Pathogenic *Diaporthe* from Italy and the first report of *D. foeniculina* associated with *Chenopodium* sp.

Gajanayake AJ¹,², Abeywickrama PD¹,²,³, Jayawardena RS¹,², Camporesi E⁴,⁵,⁶, Bundhun D¹,⁷

¹Center of Excellence in Fungal Research, Mae Fah Luang University, Chiang Rai 57100, Thailand
²School of Science, Mae Fah Luang University, Chiang Rai 57100, Thailand
³Beijing Key Laboratory of Environment-Friendly Management on Diseases and Pests of North China Fruits, Institute of Plant and Environment Protection, Beijing Academy of Agriculture and Forestry Sciences, Beijing 100097, People’s Republic of China
⁴A.M.B. Gruppo Micologico Forlivese “Antonio Cicognani”, Via Roma 18, Forlì’, Italy
⁵A.M.B. Circolo Micologico “Giovanni Carini”, C.P. 314, Brescia, Italy
⁶Societa per gli Studi Naturalistici della Romagna, C. P. 144, Bagnacavallo, RA, Italy
⁷Department of Entomology and Plant Pathology, Faculty of Agriculture, Chiang Mai University, Chiang Mai 50200, Thailand

Gajanayake AJ, Abeywickrama PD, Jayawardena RS, Camporesi E, Bundhun D 2020 – Pathogenic *Diaporthe* from Italy, and the first report of *D. foeniculina* associated with *Chenopodium* sp. Plant Pathology & Quarantine 10(1), 172–197, Doi 10.5943/ppq/10/1/18

Abstract

*Diaporthe* is an important genus composed of pathogenic, saprobic and endophytic species. A *Diaporthe* species was collected from a dead aerial branch of *Chenopodium* sp. from Italy. Multi-locus phylogeny of ITS, CAL, HIS, TEF1-α and TUB2 sequence data showed that our strain clusters with *Diaporthe foeniculina* with good statistical support. A comprehensive description, photographs of micromorphological characteristics and phylogenetic trees to show the placement of the taxon are provided. This is the first report of *D. foeniculina* on *Chenopodium* sp. from Italy. Previously, *Diaporthe foeniculina* has been recorded from Italy as a pathogen on different plant species. Based on the previous findings, a list of known pathogenic *Diaporthe* species reported from Italy is provided.

Keywords – Coelomycetes – Diaporthaceae – New record – Sordariomycetes – Taxonomy

Introduction

*Chenopodium* species are morphologically variable and comprise herbaceous and bushy annual or perennial plants growing in worldwide arid and semiarid zones (Bonifacio 2003). Most of the species of this genus are able to survive in adverse climatic and edaphic conditions (Bonifacio 2003, Fuentes-Bazan et al. 2012). This genus has important cultivable species which play diverse roles like crops for food (*C. album, C. giganteum, C. murale, C. quinoa*), animal feed production (*C. album, C. murale, C. opulifolium*) and medicinal uses (*C. album, C. amaranticolor, C. botrys*) (Bonifacio 2003, Fuentes-Bazan et al. 2012). *Chenopodium* sp. also constitutes major classes of phyto-constituents such as phenolics, ecdysteroids, flavonoids, triterpenoids and saponins (Bonifacio 2003, Kokanova-Nedialkova et al. 2009, de la Cruz Torres et al. 2013).
Several fungi associated with Chenopodium species have been recorded from various countries, including Australia (Cook & Dubé 1989), Brazil (Mendes et al. 1998), Canada (Conners 1967), China (Zhang et al. 1999), Germany (Van Der & Van Kesteren 1979), India (Sarbhoy 1971) and Italy (Choi et al. 2008). Earlier studies have reported Oidium sp. (Amano 1986) and Peronospora sp. (Greuter et al. 1991, Choi et al. 2008) as pathogens on different Chenopodium species from Italy.

Diaporthe was introduced with the type species D. eres, originally recorded on Ulmus sp. from Germany (Nitschke 1870). Species of Diaporthe have been reported as pathogens, endophytes and saprobes on a wide range of hosts in both temperate and tropical regions worldwide (Gomes et al. 2013, Udayanga et al. 2014a). In the early taxonomy, Diaporthe species were mainly defined on the basis of their micromorphology and host association (Santos & Phillips 2009). Later, it was understood that the host association of species has lesser taxonomic importance and the morphology alone is not sufficient to define a species (Santos & Phillips 2009). With the advances of molecular techniques, much progress has been made to define species using both morphological characteristics and DNA sequence data (Udayanga et al. 2012, Gao et al. 2017). The most commonly used sequence data for molecular characterization of Diaporthe species are the internal transcribed spacer region (ITS), beta-tubulin (TUB2), translation elongation factor-1alpha (TEF1α), partial histone H3 (HIS) and calmodulin (CAL) (Udayanga et al. 2012, Guarnaccia et al. 2018, Yang et al. 2018).

In the present study, a diaporthe-like strain was collected from a dead aerial branch of Chenopodium sp. from Italy. Combined ITS, CAL, HIS, TEF1–α and TUB2 phylogenetic analyses revealed that this fungus is Diaporthe foeniculina. This study, therefore, provides a new host record for D. foeniculina on Chenopodium sp. from Italy.

The accurate identification of a species in a genus, with a well resolved phylogeny, has much importance in plant pathology. It enables scientists to acquire knowledge on the host range and biogeography (Dugan et al. 2009, Udayanga et al. 2011), which will in turn help to expand their studies on coevolution, evolutionary adaptations and metabolite production. It has been discovered that the species of Diaporthe also have the ability to produce various secondary metabolites with antibiotic, cytotoxic and herbicidal activities (Gomes et al. 2013, Chepkirui & Stadler 2017). Furthermore, accurate species identification becomes particularly essential in cases where fungal diseases have to be controlled through the implementation of quarantine regulations (Rossman & Palm-Hernández 2008, Cai et al. 2011). Based on the previous findings, we provide a list of known pathogenic Diaporthe species reported from Italy.

Materials & Methods

Fungal isolation and morphological characterization

The dead aerial stem of Chenopodium sp. was collected from province of Forlì-Cesena in, Italy in February 2018. Specimen was brought to the laboratory in plastic bags. The sample was examined with a Motic SMZ 168 Series microscope. The hand cut sections of conidiomata were mounted in water for microscopic studies and photomicrography. The sections were examined using a Nikon ECLIPSE 80i compound microscope and photographed with a Canon 750D digital camera fitted to the microscope. Measurements were made with the Tarosoft (R) Image Frame Work program and images used for figures were processed with Adobe Photoshop CS6 Extended version 10.0 software (Adobe Systems, USA).

Single spore isolation was carried out following the method described in Senanayake et al. (2020). Germinated spores were individually transferred to potato dextrose agar (PDA) plates and incubated at 25 °C in daylight. Colony characteristics were observed and measured after 3 weeks. Herbarium specimens were deposited in the Mae Fah Luang University (MFLU) Herbarium, Chiang Rai, Thailand. Living cultures were deposited in the Culture Collection of Mae Fah Luang University (MFLUCC). Faces of Fungi number (FOF) was acquired, according to Jayasiri et al. (2015).
DNA extraction and PCR amplification and sequencing

Fungal isolates grown on PDA for 2 weeks at 25 °C were used to extract total genomic DNA. DNA was extracted from 50 to 100 mg of axenic mycelium of the growing cultures. The mycelium was ground to a fine powder with liquid nitrogen and fungal DNA was extracted using the OMEGA E.Z.N.A. ® Forensic DNA Kit following the manufacturer’s instructions. ITS, TUB2 and H3 genes were amplified as described in Manawasinghe et al. (2019). The attempts to obtain TEF-1α and CAL sequence data were unsuccessful. The PCR products were obtained according to optimized PCR protocols as described in Manawasinghe et al. (2019) and they were verified on 1% agarose electrophoresis gels stained with ethidium bromide. Thereafter, the amplified PCR fragments were purified and sequenced by Biomed Co. LTD, Beijing, China. Amplified nucleotide sequences were deposited in GenBank (Supplementary Table 1).

Phylogenetic analysis

Acquired sequences were verified and then subjected to a BLAST search in GenBank (https://blast.ncbi.nlm.nih.gov/Blast.cgi). Related sequences were downloaded from GenBank following recent publications (Marin-Felix et al. 2019, Caio et al. 2020, Wrona et al. 2020). Single gene alignments were automatically done by MAFFT v. 7.036 (http://mafft.cbrc.jp/alignment/server/large.html, Katoh et al. 2019) using the default settings and later manually adjusted using BioEdit v. 7.0.5.2 where necessary, (Hall 1999).

Maximum likelihood trees were generated using RAxML-HPC2 on XSEDE (8.2.8) (Stamatakis et al. 2008, Stamatakis 2014) in the CIPRES Science Gateway platform (Miller et al. 2010). GTRGAMMA was used as the model of evolution and bootstrap support values were obtained by running 1000 pseudo replicates. Bayesian Inference (BI) analysis was conducted using MrBayes v. 3.1.2 (Ronquist & Huelsenbeck 2003). Six simultaneous Markov chains were run for 2,000,000 generations and trees were sampled every 1000th generation. The first 25% of generated trees representing the burn-in phase of the analyses were discarded and the remaining 75% of trees were used to calculate posterior probabilities (BYPP) in the majority rule consensus tree. Phylograms were visualized with FigTree v1.4.0 program (Rambaut 2011) and reorganized in Microsoft power point (2010). The reference strains used for the phylogenetic analyses in this study are listed in Supplementary Table 1.

Results

The strain observed and sequenced in this study was identified as Diaporthe foeniculina using morphology and molecular data.

Phylogenetic analyses

The initial phylogenetic tree was constructed using a combined ITS, CAL, HIS, TEF1–α and TUB2 data set which consisted of 249 taxa, including our strain (Diaporthe foeniculina MFLUCC 20-0151). Phylogenetic trees were rooted as the model of evolution and bootstrap support values were obtained by running 1000 pseudo replicates. Bayesian Inference (BI) analysis was conducted using MrBayes v. 3.1.2 (Ronquist & Huelsenbeck 2003). Six simultaneous Markov chains were run for 2,000,000 generations and trees were sampled every 1000th generation. The first 25% of generated trees representing the burn-in phase of the analyses were discarded and the remaining 75% of trees were used to calculate posterior probabilities (BYPP) in the majority rule consensus tree. Phylograms were visualized with FigTree v1.4.0 program (Rambaut 2011) and reorganized in Microsoft power point (2010). The reference strains used for the phylogenetic analyses in this study are listed in Supplementary Table 1.
(AR5145, CBS 111553, CBS 123208, MFLUCC 17-1068, MFLUCC 17-1020 and DP0454) in a well-supported clade (71% ML, 0.99 BYPP, Fig. 1).

Fig. 1 – RAxML tree based on analysis of a combined dataset of ITS, CAL, HIS, TEF1-α and TUB2 sequences. Bootstrap support values for ML values equal to or >60% and BYPP values equal to or >0.95 are shown as ML/BYPP above the nodes. The isolate used for the present study is...
shown in red and already known species are shown in black. Type strains are indicated in black bold. The tree is rooted using *Diaporthella corylina* and *Diaporthella cryptica*. The scale bar represents the expected number of nucleotide substitutions per site.

**Taxonomy**

*Diaporthe foeniculina* (Sacc.) Udayanga & Castl., Persoonia 32: 95 (2014)  
Facesoffungi number: FoF02183

*Saprobic* on dead aerial stem of *Chenopodium* sp. Asexual morph: Coelomycetous. *Conidiomata* 100–250 × 100–300 µm (x̄ = 175×200 µm, n = 5), pycnidial, scattered or gregarious, solitary, globose to subglobose, semi-immersed, unilocular, visible as small round to oval dark brown to black dots on the host surface. *Pycnidial wall* composed of 5–7 layers of cells of *textura angularis* almost similarly dense at the apex and base, outer 3–4 layers dark brown to black, inner 1–2 layers hyaline. *Paraphyses* lacking. *Conidiophores* 10–20 × 1–2 µm (x̄ = 15×1.5 µm, n = 20), hyaline, unbranched, cylindrical and straight to sinuous. *Conidiogenous cells* 0.5–1 µm diam, hyaline, cylindrical and terminal. *Conidia* 5–10 × 1–3 µm (x̄ = 7.5×2.5 µm, n = 40), aseptate, hyaline, ellipsoidal to cylindrical, rounded at both ends, thin and smooth-walled, with 2–3 guttules. Sexual morph: not observed (illustrated in Udayanga et al. (2014b).

![Fig. 2](image_url)  
- **Diaporthe foeniculina** (MFLU 18-0609). a *Chenopodium* sp. with conidiomata. b, c Close-up of conidiomata on the host. d Vertical section through conidioma. e Pycnidial wall in longitudinal section f Conidiogenous cells. g Conidia. h Colony on PDA. Scale bars: b = 500 µm, c = 200 µm, d = 100 µm, e = 20 µm, f = 10 µm, g = 5 µm.

Culture characteristics – Colonies on PDA reaching 90 mm diam. after 14 days at 25°C, colony circular, initially white, turning into brown with time (both front and reverse sides of the culture plate).
Material examined – ITALY, Province of Forlì–Cesena [FC], Forlì – Via Maria Ferrari, on dead aerial stem of Chenopodium sp., 06 February 2018, E. Camporesi, IT 3715 (MFLUCC 18-0609), living culture (MFLUCC 20-0151).

GenBank numbers – ITS = MW020272, HIS = MW057341, TUB2 = MW057340.

Notes – The strain of Diaporthe foeniculina (MFLUCC 20-0151) reported in the present study shares similar morphological features with the type strain of D. foeniculina (CBS 111553), with minor dimensional differences. The pycnidia of Diaporthe foeniculina (MFLUCC 20-0151) are comparatively smaller than those of D. foeniculina (CBS 111553) (100–300 μm diam. vs 400–700 μm diam.). Diaporthe foeniculina (MFLUCC 20-0151) comprises 5–7 cell layers in its pycnidial wall while D. foeniculina (CBS 111553) consists of only 2–3 layers (Udayanga et al. 2014b). The conidiophores are higher (12–20 × 1–2 μm vs 9–15 (–18) × 1–2 μm) and the conidia are smaller (7.5 × 2.5 μm vs 8.8 ± 0.3 × 2.4 ± 0.1 μm) (Udayanga et al. 2014b). These dimensional differences are probably due to environmental variation and host associations.

Discussion

Several studies have confirmed that the species of Diaporthe have a wide host range, while some endophytic and plant pathogenic taxa have been found to be host-specific (Gomes et al. 2013). In this study, the focus has been on the particular species, Diaporthe foeniculina, identified for the first time from Chenopodium sp. in Italy. This newly acquired strain (MFLUCC 20-0151) clustered with the strains AR5145, CBS 111553, CBS 123208, MFLUCC 17-1068, MFLUCC 17-1020 and DP0454 with 71% ML, and 0.99 BYPP statistical supports in a monophyletic clade (Fig. 1). Furthermore, its asexual structures are similar to the asexual morph of the type strain of D. foeniculina (CBS 111553) (Udayanga et al. 2014b), which further confirms its identity. Epitypification of Diaporthe foeniculina was done by Udayanga et al. (2014b) and it has been recorded from different geographical locations, including Argentina, Australia, Europe (Greece, Portugal, Spain and Italy), New Zealand, South Africa and the USA (California) (Udayanga et al. 2014b, Farr & Rossman 2020). Still a few Diaporthe species has been recorded from Chenopodium species, namely, D. arctii from Georgia (Anonymous 1960, Hanlin 1963) D. arctii var. achilleae from New Jersey (Weh Meyer 1933) and D. tulasnei from Portugal (Unamuno 1941).

Previous studies have reported Diaporthe foeniculina as a pathogen or a saprobe on different host plant species from Italy (Table 1). Diaporthe foeniculina has been reported associated with blacktip and necrotic spots on hazelnut kernel in Chile (Guerrero et al. 2020), blueberry twig blight and dieback in Portugal (Hilário et al. 2020), post-harvest fruit rot in lemon in Turkey (Tekiner et al. 2020), twig blight, shoot blight and branch canker of citrus in Greece (Vakalounakis et al. 2019), reddish sunken cankers on apple trees in Uruguay (Sessa et al. 2017) and has caused disease on acacia (Robinia pseudoacacia) in Iran (Bavand et al. 2019).

This study presents the first report of D. foeniculina from a Chenopodium sp. from Italy. Diaporthe foeniculina has been reported as both opportunistic pathogen and endophyte on various host plants (Udayanga et al. 2014b, Guar naccia et al. 2016). The stress factors for the plant due to changing environmental conditions can facilitate the fungi, to switch their life mode from endophytic or saprobic to the pathogenic mode being capable of colonizing new hosts (Manawasinghe et al. 2018). In this study, we found D. foeniculina as a saprobe on Chenopodium sp. This suggests that, the fungus may survive in the plant debris and have a possibility to be a pathogen on Chenopodium sp. when the environmental conditions are favourable. We were unable to conduct a pathogenicity test due to the practical difficulty faced as the fungus was reported on a host from Italy and the culture is located in Thailand. Therefore, we suggest a pathogenicity test for Diaporthe foeniculina on Chenopodium sp. in future studies to check whether it can be a pathogen on the particular host plant species.

Other than D. foeniculina, the species Diaporthe baccae, D. caulivora, D. cytopsporella, D. eres, D. helianthi, D. novem, D. rudis, D. sclerotioi des, D. sojae, D. sterilis and D. torilicola have been already reported as pathogens from Italy (Table 1). However, some species which are recorded as pathogenic have not been confirmed by pathogenicity tests. It will be useful if future
studies conduct pathogenicity tests to confirm whether those species are pathogenic on particular hosts.

The other *Diaporthe* species, which have been reported from Italy, do not have records as pathogens on the hosts from Italy, but most of them are known pathogens from other regions of the world. *Diaporthe ambiguа* causes postharvest fruit rot on kiwifruit (*Actinidia deliciosa*) in Greece and Chile (Díaz et al. 2017, Thomidis et al. 2019). *Diaporthe ampelina* has been reported as a pathogen on grapevine wood in northern California, USA (Lawrence et al. 2015). *Diaporthe amygдali* has been reported as the causal agent of twig canker on walnut in China (Meng et al. 2018) and it has been reported as the main pathogen of almonds in Spain (León et al. 2020). *Diaporthe cynaroidis* has been found associated with walnut branch canker in Chile (Luna et al. 2020). *Diaporthe gardenia* has been reported from the cankers of gardenia in California, USA (Alfieri 1967). *Diaporthe gulyaе* is associated with stem canker of sunflower (*Helianthus annuus*) in Australia, Argentina, Canada and China (Thompson et al. 2011, Mathew et al. 2015, Mancebo et al. 2019, Zhang et al. 2019). There are records that *Diaporthe gulyaе* has caused stem disease on soybean and common buckwheat in North Dakota (Mathew et al. 2018, Duellman et al. 2019). *Diaporthe nobilis* has been reported causing post-harvest rot of blueberry, fruit decay of pepper, shoot dieback on apple and shoot canker on chestnut in China (Zhang et al. 2016, Yu et al. 2018, Zhang et al. 2018, Sun et al. 2020). *Diaporthe phaseolorum* has been found as a pathogen on sunflower in Russia (Gomzhina & Gannibal 2018).

In addition, *Diaporthe acericola*, *D. arctica*, *D. arezzoensis*, *D. camelliae*, *D. cameresii*, *D. cichorii*, *D. crataegi*, *D. dorycnii*, *D. euphorbiae*, *D. fasciculata*, *D. italiana*, *D. lonicerae*, *D. nigra*, *D. pardałota*, *D. podocarpi-macrophylli*, *D. pseudotsugae*, *D. pulla*, *D. ravennica*, *D. rumiccola*, *D. sarothamni*, *D. schoenі* and *D. stictica* have been reported from Italy. So far, those species do not have records as pathogens. However, as there is a possibility for *Diaporthe* species to become opportunistic pathogens, we would like to suggest pathogenicity tests for those species in future studies. It would be beneficial to prevent economic losses resulted by fungal diseases on commercial crop species, through implementation of quarantine regulations.

**Table 1** *Diaporthe* species recorded from Italy, their mode of life and host range

| Species            | Host                  | Life mode | Disease/Disease symptoms          | Original Reference                      |
|--------------------|-----------------------|-----------|-----------------------------------|-----------------------------------------|
| *Diaporthe acericola* | *Acer negundo*        | Saprobie  | –                                 | Dissanayake et al. (2017)               |
| *Diaporthe ambiguа* | *Platanus acerifolia* | N/A       | N/A                               | Gomes et al. (2013)                     |
| *Helianthus annuus* | N/A                   | N/A       | –                                 | Gomes et al. (2013)                     |
| *Diaporthe ampelina* | *Vitis vinferа*       | N/A       | N/A                               | Gomes et al. (2013)                     |
| *Diaporthe amygдali* | *Prunus dulcis*       | N/A       | –                                 | Santos et al. (2017)                    |
| *Diaporthe arctica* | *Cannabis sativa*     | N/A       | –                                 | Farr & Rossman (2020)                   |
| *Eupatorium cannabinum* | N/A                  | N/A       | –                                 | Farr & Rossman (2020)                   |
| *Medicago sativa*   | N/A                   | N/A       | –                                 | Farr & Rossman (2020)                   |
| *Melilotus officinalis* | N/A                  | N/A       | –                                 | Farr & Rossman (2020)                   |
| *Diaporthe arezzoensis* | *Cytisus sp.*       | Saprobie  | –                                 | Li et al. (2020)                        |
| *Diaporthe baccae*  | *Citrus limon*        | Pathogene  | Twig dieback, Branch canker       | Guarnaccia & Crous (2017)               |
| *Citrus paradisi*   | Pathogene             | Branch canker | –                                 | Guarnaccia & Crous (2017)               |
| *Citrus reticulata* | Pathogene             | Trunk canker | –                                 | Guarnaccia & Crous (2017)               |
| *Citrus sinensis*   | Pathogene             | Twig dieback, Trunk canker      | –                                 | Guarnaccia & Crous (2017)               |
| *Vaccinium corynmosum* | N/A                  | N/A       | –                                 | Lombard et al. (2014)                   |
| *Diaporthe camelliae* | *Camellia japonica*  | N/A       | –                                 | Farr & Rossman (2020)                   |
| *Diaporthe cameresii* | *Urtica dioica*      | Saprobie  | –                                 | Hyde et al. (2020)                      |
| *Diaporthe caulivora* | *Glycine max*        | Pathogene | Infection of seeds                | Zhang et al. (1997)                     |
| *Diaporthe cichorii* | *Cichorium intybus*   | Saprobie  | –                                 | Dissanayake et al. (2017)               |
| *Diaporthe crataegi* | *Crataegus oxyacanthа* | N/A       | N/A                               | Farr & Rossman (2020)                   |
| *Diaporthe cynaroidis* | *Eupatorium cannabinum* | Saprobie | –                                 | Hyde et al. (2020)                      |
| *Diaporthe cytosopеrella* | *Citrus limonia*  | Pathogene | N/A                               | Udayanga et al. (2014b)                 |
Table 1 Continued.

| Species               | Host                  | Life mode          | Disease/Disease symptoms                        | Original Reference               |
|-----------------------|-----------------------|-------------------|------------------------------------------------|----------------------------------|
| **Diaporthe dorycni** | **Diaporthe eres**    |                   |                                                |                                  |
| Citrus limon          | N/A                   | N/A               |                                                |                                  |
| Dorycnium hirsutum    | Saprobiic             |                   |                                                | Dissanayake et al. (2017)        |
| Castanea vesca        | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Ficus carica          | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Galega officinalis    | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Gleditsia triacanthos | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Juglans regia        | N/A                   | N/A               |                                                | Gomes et al. (2013)             |
| Lonicera sp.          | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Ostrya carpinifolia   | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Picea excelsa         | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Pinus pinaster        | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Populus nigra         | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Prunus persica        | Pathogenic            | Stem canker       |                                                | Precipie et al. (2017)           |
| Pyrus communis        | Pathogenic            | Fruit rot         |                                                | Bertetti et al. (2018)          |
| Rhamnus alpina        | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Salix caprea          | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Sambucus nigra        | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Sanguisorba minor     | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Sonchus oleraceus     | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Syringa vulgaris      | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Vitis sp.             | Pathogenic            | Canker            |                                                | Jayawardena et al. (2018)       |
| Vitis vinifera        | Pathogenic            | Cane blight       |                                                | Cinelli et al. (2016)           |
| **Diaporthe euphorbi**| **Diaporthe fasciculata** |                   |                                                |                                  |
| Euphorbia amygdaloids | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Robinia pseudoacacia  | N/A                   | N/A               |                                                | Farr & Rossman (2020)           |
| Achillea millefolium  | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Ailanthus altissima   | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Arctium minus         | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Asparagus sp.         | Saprobiic             | N/A               |                                                | Hyde et al. (2020)              |
| Camellia sinensis     | N/A                   | N/A               |                                                | Gomes et al. (2013)             |
| Castanea sativa       | Pathogenic            | Stem and shoot cankers |                                  | Annesi et al. (2016)           |
| Chenopodium sp.       | **Diaporthe foeniculata** |                   |                                                |                                  |
| Citrus limon          | Saprobiic             | –                 |                                                | This study                      |
| Citrus maxima         | Pathogenic            | Branch canker     |                                                | Guarnaccia & Crous (2017)        |
| Citrus mitis          | Pathogenic            | Twig dieback      |                                                | Guarnaccia & Crous (2017)        |
| Citrus paradisi       | Pathogenic            | Branch canker     |                                                | Guarnaccia & Crous (2017)        |
| Citrus reticulata     | Pathogenic            | Twig dieback      |                                                | Guarnaccia & Crous (2017)        |
| Citrus sinensis       | Pathogenic            | Branch canker, Trunk canker |                                  | Guarnaccia & Crous (2017)        |
| Cupressus sempervirens| N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Diospyros kaki        | N/A                   | N/A               |                                                | Gomes et al. (2013)             |
| Eucalyptus camaldulensis | Pathogenic             | Cankers           |                                                | Deidda et al. (2016)            |
| Hemerocallis fulva    | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Lunaria rediviva      | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Melilotes officinalis | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Microcitrus australasica | Pathogenic          | Twig dieback      |                                                | Guarnaccia & Crous (2017)        |
| Persia americana      | Pathogenic            | Branch cankers and stem-end rot |                                  | Guarnacciaet al. (2016)         |
| Prunus amygdalus      | N/A                   | N/A               |                                                | Gomes et al. (2013)             |
| Prunus avium          | Saprobiic or parasitic| –                 |                                                | Li et al. (2020)                |
| Rosa canina           | Pathogenic            | N/A               |                                                | Wanasinghe et al. (2018)        |
| Vicia sp.             | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Wisteria sinensis     | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Amorpha fruticosa     | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Angelica sylvestris   | N/A                   | N/A               |                                                | Dissanayake et al. (2017)        |
| Species          | Host                        | Life mode | Disease/Disease symptoms               | Original Reference                  |
|------------------|-----------------------------|-----------|----------------------------------------|-------------------------------------|
| Diaporthe gardeniae | Gardenia florida           | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Gardenia jasminoides       | N/A       | N/A                                    | Gomes et al. (2013)                  |
| Diaporthe gulyae  | Heracleum sphondylium      | N/A       | N/A                                    | Dissanayake et al. (2017)            |
| Diaporthe helianthi | Helianthus annuus          | Pathogenic| Stem canker                           | Pecchia et al. (2004)                |
| Diaporthe italiana | Morus alba                 | Saprobic  | –                                      | Hyde et al. (2019)                   |
| Diaporthe lonicerae | Lonicera sp.               | Saprobic  | –                                      | Dissanayake et al. (2017)            |
|                  | Laurus nobilis             | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Torilis arvensis           | N/A       | N/A                                    | Dissanayake et al. (2017)            |
| Diaporthe nigra  | Ballota nigra              | Saprobic  | –                                      | Hyde et al. (2020)                   |
| Diaporthe nobilis | Vitis vinifera             | N/A       | N/A                                    | Lorenzini et al. (2016)              |
| Diaporthe novem  | Citrus aurantifolia        | Pathogenic| Twig dieback                           | Guarnaccia & Crous (2017)            |
|                  | Citrus japonica            | Pathogenic| Twig dieback                           | Guarnaccia & Crous (2017)            |
|                  | Galium sp.                 | N/A       | N/A                                    | Dissanayake et al. (2017)            |
| Diaporthe pardalota | Euonymus japonicus         | N/A       | N/A                                    | Farr & Rossman (2020)                |
|                  | Yucca gloriosa             | N/A       | N/A                                    | Farr & Rossman (2020)                |
| Diaporthe phaseolorum | Glycine max               | N/A       | N/A                                    | Luongo et al. (2011)                 |
| Diaporthe podocarpimacrophylli | Olea europaea           | N/A       | N/A                                    | Gao et al. (2017)                    |
| Diaporthe pseudotsugae | Pseudotsuga menziesii      | N/A       | N/A                                    | Dissanayake et al. (2017)            |
| Diaporthe pulla  | Hedera helix               | N/A       | N/A                                    | Farr & Rossman (2020)                |
| Diaporthe ravenicca | Salvia sp.                | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Tamarix sp.                | Saprobic  | –                                      | Thambugala et al. (2017)             |
| Diaporthe rudis  | Acer campestre             | N/A       | N/A                                    | Guterrès et al. (2018)               |
|                  | Acer opalus                | N/A       | N/A                                    | Udayanga et al. (2014b)              |
|                  | Anthoxanthum odoratum      | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Carlinha vulgaris          | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Cornus sp.                 | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Dioscorea communis        | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Vaccinium corymbosum       | Pathogenic| Blight and dieback                     | Guarnaccia et al. (2020)             |
|                  | Vitis sp.                  | Pathogenic| Canker                                | Jayawardena et al. (2018)            |
|                  | Vitis vinifera             | N/A       | N/A                                    | Udayanga et al. (2014b)              |
| Diaporthe rumicola | Rumex sp.                 | Saprobic  | –                                      | Hyde et al. (2019)                   |
| Diaporthe sarothamni | Solarum dulcamara        | N/A       | N/A                                    | Farr & Rossman (2020)                |
| Diaporthe schoeni | Schoenus nigricans        | Saprobic  | –                                      | Dissanayake et al. (2017)            |
|                  | Cardus sp.                 | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Plantago sp.               | N/A       | N/A                                    | Dissanayake et al. (2017)            |
| Diaporthe sclerotoides | Cucumis sativus          | Pathogenic| Black root rot                        | Fukada et al. (2018)                 |
| Diaporthe sojae  | Glycine soja               | N/A       | N/A                                    | Gomes et al. (2013)                  |
|                  | Glycine max                | Pathogenic| Seed death                            | Farr & Rossman (2020)                |
| Diaporthe sterlis | Cytisus sp.                | N/A       | N/A                                    | Dissanayake et al. (2017)            |
|                  | Persea americana           | Pathogenic| Branch and shoot cankers               | Guarnaccia et al. (2016)             |
| Diaporthe stictica | Vaccinium corymbosum       | N/A       | N/A                                    | Lombard et al. (2014)                |
| Diaporthe torilicola | Torilis sempervirens       | N/A       | N/A                                    | Gomes et al. (2013)                  |

N/A – Not Available. The known pathogenic Diaporthe sp. are in **bold**. The records are taken from the literature and some pathogenic species has not been confirmed by pathogenicity tests.

### Acknowledgement
The authors would like to thank Mae Fah Luang University and the Center of Excellence in Fungal Research, Thailand for the valuable support provided for research.
References

Alfieri SA. 1967 – Gardenia Canker. Florida Department of Agriculture.
Amano K (Hirata). 1986 – Host range and geographical distribution of the powdery mildew fungi. Japan Science Society Press, Tokyo, 741 pages.
Annesi T, Luongo L, Galli M, Belisario A. 2016 – Characterization and pathogenicity of Phomopsis theicola anamorph of Diaporthe foeniculina causing stem and shoot cankers on sweet chestnut in Italy. Journal of Phytopathology 164, 412–416.
Anonymous. 1960 – Index of Plant Diseases in the United States. U.S.D.A. Agriculture Handbook 165, 1–531.
Bavand Savadkuhi S, Mahdian S, Babaeizad V, Tajik Ghanbari M. 2019 – Identification of Phomopsis Species on Some Ornamental and Forest Plants in Iran on the Basis of the Morphological and Molecular Characteristics. Journal of Ornamental Plants 9, 223–231.
Bertetti D, Guarnaccia V, Spadaro D, Gullino ML. 2018 – First report of fruit rot in European pear caused by Diaporthe eres in Italy. Plant Disease 102, 2651.
Bonifacio A. 2003 – Chenopodium sp. genetic resources, ethnomotany, and geographic distribution. Food Reviews International 19, 1–7.
Cai L, Giraud T, Zhang N, Begerow D et al. 2011 – The evolution of species concepts and species recognition criteria in plant pathogenic fungi. Fungal Diversity 50, 121–133.
Caio P, Bruno F, Carlos AP, Robert B. 2020 – Diaporthe rosiphthora sp. nov. Yet another rose dieback fungus. Crop Protection 139, article 105365.
Chepkirui C, Stadler M. 2017 – The genus Diaporthe: a rich source of diverse and bioactive metabolites. Mycological Progress 16, 477–494.
Choi YJ, Denchev CM, Shi HD. 2008 – Morphological and Molecular Analyses Support the Existence of Host-specific Peronospora Species Infecting Chenopodium. Mycopathologia 165, 155–164.
Deidda A, Buffa F, Linaldeddu BT, Pinna C et al. 2016 – Emerging pests and diseases threaten Eucalyptus camaldulensis plantations in Sardinia, Italy. iForest-Biogeosciences and Forestry 9, 883–891.
Díaz GA, Latorre BA, Lolas M, Ferrada E et al. 2017 – Identification and characterization of Diaporthe ambigua, D. australafricana, D. novem, and D. rudis causing a postharvest fruit rot in Kiwifruit. Plant Disease 101, 1402–1410.
Dissanayake AJ, Camporesi E, Hyde KD, Zhang W et al. 2017 – Molecular phylogenetic analysis reveals seven new Diaporthe species from Italy. Mycosphere 8, 853–877.
Duellman KM, Mathew FM, Markell SG, Castlebury LA. 2019 – Diaporthe gulyae: The New Pathogen on Common Buckwheat (Fagopyrum esculentum). Plant Health Progress 20, 70–72.
Fan XL, Yang Q, Bezerra JDP, Alvarez LV, Tian CM. 2018 – Diaporthe from walnut tree (Juglans regia) in China, with insight of the Diaporthe eres complex. Mycological Papers 17, 841–853.
Farr DF, Rossman AY. 2020 – Fungal Databases, U.S. National Fungus Collections, ARS, USDA. https://nt.ars-grin.gov/fungaldatabases/ (Accessed 06 September 2020).

Fuentes-Bazan S, Mansion G, Borsch T. 2012 – Towards a species level tree of the globally diverse genus Chenopodium (Chenopodiaceae). Molecular Phylogenetics and Evolution 62, 359–374.

Fukada H, Derie ML, Shishido M, du Toit LJ. 2018 – Phomopsis black root rot of cucumber in Washington State caused by Diaporthe sclerotioides. Plant Disease 102, 1657.

Gao Y, Liu F, Duan W, Crous PW, Cai L. 2017 – Diaporthe is paraphyletic. IMA fungus 8, 153–187.

Gomes RR, Glienke C, Videira SIR, Lombard L et al. 2013 – Diaporthe: a genus of endophytic, saprobic and plant pathogenic fungi. Persoonia: Molecular Phylogeny and Evolution of Fungi 31, 1–41.

Gomzhina MM, Gannibal PB. 2018 – First report of the fungus Diaporthe phaseolorum on sunflower in Russia. Microbiology Independent Research Journal. DOI: 10.18527/2500-2236-2018-5-1-65-70.

Greuter W, Poelt J, Raimondo FM. 1991– A checklist of Sicilian fungi. Bocconea 2, 222.

Guarnaccia V, Crous PW. 2017 – Emerging citrus diseases in Europe caused by species in Diaporthe. IMA Fungus 8, 317–334.

Guarnaccia V, Groenewald JZ, Woodhall J, Armengol J et al. 2018 – Diaporthe diversity and pathogenicity revealed from a broad survey of grapevine diseases in Europe. Persoonia 40, 135–153.

Guarnaccia V, Martino I, Tabone G, Brondino L, Gullino ML. 2020 – Fungal pathogens associated with stem blight and dieback of blueberry in northern Italy. Phytopathologia Mediterranea 59, 229–245.

Guarnaccia V, Vitale A, Cirvilleri G, Aiello D et al. 2016 – Characterisation and pathogenicity of fungal species associated with branch cankers and stem-end rot of avocado in Italy. European Journal of Plant Pathology 146, 963–976.

Guerrero JC, Galdames RG, Ogass KC, Pérez SF. 2020 – First Report of Diaporthe foeniculina Causing blacktip and necrotic Spot on Hazelnut Kernel in Chile. Plant Disease 104, 975.

Guterres DC, Galvao-Elias S, de Souza BCP, Pinho DB et al. 2018 – Taxonomy, phylogeny, and divergence time estimation for Apiosphaeria guaranitica, a neotropical parasite on bignoniaceous hosts. Mycologia 110, 526–545.

Hall TA. 1999 – BioEdit: a user–friendly biological sequence alignment editor and analysis program for Windows 95/98/NT. Nucleic Acids Symposium Series 41, 95–98. Available from: http://wwwmbio-ncsuedu/bioedit/bioedit.html

Hanlin RT. 1963 – A revision of the Ascomycetes of Georgia. Georgia Agricultural Experiment Stations University of Georgia, College of Agriculture. Mimeo leaflet series 175, 1–65.

Hilário S, Inês AA, Micael FMG, Anabela L, Liliana S, Artur A. 2020 – Diaporthe species associated with twig blight and dieback of Vaccinium corymbosum in Portugal, with description of four new species. Mycologia 112, 293–308.

Hyde KD, Dong Y, Phookamsak R, Jeewon R et al. 2020 – Fungal diversity notes 1151–1276: taxonomic and phylogenetic contributions on genera and species of fungal taxa. Fungal Diversity 100, 5–277.

Jayasiri SC, Hyde KD, Ariyawansa HA, Bhat J et al. 2015 – The Faces of Fungi database: fungal names linked with morphology, phylogeny and human impacts. Fungal Diversity 74, 3–18.

Jayawardena RS, Purahong W, Zhang W, Wubet T et al. 2018 – Biodiversity of fungi on Vitis vinifera L. revealed by traditional and high-resolution culture-independent approaches. Fungal Diversity 90, 1–84.
Katoh K, Rozewicki J, Yamada KD. 2019 – MAFFT online service: multiple sequence alignment, interactive sequence choice and visualization. Briefings in Bioinformatics 20, 1160–1166.

Kokanova-Nedialkova Z, Nedialkov P, Nikolov S. 2009 – The genus Chenopodium: phytochemistry, ethnopharmacology and pharmacology. Pharmacognosy Reviews 3, article 280.

Lawrence DP, Travadon R, Baumgartner K. 2015 – Diversity of Diaporthe species associated with wood cankers of fruit and nut crops in northern California. Mycologia 107, 926–940.

León M, Berbegal M, Rodríguez-Reina JM, Elena G et al. 2020 – Identification and characterization of Diaporthe spp associated with twig cankers and shoot blight of almonds in Spain. Agronomy 10, article 1062.

Li WJ, McKenzie EHC, Liu JK, Bhat DJ et al. 2020 – Taxonomy and phylogeny of hyaline-spored coelomycetes. Fungal Diversity 100, 279–801.

Lombard L, van Leeuwen GCM, Guarnaccia V, Polizzi G et al. 2014 – Diaporthe species associated with Vaccinium, with specific reference to Europe. Phytopathologia Mediterranea 53, 287–299.

Lorenzini M, Cappello MS, Logrieco A, Zapparoli G. 2016 – Polymorphism and phylogenetic species delimitation in filamentous fungi from predominant mycobiota in withered grapes. International Journal of Food Microbiology 238, 56–62.

Luna IJ, Cadiz F, Aravena R, Larach A et al. 2020 – First Report of Diaporthe cynaroides and D. australaficana Associated with Walnut Branch Canker in Chile. Plant Disease DOI: 10.1094/PDIS-01-20-0205-PDN.

Luongo L, Santori A, Riccioni L, Belisario A. 2011 – Phomopsis sp. associated with post-harvest fruit rot of kiwifruit in Italy. Journal of Plant Pathology 93, 205–209.

Manawasinghe IS, Dissanayake A, Liu M, Wanasinghe D et al. 2019 – High genetic diversity and species complexity of Diaporthe associated with Grapevine Dieback in China. Frontiers in Microbiology 10, article 1936.

Manawasinghe IS, Zhang W, Li X, Zhao W et al. 2018 – Novel microsatellite markers reveal multiple origins of Botryosphaeria dothidea causing the Chinese grapevine trunk disease. Fungal Ecolgy 33, 134–142. DOI: 10.1016/j.funeco.2018.02.004

Mancebo MF, Bazzalo ME, Reid RJ, Kontz B, Mathew FM. 2019 – First report of Diaporthe gulyae causing Phomopsis stem canker of Sunflower (Helianthus annuus) in Argentina. Plant Disease 103, 1769–1769.

Mathew FM, Gulya TJ, Jordahl JG, Markell SG. 2018 – First report of stem disease of soybean (Glycine max) caused by Diaporthe gulyae in North Dakota. Plant Disease 102, 240.

Mathew FM, Rashid KY, Gulya TJ, Markell SG. 2015 – First report of Phomopsis stem canker of sunflower (Helianthus annuus) caused by Diaporthe gulyae in Canada. Plant Disease 99, 160.

Mendes MAS, da Silva VL, Dianese JC. 1998 – Fungos em Plants no Brasil. Embrapa-SPI/Embrapa-Cenargen, Brasilia, 555.

Meng L, Yu C, Wang C, Li G. 2018 – First report of Diaporthe amygdali causing walnut twig canker in Shandong Province of China. Plant disease 102, 1859.

Marin-Felix Y, Hernández-Restrepo M, Wingfield MJ, Akulov A et al. 2019 – Genera of phytopathogenic fungi: GOPHY 2. Studies in Mycology 92, 47–133.

Miller MA, Pfieffer W, Schwartz T. 2010 – Creating the CIPRES science gateway for inference of large phylogenetic trees. Proceedings of the Gateway Computing Environments Workshop (GCE), November 14, 2010, New Orleans, Louisiana 1–8.

Nitschke T. 1870 – Pyrenomycetes Germanici 2:245 Breslau. Eduard Trewendt, Germany.

Pecchia S, Mercatelli E, Vannacci G. 2004 – Intraspecific diversity within Diaporthe Helianthi: Evidence from rDNA intergenic spacer (IGS) sequence analysis. Mycopathologia 157, 317–326.

Prencipe S, Nari L, Vittone G, Spadaro D. 2017 – First report of Diaporthe eres causing stem canker on peach (Prunus persica) in Italy.
Rambaut A. 2011 – FigTree Tree figure drawing tool version 131, Institute of Evolutionary Biology, University of Edinburgh. http://treebioedacuk/software/figtree/ (Accessed 13 July 2020).

Ronquist F, Huelsenbeck JP. 2003 – MrBayes 3: Bayesian phylogenetic inference under mixed models Bioinformatics 19, 1572–1574.

Rossman AY, Palm-Hernández ME. 2008 – Systematics of plant pathogenic fungi: why it matters. Plant Disease 92, 1376–1386.

Santos JM, Phillips AJL. 2009 – Resolving the complex of Diaporthe (Phomopsis) species occurring on Foeniculum vulgare in Portugal. Fungal Diversity 34, 111–125.

Santos L, Phillips AJL, Crous PW, Alves A. 2017 – Diaporthe species on Rosaceae with descriptions of D. Pyracanthae sp. nov. and D. Malorum sp. nov. Mycosphere 8 (5), 485–511.

Sarbhoy AK, Lal G, Varshney JL. 1971 – Fungi of India (1967–71). Navyug Traders, New Delhi, 148.

Senanayake IC, Rathnayaka AR, Marasinghe DS, Calabon MS et al. 2020 – Morphological approaches in studying fungi: collection, examination, isolation, sporulation and preservation. Mycosphere x, xx-xx (In press).

Sessa L, Abreo E, Bettucci L, Sandra LUPO. 2017 – Diversity and virulence of Diaporthe species associated with wood disease symptoms in deciduous fruit trees in Uruguay. Phytopathologia Mediterranea 56, 431–444.

Stamatakis A, Hoover P, Rougemont J. 2008 – A rapid bootstrap algorithm for the RAXML web servers. Systematic Biology 57, 758–771.

Stamatakis A. 2014 – RAXML version 8: a tool for phylogenetic analysis and post–analysis of large phylogenies. Bioinformatics 30, 1312–1313.

Sun C, Huang Y, Liu J, Zhang Q, Wang C. 2020 – First report of shoot dieback on Apple caused by Diaporthe nobilis in China. Plant Disease 104, 991.

Tekiner N, Tozlu E, Guarnaccia V. 2020 – First report of Diaporthe foeniculina causing fruit rot of lemon in Turkey. Journal of Plant Pathology 102, 277.

Thambugala KM, Daranagama DA, Phillips AJL, Bulgakov TS et al. 2017 – Microfungi on Tamarix. Fungal Diversity 82, 239–306.

Thomidis T, Prodromou I, Zambounis A. 2019 – Occurrence of Diaporthe ambigua Nitschke causing postharvest fruit rot on kiwifruit in Chrysoupoli Kavala, Greece. Journal of Plant Pathology 101, 1295–1296.

Thompson SM, Tan YP, Young AJ, Neate SM et al. 2011 – Stem cankers on sunflower (Helianthus annuus) in Australia reveal a complex of pathogenic Diaporthe (Phomopsis) species. Persoonia: Molecular Phylogeny and Evolution of Fungi 27, 80.

Udayanga D, Castlebury LA, Rossman AY, Chukeatirote E, Hyde KD. 2014a – Insights into the genus Diaporthe: phylogenetic species delimitation in the D. eres species complex. Fungal Diversity 67, 203–229.

Udayanga D, Castlebury LA, Rossman AY, Hyde KD. 2014b – Species limits in Diaporthe: molecular re-assessment of D. citri, D. cytospora, D. foeniculina and D. rudis. Persoonia: Molecular Phylogeny and Evolution of Fungi 32, 83.

Udayanga D, Liu X, Crous PW, McKenzie EHC et al. 2012 – A multi locus phylogenetic evaluation of Diaporthe (Phomopsis). Fungal Diversity 56, 157–171.

Udayanga D, Liu X, McKenzie EH, Chukeatirote E et al. 2011 – The genus Phomopsis: biology, applications, species concepts and names of common phytopathogens. Fungal diversity 50, article 189.

Unamuno PLM. 1941 – Enumeration and geographical distribution of the ascomycetes of the Iberian Peninsula and the Balearic Islands. Memorias Real Academia de Ciencias Madrid 8, 1–403.

Vakalounakis DJ, Ntougias S, Kavroulakis N, Protopapadakis E. 2019 – Neofusicoccum parvum and Diaporthe foeniculina associated with twig and shoot blight and branch canker of citrus in Greece. Journal of Phytopathology 167, 527–537.
Van Der AA, Van Kesteren HA. 1979 – Some pycnidial fungi occurring on Atriplex and Chenopodium. Persoonia 10, 267–276.

Wanasinghe DN, Phukhamsakda C, Hyde KD, Jeewon R et al. 2018 – Fungal diversity notes 709–839: taxonomic and phylogenetic contributions to fungal taxa with an emphasis on fungi in Rosaceae. Fungal Diversity 89, 1–236.

Wehmeyer LE. 1933 – The genus Diaporthe Nitschke and its segregates. University of Michigan, Studies in Science Series 9, 1–349.

Wrona CJ, Mohankumar V, Schoeman MH, Tan YP et al. 2020 – Phomopsis husk rot of macadamia in Australia and South Africa caused by novel Diaporthe species. Plant Pathology 69, 911–921.

Yang Q, Fan XL, Guarnaccia V, Tian CM. 2018 – High diversity of Diaporthe species associated with twelve new species described. MycoKeys 39, 97–149.

Yu C, Wu C, Li G, Wang C. 2018 – First Report of Diaporthe nobilis causing postharvest rot of blueberry in Shandong Province, China. Plant Disease 102, 1856.

Zhang TY, Zhang J, Chen W, Gao M. 1999 – Taxonomic studies of Alternaria from China II. New species and new records on Amaranthaceae, Basellaceae and Chenopodiaceae. Mycosystema 18, 121–124.

Zhang AW, Hartman GL, Riccioni L, Chen WD et al. 1997 – Using PCR to distinguish Diaporthe phaseolorum and Phomopsis longicolla from other soybean fungal pathogens and to detect them in soybean tissues. Plant Disease 81, 1143–1149.

Zhang C, Wang WZ, Diao YZ, Liu XL. 2016 – First report of Diaporthe nobilis causing fruit decay of pepper in China. Plant Disease 100, 1948.

Zhang Q, Liu H, Yu C, Wang C. 2018 – First report of shoot canker on Chestnut caused by Diaporthe nobilis in Shandong Province of China. Plant Disease 102, 2376.

Zhang Y, Yu Y, Li M, Zhang J et al. 2019 – First report of Phomopsis stem canker of Sunflower (Helianthus annuus) caused by Diaporthe gulyae in China. Plant Disease 103, 2124.
### Supplementary data

**Supplementary Table 1** Selected taxa with their corresponding GenBank accession numbers of *Diaporthae* used in the phylogenetic analyses. Type species are marked with an asterix and the newly generated sequences are in blue.

| Species | Culture collection/Herbarium number | GenBank accession numbers |
|---------|------------------------------------|--------------------------|
|         |                                    | ITS | TUB2 | HIS | TEFL-α | CAL |
| *D. acaciarum* | CBS 138862* | KP004460 | KP004509 | KP004504 | – | – |
| *D. acaciigena* | CBS 129521* | KC343005 | KC343973 | KC343489 | KC343731 | KC343247 |
| *D. acericola* | MFLUCC 17-0956* | KY964224 | KY964074 | – | KY964180 | KY964137 |
| *D. acerina* | CBS 137.27 | KC343006 | KC343974 | KC343490 | KC343732 | KC343248 |
| *D. acuta* | PSCG 047* | MK26957 | MK612265 | MK726161 | MK654802 | MK691124 |
| *D. acutispora* | CGMCC 3.18285* | KX986764 | KX999195 | KX999235 | KX999155 | KX999274 |
| *D. albovinosum* | CFCC 53.066* | MK432659 | MK578059 | MK443004 | MK578133 | MK442979 |
| *D. alleghaniensis* | CBS 495.72* | FJ889444 | KC843228 | KC343491 | GQ250298 | KC343249 |
| *D. alnea* | CBS 146.46* | KC343008 | KC343976 | KC343492 | KC343734 | KC343250 |
| *D. ambigua* | CBS 114015* | KC343010 | KC343978 | KC343494 | KC343736 | KC343252 |
| *D. ampelina* | CBS 114016* | AF230751 | JX275452 | – | GQ250351 | JX197443 |
| *D. amygdali* | CBS 126679* | KC343022 | KC343990 | KC343506 | KC343748 | KC343264 |
| *D. anacardii* | CBS 720.97* | KC343024 | KC343992 | KC343508 | KC343750 | KC343266 |
| *D. angeliaca* | CBS 111592* | KC343026 | KC343994 | KC343511 | KC343752 | KC343268 |
| *D. anhuicensis* | CNVCC 201901 | MN219718 | MN227008 | MN224556 | MN224668 | MN224549 |
| *D. apiculatum* | LC 3418* | KP267896 | KP293476 | – | KP267970 | – |
| *D. aquatica* | IFRDCC 3051* | JQ797437 | – | – | – | – |
| *D. arbutina* | RGM 2546 | MN509711 | MN509722 | – | MN509733 | MN974277 |
| *D. arctii* | CBS 136.25 | KC343031 | KC343999 | KC343515 | KC343757 | KC343273 |
| *D. arecae* | CBS 161.64* | KC343032 | KC344000 | KC343516 | KC343758 | KC343274 |
| *D. arengae* | CBS 114979* | KC343002 | KC343518 | KC343760 | – | KC343276 |
| *D. arezzoensis* | MFLU 19-2880* | MT185503 | MT454055 | – | MT454019 | – |
| *D. asaenum* | MFLUCC 12-0299a* | KT459414 | KT459432 | – | KT459448 | KT459464 |
| *D. asheicola* | CBS 136967* | KJ160562 | KJ105018 | – | KJ160594 | KJ160542 |
| *D. aspalathia* | CBS 117169* | KC343036 | KC344004 | KC343520 | KC343762 | KC343278 |
| *D. australaficana* | CBS 111886* | KC343038 | KC344006 | KC343522 | KC343764 | KC343280 |
| *D. australiana* | BRP 66145* | MN708222 | MN696530 | – | MN696522 | – |
| *D. baccae* | CBS 136972* | KJ160565 | MF418509 | MF418264 | KJ160597 | – |
| *D. batatas* | CBS 122.21 | KC343040 | KC344008 | KC343524 | KC343766 | KC343282 |
| *D. beckhaussi* | CBS 138.27 | KC343041 | KC344009 | KC343525 | KC343767 | KC343283 |
| *D. belharziae* | BRP 54792* | JX862529 | KF170921 | – | JX862535 | – |
| *D. benedicti* | CFCC 50062* | KP208847 | KP208855 | KP208851 | KP208853 | KP208849 |
| *D. betulae* | CFCC 50469* | KT732950 | KT733020 | KT732999 | KT733016 | KT732997 |
| Species                      | Culture collection/Herbarium number | GenBank accession numbers | ITS       | TUB2      | HIS       | TEF1-α    | CAL       |
|------------------------------|-------------------------------------|---------------------------|-----------|-----------|-----------|-----------|-----------|
| *D. betulicola*              | CFCC 51128                          |                           |           |           |           |           |           |
| *D. bicincta*                | CBS 121004*                         |                           |           |           |           |           |           |
| *D. biconispora*             | CGMCC 3.17252*                      |                           |           |           |           |           |           |
| *D. biguttata*               | ICMP20657*                          |                           |           |           |           |           |           |
| *D. biguttata*               | ICMP20657*                          |                           |           |           |           |           |           |
| *D. boehmiae*                | CBS 143347*                         |                           |           |           |           |           |           |
| *D. brasiliensis*            | CBS 133183*                         |                           |           |           |           |           |           |
| *D. caatingaensis*          | CBS 141452*                         |                           |           |           |           |           |           |
| *D. camptothecicola*         | CFCC 51632*                         |                           |           |           |           |           |           |
| *D. canthii*                 | CBS 132533*                         |                           |           |           |           |           |           |
| *D. carpinii*                | CBS 114437                          |                           |           |           |           |           |           |
| *D. cassines*                | CBS 136440*                         |                           |           |           |           |           |           |
| *D. caulivora*               | CBS 127268*                         |                           |           |           |           |           |           |
| *D. celastrina*              | CBS 139,27*                         |                           |           |           |           |           |           |
| *D. celeris*                 | CBS 143349*                         |                           |           |           |           |           |           |
| *D. ceratozamiae*            | CBS 131306*                         |                           |           |           |           |           |           |
| *D. chamaerops*              | CBS 454,81                          |                           |           |           |           |           |           |
| *D. charlesworthii*          | BRIP 54884m*                        |                           |           |           |           |           |           |
| *D. chonggingensis*          | PSCG435*                           |                           |           |           |           |           |           |
| *D. cichorii*                | MFLLUCC 17-1023*                    |                           |           |           |           |           |           |
| *D. cinerasces*              | CBS 719,96                          |                           |           |           |           |           |           |
| *D. cissampeli*              | CBS 141331*                         |                           |           |           |           |           |           |
| *D. citri*                   | CBS 13522*                          |                           |           |           |           |           |           |
| *D. citri*                   | CBS 13522*                          |                           |           |           |           |           |           |
| *D. citri*                   | CBS 13522*                          |                           |           |           |           |           |           |
| *D. citri*                   | CBS 13522*                          |                           |           |           |           |           |           |
| *D. citri*                   | CBS 13522*                          |                           |           |           |           |           |           |
| *D. compacta*                | LC3083*                             |                           |           |           |           |           |           |
| *D. convolvuli*              | CBS 124654                          |                           |           |           |           |           |           |
| *D. corlyi*                  | CFCC 53083*                         |                           |           |           |           |           |           |
| *D. crataegi*                | CBS 114435                          |                           |           |           |           |           |           |
| *D. crotalariae*             | CBS 162.33*                         |                           |           |           |           |           |           |
| *D. croxii*                  | CAAS823*                            |                           |           |           |           |           |           |
| *D. cucurbiteae*             | DAOM 42078*                         |                           |           |           |           |           |           |
| *D. cupputea*                | CBS 117499*                         |                           |           |           |           |           |           |
| *D. cynaroidis*              | CBS 122676                          |                           |           |           |           |           |           |
| *D. cytopsoprella*           | CBS 137020*                         |                           |           |           |           |           |           |
## Supplementary Table 1 Continued.

| Species                  | Culture collection/Herbarium number | GenBank accession numbers |
|--------------------------|-------------------------------------|---------------------------|
|                          | ITS                                 | TUB2                      | HIS          | TEF1-α       | CAL          |
| *D. decedens*            | CBS 109772                          | KC343059                  | KC344027     | KC343543     | KC343785     | KC343301     |
| *D. decorticans*         | CBS 114200                          | KC343169                  | KC344137     | KC343653     | KC343895     | KC343411     |
| *D. destruens*           | SPL15025*                           | MH465671                  | –            | –            | MH560611     | MH560612     |
| *D. detrusa*             | CBS 109770                          | KC343061                  | KC344029     | KC343545     | KC343787     | KC343303     |
| *D. diospyricola*        | CBS 136552*                         |KF777156                  | –            | –            | –            | –            |
| *D. discoidispora*       | ICMP20662*                          | KJ490624                  | KJ490445     | KJ490566     | KJ490503     | –            |
| *D. dorycnii*            | MFLUCC 17-1015*                     | KY964215                  | KY964099     | –            | KY964171     | –            |
| *D. drenthii*            | BRIP 66524*                         | MN708229                  | MN696537     | –            | MN696526     | –            |
| *D. durionigena*         | KCSR                                 | MN453530                  | MT276159     | –            | MT276157     | –            |
| *D. elaeagni-glabrae*    | CGMCC 3.18287*                      | KX986779                  | KX999212     | KX999251     | KX999171     | KX999281     |
| *D. elegans*             | CBS 504.72                          | KC343064                  | KC344032     | KC343548     | KC343790     | KC343306     |
| *D. ellipicola*          | CGMCC 3.17084*                      | KF576270                  | KF576291     | –            | KF576245     | –            |
| *D. endophytica*         | CBS 133811*                         | KC343065                  | KC344036     | KC343549     | KC343791     | KC343307     |
| *D. eres*                | CBS 138594*                         | KJ210529                  | KJ420799     | KJ420850     | KJ210550     | KJ434999     |
| *D. eucalyptorum*        | CBS 132525*                         | XJ069862                  | –            | –            | –            | –            |
| *D. eugeniae*            | CBS 444.82                          | KC343098                  | KC344066     | KC343582     | KC343824     | KC343340     |
| *D. fibrosa*             | CBS 109751                          | KC343099                  | KC344067     | KC343583     | KC343825     | KC343341     |
| *D. foeniculina*         | MFLUCC 17-1068                       | KY964188                  | KY964071     | –            | KY964144     | –            |
| *D. foeniculina*         | MFLUCC 17-1020                       | KY964218                  | KY964102     | –            | KY964174     | –            |
| *D. foeniculina*         | AR5145                               | KC843306                  | KC843220     | –            | KC843115     | KC834140     |
| *D. foeniculina*         | DP0454                               | KC843297                  | KC843211     | –            | KC843106     | KC834131     |
| *D. foeniculacea*        | CBS 123208                          | KC343104                  | KC344072     | KC343588     | KC343830     | KC343346     |
| *D. foeniculina*         | CBS 111553*                         | KC343101                  | KC344069     | KC343585     | KC343827     | KC343343     |
| *D. foeniculina*         | MFLUCC 20-0151                       | MFLUCC 20-0151            | MW020722     | MW0207340    | –            | –            |
| *D. foikealwen*          | RGM 2539*                           | MN509713                  | MN509724     | –            | MN509735     | MN974278     |
| *D. fraxini-argustifoliae*| BRIP 54781*                         | JX862528                  | KF170920     | –            | JX852534     | –            |
| *D. fructicola*          | MAFF 246408*                        | LC342734                  | LC342736     | LC342737     | LC342735     | LC342738     |
| *D. fulvicolor*          | PSCG 051*                           | MK626859                  | MK691236     | MK726163     | MK654806     | MK691132     |
| *D. fuscisola*           | CGMCC 3.17087*                      | KF576281                  | KF576305     | –            | KF576256     | KF576233     |
| *D. ganjiae*             | CBS 180.91*                         | KC343112                  | KC344080     | KC343596     | KC343838     | KC343354     |
| *D. gardeniae*           | CBS 288.56                          | KC343113                  | KC344081     | KC343597     | KC343839     | KC343355     |
| *D. garethjonesii*       | MFLUCC 12-0542a*                    | KT459423                  | KT459441     | –            | KT459457     | KT459470     |
| *D. gautieri*            | BRIP 55657a*                        | KJ197290                  | KJ197270     | –            | KJ197252     | –            |
| *D. guangxiensis*        | JXZ320094*                          | MK350772                  | MK500168     | –            | MK523566     | MK736727     |
| *D. gulyae*              | BRIP 54025*                         | JF431299                  | KJ197271     | –            | JN645803     | –            |
## Supplementary Table 1 Continued.

| Species                  | Culture collection/Herbarium number | GenBank accession numbers | ITS            | TUB2            | HIS            | TEF1-α         | CAL            |
|--------------------------|-------------------------------------|---------------------------|----------------|-----------------|----------------|----------------|-----------------|
| D. helianthi             | CBS 592.81*                         | KC343115                  | KC344083       | KC343599        | KC343841       | JX197454       |                 |
| D. heterophyllae         | CBS 143769*                         | MG600222                  | MG600226       | MG600220        | MG600224       | MG600218       |                 |
| D. heveae                | CBS 852.97                          | KC343116                  | KC344084       | KC343600        | KC343842       | KC343358       |                 |
| D. heveae                | CBS 681.84                          | KC343117                  | KC344085       | KC343601        | KC343843       | KC343359       |                 |
| D. hickoriae             | CBS 145.26                          | KC343118                  | KC344086       | KC343602        | KC343844       | KC343360       |                 |
| D. hispaniae             | CBS 143351*                         | MG812123                  | MG812196       | MG812147        | MG812144       | MG812180       |                 |
| D. hongkongensis         | CBS 115448*                         | KC343119                  | KC344087       | KC343603        | KC343845       | KC343361       |                 |
| D. hordel                | CBS 481.92                          | KC343120                  | KC344088       | KC343604        | KC343846       | KC343362       |                 |
| D. huangshensis          | CNUCC 201903*                       | MN219729                  | MN227010       | MN224558        | MN224670       | –              |                 |
| D. hueiensis             | JZB320123*                         | MK356809                  | MK500148       | –               | MK523570       | MK500235       |                 |
| D. hungaricae            | CBS 143353*                         | MG812126                  | MG812199       | MG812147        | MG812147       | MG812183       |                 |
| D. impulsa               | CBS 114434                          | KC343121                  | KC344089       | KC343605        | KC343847       | KC343363       |                 |
| D. incompleta            | CGMCC 3.18288*                      | KX986794                  | KX999226       | KX999265        | KX999186       | KX999289       |                 |
| D. inconspicua           | CBS 133813*                         | KC343123                  | KC344091       | KC343607        | KC343849       | KC343365       |                 |
| D. infecunda             | CBS 133812*                         | KC343126                  | KC344094       | KC343610        | KC343852       | KC343368       |                 |
| D. isoberliniae          | CBS 137981*                         | KJ869133                  | KJ869245       | –               | –              | –              |                 |
| D. italiana              | MFLUCC:18-0091*                     | MH846238                  | MH853689       | –               | MH853697       | MH853691       |                 |
| D. juglandicola          | CFCC 51134*                         | KU995101                  | KO24634        | –               | KO246284       | KO246166       |                 |
| D. kochmanii             | BRIP 54033*                         | JF431295                  | –              | JN645809        | –              | –              |                 |
| D. kongii                | BRIP 54031*                         | JF431301                  | KJ97272        | JN645797        | –              | –              |                 |
| D. krabianesi            | MFLUCC 17-2481*                     | MN047100                  | MN431495       | –               | MN433215       | –              |                 |
| D. leucospermi           | CBS 111980*                         | JN712460                  | KY435673       | KY435653        | KY435632       | KY435663       |                 |
| D. limoncola             | CBS 142549*                         | MF418422                  | MF418582       | MF418342        | MF418501       | MF418256       |                 |
| D. litticola             | BRIP 54900*                         | JX862533                  | KF170925       | JX862539        | –              | –              |                 |
| D. lithocarpus           | CGMCC 3.15175*                      | KC153104                  | KF576311       | –               | KC153095       | –              |                 |
| D. longicola             | MFLUCC 17-0963*                     | KY964190                  | KY964073       | –               | KY964146       | KY964116       |                 |
| D. lusitanicae           | CBS 123212*                         | KC343136                  | KC344010       | KC343620        | KC343862       | KC343378       |                 |
| D. macadamiae            | BRIP 66526*                         | MN078230                  | MN695639       | –               | MN695628       | –              |                 |
| D. macintoshii           | BRIP 55064a*                        | KJ197289                  | KJ197269       | –               | KJ197251       | –              |                 |
| D. mahothocarpus         | CGMCC 3.15181                       | KC153096                  | –              | –               | KC153087       | –              |                 |
| D. malorum               | CBS142383*                          | KY435688                  | KY435668       | KY435648        | KY435627       | KY435658       |                 |
| D. manihotia             | CBS 505.76                          | KC343138                  | KC344106       | KC343622        | KC343864       | KC343380       |                 |
| D. marina                | MFLU 17-2622*                       | MN047102                  | –              | –               | –              | –              | –               |
### Supplementary Table 1 Continued.

| Species          | Culture collection/Herbarium number | GenBank accession numbers |  |  |  |
|------------------|-------------------------------------|---------------------------|---|---|---|
|                  |                                     | ITS                       | TUB2     | HIS                       | TEF1-α       | CAL |
| *D. maritima*    | DAOMC 250563<sup>2</sup>            | KU552025                  | KU574615 | –                         | KU552023     | –   |
| *D. masirevicii* | BRIP 57892<sup>*a</sup>            | KJ197277                  | KJ197257 | KJ197239                  | –             | –   |
| *D. mayteni*     | CBS 133185<sup>5</sup>             | KC343139                  | KC344107 | KC343623                  | KC343865     | KC343381 |
| *D. maytenicola* | CBS 136441<sup>1</sup>             | KF777157                  | KF777250 | –                         | –             | –   |
| *D. megalospora* | CBS 143.27                          | KC343140                  | KC344108 | KC343624                  | KC343866     | KC343382 |
| *D. melitensis*  | CBS 142551<sup>1</sup>             | MF418424                  | MF418584 | MF418344                  | MF418503     | MF418258 |
| *D. melonis*     | CBS 507.78<sup>1</sup>             | KC343142                  | KC344110 | KC343626                  | KC343868     | KC343384 |
| *D. middletonii* | BRIP 54884<sup>e</sup>             | KJ197286                  | KJ197266 | –                         | KJ197248     | –   |
| *D. millietiae*  | GUCC9167<sup>5</sup>               | MK398674                  | MK460488 | –                         | MK480609     | MK502086 |
| *D. miriciæ*     | BRIP 54736<sup>e</sup>             | KJ197283                  | KJ197263 | –                         | KJ197245     | –   |
| *D. momicola*    | MFLUCC 16-0113<sup>1</sup>         | KU557563                  | KU557587 | –                         | KU557631     | KU557611 |
| *D. multiguttulata* | ICMP20656<sup>*</sup>         | KJ490633                  | KJ490454 | KJ490575                  | KJ490512     | –   |
| *D. musigena*    | CBS 129519<sup>7</sup>             | KC343143                  | KC344111 | KC343627                  | KC343869     | KC343385 |
| *D. myracrodruonis* | URM 7972<sup>7</sup>            | NR_163320                 | MK205291 | MK213408                  | MK205290     | –   |
| *D. neilliae*    | CBS 144.27                          | KC343144                  | KC344112 | KC343628                  | KC343870     | KC343386 |
| *D. neorcaritii* | CBS 109490                         | KC343145                  | KC344113 | KC343629                  | KC343871     | KC343387 |
| *D. nomurai*     | CBS 157.29                          | KC343154                  | KC344115 | KC343638                  | KC343880     | KC343396 |
| *D. nothofagi*   | BRIP 54801<sup>*</sup>             | KJ862530                  | KF170922 | –                         | KJ862536     | –   |
| *D. novem*       | CBS 127271<sup>1</sup>             | KC343157                  | KC344125 | KC343641                  | KC343883     | KC343399 |
| *D. obusfoliae*  | CBS 143449                          | MG386072                  | –         | MG386137                  | –             | –   |
| *D. ocoteae*     | CBS 141330                          | KX228293                  | KX228388 | –                         | –             | –   |
| *D. oncostoma*   | CBS 589.78                          | KC343162                  | KC344130 | KC343646                  | KC343888     | KC343404 |
| *D. oraccinii*   | LC 3166<sup>*e</sup>               | KP267863                  | KP293443 | KP293517                  | KP267937     | –   |
| *D. osmanthi*    | GUCC9165<sup>5</sup>               | MK398675                  | MK502091 | –                         | MK480610     | MK502087 |
| *D. ovalispora*  | ICMP20659<sup>*a</sup>             | KJ490628                  | KJ490449 | KJ490570                  | KJ490507     | –   |
| *D. ovoicicola*  | CGMCC 3.17092<sup>7</sup>          | KF576264                  | KF576288 | KF576239                  | KF576222     | –   |
| *D. oxe*         | CBS 133186                          | KC343164                  | KC344132 | KC343648                  | KC343890     | KC343406 |
| *D. paranensis*  | CBS 133184                          | KC343171                  | KC344139 | KC343655                  | KC343897     | KC343413 |
| *D. parapterocarp* | CBS 137986<sup>2</sup>            | KJ869138                  | KJ869248 | –                         | –             | –   |
| *D. parva*       | PSCG 034<sup>*a</sup>              | MK629199                  | MK691248 | MK726210                  | MK654858     | –   |
| *D. patagonica*  | RGM 2473<sup>*a</sup>              | MN509717                  | MN509728 | –                         | MN509739     | MN974279 |
| *D. pascoei*     | BRIP 54847<sup>*a</sup>             | JX862532                  | KF170924 | –                         | JX862538     | –   |
| *D. passiflorae* | CBS 132527                          | JK069860                  | KY435674 | KY435654                  | KY435633     | KY435664 |
| *D. passifloricola* | CBS 141329<sup>7</sup>          | KX228292                  | KX228387 | KX228367                  | –             | –   |
| *D. penetratum*  | LC 3353                            | KP714505                  | KP714529 | KP714493                  | KP714517     | –   |
| *D. perjuncta*   | CBS 109745<sup>*e</sup>            | KC343172                  | KC344140 | KC343656                  | KC343898     | KC343414 |
Supplementary Table 1 Continued.

| Species              | Culture collection/Herbarium number | GenBank accession numbers | ITS   | TUB2  | HIS   | TEF1-α | CAL  |
|----------------------|-------------------------------------|---------------------------|-------|-------|-------|--------|------|
| D. perennis          | CBS 124030                          | KC343149                  | KC344117 | KC343633 | KC343875 | KC34391 |
| D. perseae           | CBS 151.73                          | KC343173                  | KC344141 | KC343657 | KC343899 | KC343415 |
| D. pescicola         | MFLUCC 16-0105                       | KU557555                  | KU557579 | –       | KU557623 | KU557603 |
| D. phaseolorum       | CBS 113425                          | KC343174                  | KC344142 | KC343658 | KC343900 | KC343416 |
| D. phillipi          | MUM 19.28*                          | MK792305                  | MN000351 | MK871445 | MK828076 | MK883831 |
| D. phragmitis        | CBS 138897*                         | KP004445                  | KP004507 | KP004503 | –       | –      |
| D. podocarpipacrophylli |                   |                           |         |         |         |        |
| D. pseudomangiferae  | CBS 101339*                         | KC343181                  | KC344149 | KC343665 | KC343907 | KC343423 |
| D. pseudophoenicicola| CBS 462.69*                         | KC343184                  | KC344152 | KC343668 | KC343910 | KC343426 |
| D. pseudotsugae      | MFLU 15-3228                        | KY964225                  | KY964108 | –       | KY964181 | KY964138 |
| D. psoraleae         | CBS 136412*                         | KF777158                  | KF777251 | –       | KF777245 | –      |
| D. psoraleae-pinnatae| CBS 136413*                         | KF777159                  | KF777251 | –       | –       | –      |
| D. pterocarpus       | MFLUCC 10-0571                      | JQ619899                  | JX275460 | –       | JX275416 | JX197451 |
| D. pterocarpicolora  | MFLUCC 10-0580a                     | JQ619887                  | JX275441 | –       | JX275403 | JX197433 |
| D. postulata         | CBS 109742                          | KC343185                  | KC344153 | KC343669 | KC343911 | KC343427 |
| D. pyrancanthae      | CBS142384*                         | KY435635                  | KY435666 | KY435645 | KY435625 | KY435656 |
| D. racemosae         | CBS 147770*                        | MG600223                  | MG600227 | MG600221 | MG600225 | MG600219 |
| D. raonikayaporum    | CBS 133182*                        | KC343188                  | KC344156 | KC343672 | KC343914 | KC343430 |
| D. ravennica         | MFLUCC 15-0479*                     | KU906035                  | KX432254 | –       | –       | –      |
| D. rhoina            | CBS 146.27                          | KC343189                  | KC344157 | KC343673 | KC343915 | KC343431 |
| D. rhusicola         | MFLU 17-0647                        | MG828893                  | MG922552 | –       | MG922551 | –      |
| D. rhusicola         | MFLUCC 16-1393                      | KY684947                  | KY684945 | –       | KY684946 | –      |
| D. rospinthera       | COAD 2914                          | MT31119                   | –       | –       | –       | –      |
| D. rosmanitae        | MUM 19.30*                          | MK792290                  | MK837914 | MK871432 | MK828063 | MK883822 |
| D. rostrata          | CFCC 50062*                         | KP208847                  | KP208855 | KP208851 | KP208853 | KP208849 |
| D. rudis             | CBS 113201                          | KC343234                  | KC344202 | KC343718 | KC343960 | KC343476 |
| D. saccaria          | CBS 116311*                         | KC343190                  | KC344158 | KC343674 | KC343916 | KC343432 |
| D. sackstonii        | BRIP 54669b*                       | KJ197287                  | KJ197267 | –       | KJ197249 | –      |
| D. salicicola        | BRIP 54825*                        | JX862531                  | KF170923 | –       | JX862537 | –      |
| D. salinicola        | MFLUCC 18-0533 *                   | MN047098                  | –       | –       | MN077073 | –      |
| D. sambucusii        | CFCC 51986*                        | KY852495                  | KY852511 | KY852503 | KY852507 | KY852499 |
| D. schini            | CBS 133181*                        | KC343191                  | KC344159 | KC343675 | KC343917 | KC343433 |
| D. schisandrae       | CFCC 51988*                        | KY852497                  | KY852513 | KY852505 | KY852509 | KY852501 |
| D. schoeni           | MFLU 15-1279*                      | KY964226                  | KY964109 | –       | KY964182 | KY964139 |
### Supplementary Table 1 Continued.

| Species                  | Culture collection/Herbarium number | GenBank accession numbers |
|--------------------------|-------------------------------------|---------------------------|
|                          |                                     | ITS          | TUB2         | HIS          | TEF1-α       | CAL          |
| *D. sclerotoides*        | CBS 296.67                         | KC343193     | KC344161     | KC343677     | KC343919     | KC343435     |
| *D. scrobina*            | CBS 251.38                         | KC343195     | KC344163     | KC343679     | KC343921     | KC343437     |
| *D. searlei*             | BRIP 66528                         | MN708231     | MN696540     | –            | –            | –            |
| *D. senneae*             | CFCC 51636*                        | KY203724     | KY228891     | –            | KY228885     | KY228875     |
| *D. semincola*           | CFCC 51634*                        | KY203722     | KY228889     | –            | KY228883     | KY228873     |
| *D. serafiniae*          | BRIP 55665*                        | KJ197274     | KJ197254     | –            | KJ197236     | –            |
| *D. shaanxiensis*        | CFCC 53106*                        | MK432654     | –            | MK443001     | MK578130     | MK442976     |
| *D. shenongiaensis*      | CNUCC 201905*                      | MN216229     | MN227012     | MN224560     | MN224672     | MN224551     |
| *D. siamensis*           | MFLUCC 10-0573a                     | JQ619879     | JX275429     | –            | JX275393     | –            |
| *D. sojae*               | CBS 139282                         | KJ590719     | KJ610875     | KJ659208     | KJ590762     | KJ612116     |
| *D. spinosa*             | PSCG383*                           | MK626849     | MK691234     | MK726156     | MK654811     | MK691129     |
| *D. sterilis*            | CBS 136969*                        | KJ160579     | KJ160528     | MF418350     | KJ160611     | KJ160548     |
| *D. stewartii*           | CBS 193.36                         | FJ899448     | –            | –            | GQ250324     | –            |
| *D. stricta*             | CBS 370.54                         | KC343212     | KC344180     | KC343696     | KC343938     | KC343454     |
| *D. subclavata*          | ICMP20663*                         | KJ490630     | KJ490451     | KJ490572     | KJ490509     | –            |
| *D. subordinaria*        | CBS 101711                         | KC343213     | KC344181     | KC343697     | KC343939     | KC343455     |
| *D. taoioka*             | MFLUCC 16-0117*                    | KU557567     | KU557591     | –            | KU557635     | –            |
| *D. tarchonanthi*        | CPC 37479*                         | MT223794     | MT223733     | MT223759     | –            | –            |
| *D. tecomae*             | CBS 100547                         | KC343215     | KC344183     | KC343699     | KC343941     | KC343457     |
| *D. tectonae*            | MFLUCC 12-0777*                    | KU712430     | KU743977     | –            | KU749359     | KU749345     |
| *D. tectonendophytica*   | MFLUCC 13-0471*                    | KU712439     | KU743986     | –            | KU749367     | KU749354     |
| *D. tectonigena*         | MFLUCC 12-0767*                    | KU712429     | KU743976     | –            | KU749371     | KU749358     |
| *D. terebinthifoli*      | CBS 133180*                        | KC343216     | KC344184     | KC343700     | KC343942     | KC343458     |
| *D. ternstroemia*        | CGMCC 3.15183*                     | KC153098     | –            | –            | KC153089     | –            |
| *D. thunbergii*          | MFLUCC 10-0756a                     | JQ619893     | JX275449     | –            | JX275409     | JX197440     |
| *D. toxicodendri*        | FFPR1420987                        | LC275192     | LC275224     | LC275216     | LC275216     | LC275200     |
| *D. tulliensis*          | BRIP 62248a                        | KR936130     | KR936132     | –            | KR936133     | –            |
| *D. uncleare*            | FAU 656                           | KJ590726     | KJ610881     | KJ659215     | KJ590747     | KJ612122     |
| *D. undulata*            | CGMCC 3.18293*                     | KX986798     | KX999230     | KX999269     | KX999190     | –            |
| *D. unshiuensis*         | CGMCC3.17569*                      | KJ490587     | KJ490408     | KJ490529     | KJ490466     | –            |
| *D. vaccini*             | CBS 160.32*                        | AF317578     | KC344196     | KC343712     | GQ250326     | KC343470     |
| *D. vacuue*              | MUM 19.31*                        | MK792309     | MK837931     | MK871449     | MK828080     | MK883834     |
| *D. vanguardiae*         | CBS 137985*                        | KJ869137     | KJ869247     | –            | –            | –            |
| *D. vawdreyi*            | BRIP 57887a                        | KR936126     | KR936128     | –            | KR936129     | –            |
| *D. velutina*            | CGMCC 3.18286*                     | KX986790     | KX999223     | KX999261     | KX999182     | –            |
| *D. vexans*              | CBS 127.14                         | KC343229     | KC344197     | KC343713     | KC343955     | KC343471     |
## Supplementary Table 1

| Species                | Culture collection/Herbarium number | GenBank accession numbers |
|------------------------|------------------------------------|---------------------------|
|                        |                                    | ITS | TUB2 | HIS | TEF1-α | CAL |
| D. viniferae           | JZB320071*                         | MK341550 | MK500112 | – | MK500107 | MK500119 |
| D. virgiliae           | CBS 138788*                        | KP247573 | KP247582 | – | – | – |
| D. woodii              | CBS 558.93                         | KC343244 | KC344212 | KC343728 | KC343970 | KC343486 |
| D. woolworthii         | CBS 148.27                         | KC343245 | KC344213 | KC343729 | KC343971 | KC343487 |
| D. xishuangbanica      | CGMCC 3.18282*                     | KX986783 | KX999216 | KX999255 | KX999175 | – |
| D. yunnanensis         | CGMCC 3.18289*                     | KX986796 | KX999228 | KX999267 | KX999188 | KX999290 |
| D. zaobaisi            | PSCG031*                           | MK626922 | MK691245 | MK726207 | MK654855 | – |

---

1BRIP: Queensland Plant Pathology Herbarium, Brisbane, Australia; CBS: Westerdijk Fungal Biodiversity Institute, Utrecht, the Netherlands; CFCC: China Forestry Culture Collection Center, Beijing, China; CGMCC: Chinese General Microbiological Culture Collection Center, Beijing, China; DAOM: Plant Research Institute, Department of Agriculture (Mycology), Ottawa, Canada; DAOMC: Canadian Collection of Fungal Cultures, Ottawa, Canada; FAU: Isolates in culture collection of Systematic Mycology and Microbiology Laboratory; FFPRI: Forestry and Forest Products Research Institute, Japan; ICMP: International Collection of Micro-organisms from Plants, Landcare Research, Private Bag 92170, Auckland, New Zealand; IFRDCC: International Fungal Research and Development Culture Collection; MFLU: Mae Fah Luang University herbarium, Thailand; MFLUCC: Mae Fah Luang University Culture Collection, Chiang Rai, Thailand; LC: Working collection of Lei Cai, housed at Institute of Microbiology, Chinese Academy of Sciences, Beijing, China. Asterix (*) indicates ex-type strains.

2ITS: internal transcribed spacers and intervening 5.8S nrDNA; TUB2: partial β-tubulin gene; HIS: partial histone H3 gene; TEF1-α: partial elongation factor 1-alpha gene; CAL: partial calmodulin gene
Supplementary Fig. 1 – Phylogram generated from the best scoring of the RAxML tree based on combined data set (ITS, CAL, HIS, TEF1–α and TUB2) of 249 taxa in Diaporthe. Diaporthe corylina (CBS 121124) and Diaporthe cryptica (CBS 140348) are selected as the outgroup taxon. The best RAxML tree with a final likelihood value of -58281.827211 is presented. RAxML analysis yielded 1390 distinct alignment patterns and 29.63% of undetermined characters or gaps.
Estimated base frequencies were as follows: $A = 0.217907$, $C = 0.312897$, $G = 0.242800$, $T = 0.226396$, with substitution rates. The gamma distribution shape parameter $\alpha = 0.165747$. Bayesian posterior probabilities (BYPP) from MCMC were evaluated with final average standard deviation of split frequencies $AC = 1.148527$, $AG = 3.407871$, $AT = 1.179852$, $CG = 0.925771$, $CT = 4.859002$, $GT = 1.000000$. Bootstrap support values for maximum likelihood (ML) equal to or greater than 60%; BYPP equal to or greater than 0.95 are given above or below the nodes as ML/BYPP. Type sequences are in black and newly generated sequences are indicated in red bold.

Supplementary Fig. 1 – Continued.
Supplementary Fig. 1 – Continued.
Supplementary Fig. 1 – Continued.