Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Botrytis cinerea* Causing Gray Mold on Greenhouse-Grown Tomato Plants in Mauritius

N. Mamode Ally,¹ H. Neetoo,¹ V. M. Ranghoo-Sanmukhiya,¹ S. Hardowar,¹ V. Vally,² A. Gungoosingh-Bunwaree,² F. Maudarbaccus,² T. A. Coutinho,³ M. Vojvodić,⁴ and A. Bulajić^{4,†}

¹ Department of Agricultural and Food Science, Faculty of Agriculture, University of Mauritius, Réduit, 80837, Mauritius

² Plant Pathology Division, Food and Agricultural Research and Extension Institute, Reduit, Mauritius

³ Centre for Microbial Ecology and Genomics/Forestry and Agricultural Biotechnology Institute, University of Pretoria, Pretoria 0002, Republic of South Africa

⁴ Institute of Plant Protection, Department of Phytopathology, University of Belgrade-Faculty of Agriculture, 11080 Belgrade, Serbia

Funding: Funding was provided by Ministry of Education, Science and Technological Development of the Republic of Serbia (451-03- 68/2020-14/ 200116) and Higher Education Commission of Mauritius (REF HEC 11/4/13/ 10). Plant Dis. 105:2725, 2021; published online as <https://doi.org/10.1094/PDIS-01-21-0219-PDN>. Accepted for publication 27 February 2021.

Gray mold is one of the most important fungal diseases not only of greenhouse-grown vegetables (Elad and Shtienberg 1995) but also of plants grown in open fields. Its etiological agent, *Botrytis cinerea*, has been reported to have a wide host range of over 200 species (Williamson et al. 2007). Greenhouse production of tomato (*Lycopersicon esculentum* Mill.) is annually threatened by *B. cinerea*, which significantly influences the yield (Dik and Elad 1999). In August 2019, a disease survey was carried out in a tomato greenhouse (Elpida variety) located at Camp Thorel in the superhumid agroclimatic zone of Mauritius. Foliar tissues were observed with a fuzzy-like appearance and gray-brown lesions from which several sporophores could be seen developing. In addition, a distinctive “ghost spot” was also observed on unripe fruits. Disease incidence was estimated to be ~40% in the entire greenhouse. Diseased infected leaves were cut into small pieces, surface disinfected using 1% sodium hypochlorite, air dried, and cultured on potato dextrose agar (PDA). Colonies having white to gray fluffy mycelia formed after an incubation period of 7 days at 23°C. Single-spore isolates were prepared, and one (405G-19/M) exhibited a daily growth of 11.4 mm, forming pale brown to gray conidia (9.7 × 9.4 µm) in mass as smooth, ellipsoidal to globose single cells and produced tree-like conidiophores.

Black, round sclerotia (0.5 to 3.0 mm) were formed after 4 weeks postinoculation, immersed in the PDA, and scattered unevenly throughout the colonies. Based on these morphological characteristics, the isolates were presumptively identified as *B. cinerea* Pers. (Ellis 1971). A DNeasy Plant Mini Kit (Qiagen, Hilden, Germany) was used for the isolation of DNA from the fungal mycelium followed by PCR amplification and sequencing with primers ITS1F (Gardes and Bruns 1993) and ITS4 (White et al. 1990). The nucleotide sequence obtained (551 bp) (accession no. MW301135) showed a 99.82 to 100% identity with over 100 *B. cinerea* isolates when compared in GenBank (100% with MF741314 from *Rubus crataegifolius*; Kim et al. 2017). Under greenhouse conditions, 10 healthy tomato plants were sprayed with conidial suspension (1 × 10⁵ conidia/ml) of the isolate 405G-19/M, and control plants were inoculated with sterile water. After 7 days postinoculation, the lesions on all inoculated plants were similar to those observed in the greenhouse. No symptoms developed in the plants inoculated with sterile water after 15 days. The original isolate was successfully recovered, thus fulfilling Koch’s postulates. Although symptoms of gray mold were occasionally observed on tomatoes previously (Bunwaree and Maudarbaccus, *personal communication*), to our knowledge, this is the first report that confirmed *B. cinerea* as the causative agent of gray mold on tomato crops in Mauritius. This disease affects many susceptible host plants (Sarven et al. 2020), such as potatoes, brinjals, strawberries, and tomatoes, which are all economically important for Mauritius. Results of this research will be useful for reliable identification necessary for the implementation of a proper surveillance, prevention, and control approaches in regions affected by this disease.

References:

- Dik, A. J., and Elad, Y. 1999. Eur. J. Plant Pathol. 105:123.
- Elad, Y., and Shtienberg, D. 1995. J. Integr. Pest Manag. 1:15.
- Ellis, M. B. 1971. Dematiaceous Hyphomycetes. Commonwealth Mycological Institute, Kew, U.K.
- Gardes, M., and Bruns, T. D. 1993. Mol. Ecol. 2:113.
- Kim, S., et al. 2017. Korean J. Mycol. 45:251.
- Sarven, M. S., et al. 2020. Pathogens 9:213.
- White, T. J., et al. 1990. Page 315 in: PCR Protocols: A Guide to Methods and Applications. Academic Press, San Diego, CA.
- Williamson, B., et al. 2007. Mol. Plant Pathol. 8:561.

The author(s) declare no conflict of interest.

e-Xtra

Keywords: fungi, pathogen detection, etiology, tomatoes, gray mold, greenhouse

[†]Indicates the corresponding author.

A. Bulajić; bulajic_aleksandra@yahoo.com