dehydrogenase (*gpdh*) gene amplification. A phylogenetic tree based on maximum likelihood including published ITS and *gpdh* for *Curvularia* spp. was constructed. Phylogenetic analyses showed that isolate FAVF643 grouped with the type strain *Curvularia pisi* (CBS190.48) sequence, and the isolate FAVF645 grouped with the type strain *C. muehlenbeckiae* (CBS144.63) sequence. The resulting sequences were deposited in GenBank as follows: *C. pisi* OM802153 (ITS) and OM835758 (*gpdh*), and *C. muehlenbeckiae* OM802154 (ITS) and OM835759 (*gpdh*). The pathogenicity was verified on healthy guar plants. For each isolate, five plants were inoculated by spraying a conidial suspension (1×10^6 spores/ml) onto leaves until runoff. Five plants sprayed with sterile distilled water served as controls. All plants were kept in a moist chamber for 2 days and were subsequently transferred to a greenhouse for 12 days at temperatures ranging from 26 to 32°C. All inoculated leaves exhibited necrotic lesions with a dark margin 10 days after inoculation, whereas control plants remained symptomless. The fungi were consistently reisolated from the diseased leaves and found to be morphologically identical to the isolates used for inoculation, fulfilling Koch's postulates. *Curvularia lunata* had been reported as the causal agent of leaf spot on guar in India (Chand and Verma 1968); however, to our knowledge, this is the first report of *C. pisi* and *C. muehlenbeckiae* causing leaf spot on guar in Mexico and worldwide.

References:

Chand, J. N., and Verma, P. S. 1968. Indian Phytopathol. 21:239.
Marin-Felix, Y., et al. 2017. Stud. Mycol. 86:99.
Marin-Felix, Y., et al. 2020. Mycol. Prog. 19:559.
White, T. J., et al. 1990. Page 315 in: PCR Protocols: A Guide to Methods and Applications. Academic Press, San Diego, CA.

The author(s) declare no conflict of interest.

e-Xtra

Keywords: *Curvularia* spp., *Cyamopsis tetragonoloba*, pathogenicity, phylogeny

†Indicates the corresponding author.
E. García-León; egarcialeon55@gmail.com