Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Seimatosporium vitifusiforme* Causing Trunk Disease in Chilean Grapevines (*Vitis vinifera*)

D. Grinbergs,[†] J. Chilian, and A. France

Instituto de Investigaciones Agropecuarias, INIA Quilamapu, Chillán, Chile

Funding: Funding was provided by Instituto de Investigaciones Agropecuarias, Chile. Plant Dis. 105:1852, 2021; published online as <https://doi.org/10.1094/PDIS-11-20-2475-PDN>. Accepted for publication 22 January 2021.

Grapevine is one of the most important fruit crops in Chile, and trunk diseases are a major problem, reducing the productivity, quality, and longevity of the vineyards. A survey was conducted in ancient vineyards of Cauquenes (35°57'14"S, 72°17'07"W) and Itata valleys (36°38'13"S, 72°30'57"W), located in the central area of Chile, during 2019. Trunks and cordons showing dieback and dark brown to black wood discoloration were collected from 50- to 200-year-old plants of six cultivars: País, Moscatel, Torontel Amarilla, Carignan, Aliatica, and Aligote. The bark was removed, and 0.5-cm sections were cut from the edges of necrotic wood lesions. Subsequently, pieces were surface disinfected using 10% v/v sodium hypochlorite bleach (4.9% chlorine), plated on acidified quarter-strength potato dextrose agar (APDA) (25% PDA, acidified with 0.1% v/v 85% lactic acid), and incubated at 25°C for 14 to 28 days. Fungal tips were transferred to PDA to obtain pure cultures. Growth rate, color, and shape of the colonies were studied on PDA after 7 and 14 days of incubation at 25°C ($n = 17$). Conidiomata and conidia were described. DNA was extracted from pure cultures of three isolates on PDA: HMV3, HMV64, and HMV81. The internal transcribed spacer (ITS) region and partial β -tubulin genes were amplified, using ITS1/ITS4 (White et al. 1990) and bt2A/bt2B (Glass and Donaldson 1995) primers, respectively. Sequences were subjected to NCBI BLAST search and compared with the pub-

lished ones. Isolated colonies were whitish to light-brown, cottony with a smooth margin ($n = 37$). Their mycelia grew 1.9 cm after 7 days and 3.2 cm after 14 days of incubation on PDA, at 25°C. Colonies produced black globose pycnidia and curved, slightly pigmented, three-septated conidia 22.3 to (29.8) to 32.2 $\times$ 3.9 to (4.8) to 5.3 μ m ($n = 30$), with apical and basal flexuous appendages 4.3 to (12.7) to 21.5 μ m ($n = 20$). Furthermore, ITS and β -tubulin sequences identity of the isolates were 100 and 99%, respectively, when compared with type sequences of *Seimatosporium vitifusiforme* (Lawrence et al. 2018). To produce uniform healthy plants for pathogenicity tests, Petit Syrah canes (1 year old) were rooted in tap water amended with 500 ppm of indole-butyric acid for 30 days. Plants were inoculated with 0.5-cm-diameter mycelial plugs of actively growing colonies of the isolates HMV3, HMV64, and HMV81 (GenBank accessions no. MW026664, MW048518; MW026665, MW048519; and MW026666, MW048520, respectively). Sterile agar plugs were used for controls. Five plants per isolate were incubated at 25°C in a humid chamber for 25 days, and another seven plants per isolate were incubated in aerated tap water for 55 days. After the incubation period, the bark was removed and the lesions measured. Dark necrotic discoloration was reproduced, both in humid chamber (6% length) and water (10% length), without differences among the isolates ($P < 0.05$). Control vines remained asymptomatic. Each isolate was reisolated and compared with the inoculated one, to fulfill Koch's postulates. *S. vitifusiforme* was previously reported as a pathogen of *Vitis vinifera* in California, U.S.A. (Lawrence et al. 2018). Consequently, this is the second report of this fungus as a grapevine pathogen and the first one affecting Latin-American grapevines.

References

- Glass, L. N., and Donaldson, G. C. 1995. Appl. Environ. Microbiol. 61:1323.
- Lawrence, D. P., et al. 2018. Plant Dis. 102:1081.
- 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: fungi, grapevines, grapevine trunk diseases, patrimonial vineyards, *Seimatosporium vitifusiforme*, *Sporocadaceae*

[†]Indicates the corresponding author.
D. Grinbergs; dgrinbergs@inia.cl