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First Report of Root and Collar Rot Caused by *Neocosmospora solani* on *Ligusticum chuanxiong* in South Korea

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Ligusticum chuanxiong, that belongs to the Family Umbelliferae, is a perennial plant and is distributed in the East Asian countries, including South Korea. *Ligusticum chuanxiong* is widely cultivated as a medicinal plant in the country (Lee 1985). Severe symptoms on *L. chuanxiong* were consistently observed in Bonghwa (35°00'32.4"N 126°49'17.6"E) and Yeongyang (36°51'21.8"N 129°11'03.0"E), Gyeongsangbuk Province of South Korea in 2019 (Supplementary Fig. 1). The disease symptoms included an initial marginal chlorosis that gradually progressed to all leaves, followed by large-scale leaf desiccation and associated leaf drop. In the later stage of disease, plants exhibited stem and root decay, causing a partial or complete girdling of the trunk. The stems and roots had a prominent, dark-brown, water-soaked necrotic tissue. The putative causal agent of root and collar rot on *L. chuanxiong* was isolated from the symptomatic area developed on the plants following the technique described by Hong et al. (2018). The culture obtained in this study was deposited in the culture collection of the National Institute of Forest Science, South Korea (Accession No. CDH2020-1). The purified isolates obtained from each region were then identified using sequences of the internal transcribed spacer regions (ITS1, ITS2) and 5.8S rDNA gene regions and part of the translation elongation factor-1 alpha (*tef-1α*) regions. The resulting sequences of ITS and *tef-1α* (GenBank Accession Nos. MT269073 and MT263069, respectively) matched with those of *Neocosmospora solani* (LR583770 for ITS, LR683651 for *tef-1α*). In addition to the initial identification based on the BLAST search, the phylogenetic analysis based on the Maximum Likelihood (ML) method using the concatenated dataset obtained in this study was further performed. The result showed that the isolate is clustered with the authentic isolate of *N. solani*, confirming its identity (Sandoval-Denis et al. 2019) (Supplementary Table 1, Supplementary Fig. 2). To confirm fungal pathogenicity, healthy plants were inoculated with the fungus obtained in this study. Agar plugs (5 mm) were inserted, with the mycelium facing the cambium, on wounds inflicted with a 7 mm cork on stems and collar regions and finally wrapped with Parafilm® with which moist cotton was covered to reduce contamination and to prevent desiccation of the inoculum and cambium. Ten additional plants were treated with sterile agar plugs instead of the fungal inoculum as the control. Plants were maintained at 28°C and 40% relative humidity in a greenhouse. All the inoculated plants produced collar rot and root rot symptoms eight weeks after the inoculation, while no symptom was devel-

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oped on the control. The pathogen was successfully re-isolated from all inoculated plants, fulfilling Koch's postulates. To the best of our knowledge, this is the first report of *N. solani* causing root and collar rot on *L. chuanxiong* in South Korea (Farr and Rossman 2020).

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Ethical Statements

All the authors have sufficiently contributed to the work, have agreed to this submission and are responsible for its contents. This manuscript including the data that are supporting the aim and the conclusion of this research is new and is not being considered elsewhere. No data have been fabricated or manipulated for being published to the journal.

Conflict of interest

The authors have no conflicts of interest to declare.

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