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ARTICLE

Exploring fungi: a taxonomic and phylogenetic study of leaf-inhabiting *Ascomycota* in *Musa* species from northern Thailand, with a global checklist

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Abstract

Dead and living leaves of *Musa* (banana) were collected from northern Thailand during the 2017–2021 investigation of microfungi. Thirty fresh collections of ascomycetous taxa from *Dothideomycetes*, *Eurotiomycetes* and *Sordariomycetes*, comprising eight subclasses, ten orders, 23 families and 28 genera, are illustrated in this study. Among them, three new species, 14 new host records and nine new geographical reports are included. The newly described species are *Dematipyriforma terrestris* (*Pleurotheciaceae*), *Neohelicosporium terrestris* (*Tubeufiaceae*) and *Pyrenochaetopsis musae* (*Pyrenochaetopsidaceae*). Eight fungal taxa, *viz. Colletotrichum siamense* (*Glomerellaceae*), *Curvularia umbiliciformis* (*Pleosporaceae*), *Metulocladosporiella musae* (*Herpotrichiellaceae*), *Neocordana musae* (*Pyriculariaceae*), *Neopestalotiopsis clavispora*, *N. musae* (*Sporocadaceae*), *Phaeosphaeria oryzae* (*Phaeosphaeriaceae*) and *Pyrenochaetopsis musae* (*Pyrenochaetopsidaceae*), associated with leaf spots are reported. Fifteen species, *viz. Apiospora locuta-pollinis* (*Apiosporaceae*), *Bahusandhika indica* (*Lentimurisporaceae*), *Dematipyriforma terrestris* (*Pleurotheciaceae*), *Dendryphiella vinosa* (*Dictyosporiaceae*), *Dictyoarthrinium musae*, *D. thailandica* (*Didymosphaeriaceae*), *Gibellulopsis serrae* (*Plectosphaerellaceae*), *Lophiotrema hydei* (*Lophiotremataceae*), *Musicillium elettariae* (*Plectosphaerellaceae*), *Neohelicosporium terrestris* (*Tubeufiaceae*), *Nigrospora sphaerica* (*Apiosporaceae*), *Periconia echinochloae* (*Periconiaceae*), *Spegazzinia musae* (*Didymosphaeriaceae*), *Stachybotrys subcylindrosporus* (*Stachybotryaceae*), *Torula mackenziei* (*Torulaceae*) are reported as saprobes. In addition, four species, *viz. Albifimbria verrucaria* (*Stachybotryaceae*), *Musicillium tropicale* (*Plectosphaerellaceae*), *Pseudophaeocytostroma sacchari* (*Diaporthaceae*) and *Setoarthopyrenia chromolaenae* (*Roussoellaceae*) are documented as endophytes. Four fungal taxa, *viz. Albifimbria verrucaria*

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(*Stachybotryaceae*), *Corynespora torulosa* (*Corynesporascaceae*), *Lasiodiplodia theobromae* (*Botryosphaeriaceae*) and *Pseudopithomyces chartarum* (*Didymosphaeriaceae*), are identified as exhibiting both endophytic and saprobic lifestyles on the leaves of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak). These findings further support the hypotheses of lifestyle transition in fungi on the same host. This is the first comprehensive study that combines the morphology and phylogeny of the systematics of leaf-occupying microfungi in *Musa* from northern Thailand. The current research particularly focuses on understanding the biodiversity and ecological dynamics of fungi in relation to *Musa* species. Furthermore, this study documents the global fungi associated with *Musa* hosts, and the findings are presented here as a checklist. A total of 760 fungal species associated with *Musa* are listed, along with their respective geographical localities, updated classifications, and literature. These taxa belong to four major phyla: *Ascomycota* is the most species-rich (93%), followed by *Basidiomycota* (6%), and *Mucoromycota* (1%). This compilation serves as a valuable resource for further research in the mycology and plant pathology of *Musa*.

Keywords – 3 new species – DNA sequences – endophytes – leaf spots – lifestyle change – molecular evidence – *Musaceae* – saprobes

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INTRODUCTION

Banana and plantain (*Musa* spp.) are monocotyledonous plants in the family *Musaceae* of *Zingiberales* (Heslop-Harrison & Schwarzacher 2007). The fruit crop is cultivated and consumed globally, being present in 135 countries, and it ranks among the most traded fruits worldwide (Voora et al. 2020). *Musa* provides an excellent habitat for many fungi with different lifestyles, *i.e*., endophytes, pathogens and saprobes (Ellis 1971b, 1976, Matsushima 1971, Brown et al. 1998, Photita et al. 2000, 2001a, b, 2002, 2003a, b, 2004, Somrithipol 2007, Hernández-Restrepo et al. 2015, Crous et al. 2016, Hyde et al. 2017, Samarakoon et al. 2019, 2020a, b, 2021). Prior research on fungi in *Musa* spp. across various ecological niches rarely employed polyphasic species identification methods as proposed by Chethana et al. (2021a). Many identified fungi lack DNA sequence data in GenBank. Hence, the phylogenetic relationships of fungi associated with *Musa* spp. are yet to be investigated.

The absence of recent comprehensive taxonomic investigations on micro-fungi associated with *Musa* in Thailand has left a notable gap since the detailed studies by Photita et al. (2001b, 2002, 2004), Lumyong et al. (2003), Somrithipol (2007), and Chen et al. (2017). Most taxa of Photita et al. (2001b, 2004) were documented based only on morphological characters. Hence, the phylogenetic relationships of these taxa are not well-resolved. Many prior studies lacked descriptive morphological illustrations and only explored fungal biodiversity in *Musa* from specific habitats in Thailand. Globally, few studies (Crous et al. 2006, 2016, 2021b, Hernández-Restrepo et al. 2015, Zakaria & Aziz 2018, Zakaria 2021) investigated the morpho-molecular taxonomy of leaf-inhabiting fungi on *Musa*, with limited genera reported.

Due to the economic value of *Musa*, most studies were oriented towards specifically selected groups of pathogenic fungi (such as *Colletotrichum*, *Fusarium*, *Mycosphaerella*, *Neocordana*, and *Phyllosticta*) (Giatgong 1980, Crous et al. 2002a, Arzanlou et al. 2008, Wulandari et al. 2010, Guarnaccia et al. 2017a, b, Marin-Felix et al. 2019, Maryani et al. 2019a, b). Therefore, it becomes imperative to investigate the hidden diversity of *Musa*-associated microfungi such as saprobic *Ascomycota*. Since Photita et al. (2002), there has been no updated index for fungi associated with *Musa*.

A four-year taxonomic and phylogenetic investigation of leaf-inhabiting fungal taxa associated with *Musa* spp. was conducted to fill the research gaps. In addition, this study addresses the critical need for an updated checklist of fungi associated with *Musa*. To accomplish this, we conducted a comprehensive review of global literature and online databases, ensuring that our data collection was both thorough and current. We have provided updated taxonomic classifications for previously recorded fungi, along with detailed geographical localities for each fungus associated with the diverse *Musa* species.

The results of this study are not just a compilation of data; they establish a robust foundation for future taxonomists, pathologists, and scientists working in related applied fields. Moreover, this work significantly contributes to the polyphasic taxonomy of microfungi associated with *Musa* leaves, offering a valuable resource for ongoing and future research in this domain.

MATERIALS AND METHODS

Sample collection, morphological studies and isolation

Fungi associated with dead leaf materials (saprobes) and leaf spots on *Musa* spp.

Dead and symptomatic leaves of *Musa* spp. were collected from three provinces (Chiang Mai, Chiang Rai and Tak) in northern Thailand during both dry and rainy seasons in 2017–2021. The collected specimens were transferred to the laboratory using zip-lock bags and cardboard boxes. Fungi on dead leaf materials and leaf spots were examined with a Motic SMZ 168 Series microscope (Motic Asia, Kowloon, Hong Kong). Fungal fruiting structures were mounted in water for microscopic studies and photomicrography with a Nikon ECLIPSE 80i compound microscope (Nikon Instruments Inc., Melville, NY, USA) fitted with a Canon 750D digital camera (Canon Inc., Ota, Tokyo, Japan). Measurements were made with the Tarosoft (R) Image Frame Work program and images used for figures were processed with Adobe Photoshop CS3 Extended version 10.0 software (Adobe Systems, USA). In the taxonomic descriptions, the exceptional values of the dimensions are denoted with brackets.

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.

Fungi associated with fresh leaf materials (endophytes) and symptomatic leaves of *Musa* spp.

Fresh *Musa* leaves were collected from Chiang Rai Province, Thailand, during the dry season from 2017–2021. Small pieces (<5 mm^2) from the leaf tissues were separated using a sterilized scalpel, disinfected in 75% ethanol for 1 min, rinsed three times in sterile distilled water, dried and plated on PDA or oat meal agar (OMA). The plates were incubated at 25 °C for at least 5 days until fungi developed from the healthy and symptomatic plant tissues. The hyphal tips of colonies were transferred to fresh PDA plates using a sterilized scalpel and incubated until they produced conidiomata and conidia. Fungi were initially identified based on their morphological characteristics.

The conidia of these isolates were observed with a Motic SMZ 168 stereo zoom microscope. The conidia suspension was spread over the surface of the PDA plates. After incubation at 25 °C overnight, single germinating conidia were transferred to PDA plates to obtain pure cultures, which were then used for determination of growth rate, observation of morphological characteristics, and DNA extraction. Pure cultures were incubated at 25 °C in daylight until the formation of fruiting structures, which were then photographed following the same procedure used for saprobic fungi.

Sporulated cultures were used to prepare dry culture herbarium material as follows: The glycerol agar medium was prepared by mixing 100 ml of a 15% glycerol solution, 7.1 g of agar, and 200 ml of distilled water. The final mixture was autoclaved at 121 °C for 20 minutes to ensure sterility. The autoclaved agar solution was cooled to 60–90 °C and poured onto a flat, sterilized plastic or glass petri dish lid. The culture was then cut with the growth medium and placed on the hot agar solution, allowing immersion. The agar plates were incubated in an open area at 25 °C–35 °C for drying. After one day, the agar blocks were removed from the plastic surface and transferred to sterilized parchment paper for additional drying. The drying period was continued for one week. The flexibility of the agar blocks was carefully observed after one week, ensuring the complete removal of water from the glycerol agar medium. Throughout the process, sterile conditions were maintained to prevent contamination.

Herbarium specimens of the fungi described in the manuscript were deposited in the Mae Fah Luang University (MFLU) Fungarium, Chiang Rai, Thailand. Permanent slides were also prepared following Senanayake et al. (2020) and deposited together with the dry specimens. Cultures were deposited in the Culture Collection of Mae Fah Luang University (MFLUCC). The names of new fungal taxa were registered in Index Fungorum (http://www.indexfungorum.org/). Following Jayasiri et al. (2015), the Faces of Fungi numbers (FoF) were acquired for the isolates. Morphological illustrations and related information were submitted to GMS MICROFUNGI (https://gmsmicrofungi.org) website, followed by Chaiwan et al. (2021).

DNA extraction and PCR amplification and sequencing

Mycelium was scraped from seven-day old cultures and crushed with metal beads by TissueLyser LT (QIAGEN: Sample and Assay Technologies; Miami, Florida, United States) to extract DNA. A column based PureDireX Genomic DNA Isolation Kit (Blood/Cultured Cell/Fungus; New Taipei City, Taiwan) was used for the extraction following the manufacturer's guidelines. In addition, DNA was extracted directly from hyphomycete fruiting structures as follows: 15–20 fruiting structures (visible conidia and conidiophores) were removed from the substrate using a sterilized needle. In aseptic conditions, the latter were transferred to a drop of distilled water in a sterile microcentrifuge tube (1.5 mL). E. Z. N. A. ® Tissue DNA KIT (Omega Bio-tek, Thermo Fisher Scientific, United States) was used to extract DNA following the instructions of the manufacturer.

Polymerase chain reaction (PCR) was conducted according to the following protocol: The total volume of the PCR reaction was 25 μL and consisted of 12.5 μL of DreamTaq Green PCR Master Mix (2X) (a ready-to-use solution containing DreamTaq DNA polymerase, optimized DreamTaq Green buffer, $MgCl_2$, and dNTPs) (Thermo Fisher Scientific Inc. USA), 1 μL of each primer (10 pM), 2 μL genomic DNA extract and 8.5 μL double distilled water (ddH_2O). The gene regions, primers and respective PCR cycles are mentioned in Table 1. PCR amplification was confirmed on 1% agarose electrophoresis gels loaded using Invitrogen DNA gel loading dye (6X) (Thermo Fisher Scientific Inc., USA). The amplified PCR fragments were sent to a commercial sequencing provider. The amplified

PCR fragments were sent to SolGent Co., Ltd., South Korea, for sequencing. Generated molecular data have been deposited in GenBank (https://www.ncbi.nlm.nih.gov/).

Sequence alignment

Obtained sequences were subjected to a BLASTn search in GenBank (https://blast.ncbi.nlm.nih.gov/Blast.cgi) and verified. Sequences used in the phylogenetic analyses were acquired from GenBank based on previous literature published until October 2023. The single gene alignments were done by MAFFT v. 7.036 (http://mafft.cbrc.jp/alignment/server/large.html, Katoh et al. 2019) using the default settings. The latter alignments were visualized and combined with BioEdit v. 7.0.5.2 (Hall 1999).

Phylogenetic analyses

Maximum likelihood (ML) trees were generated using the RAxML-HPC2 on XSEDE (8.2.8) (Stamatakis et al. 2008, Stamatakis 2014) on the CIPRES Science Gateway platform (Miller et al. 2010) using the GTR+I+G model of evolution. Bootstrap supports were obtained by running 1000 pseudo-replicates. Maximum likelihood bootstrap values equal to or greater than 60% are given near each node of the phylogenetic trees.

Bayesian analyses were conducted with MrBayes v. 3.1.2 (Huelsenbeck & Ronquist 2001) to evaluate posterior probabilities (PP) (Rannala & Yang 1996, Zhaxybayeva & Gogarten 2002) by Markov chain Monte Carlo sampling (BMCMC). Two parallel runs were conducted, using the default settings, but with the following adjustments: Four simultaneous Markov chains were run for 1, 000, 000 to 2,000,000 generations (depending on the data set) and trees were sampled every 100th generation. The first 25% of the trees, representing the burn-in phase of the analyses, were discarded. The remaining 75% of trees were used for calculating PP in the majority rule consensus tree. Branches with Bayesian posterior probabilities (PP) equal to or greater than 0.90 are indicated near each node of the phylogenetic trees. Phylograms were visualized with the FigTree v1.4.0 program (Rambaut 2011) and reorganized in Microsoft Power Point.

The statistical parameters of the ML trees of the respective species are displayed in the figure legends. Strains generated in this study are shown in blue, with ex-type strains in bold.

The global checklist of fungi associated with *Musa*

The global checklist of fungi associated with *Musa* (Table 2) was prepared based on previous written and online literature. The historical fungal species were recorded using the following bibliographic information; Index of Fungi (from 1940 to the present), including Petrak's Lists (1920–1939), Sylloge Fungorum by Saccardo (1882–1920), Traverso (1878–1955), Trotter (1874–1967). In addition, the available data resources at the Mycological Library of the Mushroom Research Foundation (Chiang Rai, Thailand), were primarily utilized to collect information. For the curation of hyphomycetous fungi, references from Ellis (1889, 1957a, b, 1960, 1967, 1971a, b, 1972, 1976) were used. Online bibliographic reports were mainly extracted from the US National Fungus Collections Fungal Databases search site (Farr & Rossman 2021; dataset; https://doi.org/10.15482/USDA.ADC/1524414; accessed 2024-01-02). Additional online literature was downloaded from various research publications available in different search engines. Extra information was also derived from Photita et al. (2002) and the ongoing studies conducted by the authors from 2017 to 2024. The documentation includes known hosts (solely the genus name or coupled with the species epithet) and the geographical locality of fungi recorded on *Musa*. The nomenclature of Index Fungorum (2024) was followed for all the records. Taxonomic classification updates (Phylum, Class, Order, and Family) were implemented according to Wijayawardene et al. (2022). Fungal names are arranged in descending order in the taxonomic hierarchy. As per journal guidelines, reachable bibliographic information is in-text cited in front of each record. Fungal species for which molecular data are available in GenBank are indicated with an asterisk (*) mark.

Table 1 Partial gene regions, primers and PCR amplification conditions used in this study.

Gene/Locus	**Primer**		**PCR protocol**					**Reference**
	Forward	**Reverse**	**Initial Denaturation**	**Denaturation**	**Annealing**	**Extension**	**Final extension**	
Internal Transcribed Spacers (ITS)	ITS4	ITS5	94 °C, 4 min, 1 cycle	94 °C, 45 secs, 35 cycles	53 °C, 60 sec	72 °C, 1 min	72 °C, 10 min, 1 cycle	White et al. (1990)
28S ribosomal RNA (LSU)	LR0R	LR5						Vilgalys & Hester (1990)
18S ribosomal RNA (SSU)	NS1	NS4			53 °C, 45 sec			White et al. (1990)
Translation Elongation Factor 1–alpha (*tef*1)	728F	986R	94 °C, 3 min, 1 cycle	94°C, 30 secs, 35 cycles	58°C, 50 sec			Carbone & Kohn (1999)
	983F	2218R						Rehner (2001)
	526F	1567R						Rehner (2001)
RNA polymerase II second largest subunit (RPB2)	5F2	7cr	95 °C, 5 min, 1 cycle	95 °C, 45 secs, 40 cycles	57 °C, 2 min	72 °C, 1.5 min		Liu et al. (1999)
β-tubulin (*tub2*)		Bt2a	Bt2b	94 °C, 3 min, 1 cycle	94 °C, 30 sec 35 /40 cycles	58 °C, 50 sec	72 °C, 1 min	Glass & Donaldson (1995)
		T1	T2			58 °C, 55 sec		O'Donnell & Cigelnik (1997)
Glyceraldehyde-3-Phosphate Dehydrogenase (GADPH)		gpd1	gpd2	96 °C, 1 min, 1 cycle	96 °C, 1 min 35 / 40 cycles	58/59 °C, 1 min	72 °C, 45 sec	Myllys et al. (2002)
		gdf	gdr			58/59 °C, 1 min		Templeton et al. (1992)
Chitin synthase 1 (*chs-1*)		79F	354R	95 °C, 1 min, 1 cycle	96 °C, 1 min, 35 cycles	53 °C, 1 min		Carbone & Kohn (1999)
Actin (*act*)		512F	783R					Carbone & Kohn (1999)
Calmodulin (*cal*)		228F	737R			57 °C, 1 min		Carbone & Kohn (1999)

RESULTS

Phylum *Ascomycota* Caval. Sm

Subphylum *Pezizomycotina* O. E. Erikss. & K. Winka
Class *Dothideomycetes* O. E. Erikss. & Winka

Botryosphaeriales C. L. Schoch, Crous & Shoemaker

Botryosphaeriales (*Dothideomycetes* order *incertae sedis*) represent a morphologically diverse group of fungi associated with different hosts and geographical localities (Slippers et al. 2017). Most of the fungi in the order are usually reported as saprobes, pathogens and are sometimes found as endophytes associated with the woody parts of angiosperms and gymnosperms (Phillips et al. 2019, Zhang et al. 2021). Some species were equally reported as opportunistic human pathogens; some were also documented in marine environments associated with sea grasses (Sakayaroj et al. 2012). Thirty-three genera have been identified in six families of *Botryosphaeriales* (*viz*., *Aplosporellaceae*, *Botryosphaeriaceae*, *Melanopsaceae*, *Phyllostictaceae*, *Planistromellaceae* and *Saccharataceae*) (Phillips et al. 2019, Wu et al. 2021, Wijayawardene et al. 2022).

Botryosphaeriaceae Theiss. & Syd.

The sexual morph of *Botryosphaeriaceae* taxa is characterized by uni- to multi-loculate ascostromata with 8-spored, bitunicate asci and hyaline to brown, aseptate, or septate ascospores (Phillips et al. 2013, Batista et al. 2021). The asexual morph comprises coelomycetes that produce uni- to multi-loculate pycnidia, hyaline, phialidic conidiogenous cells, and large hyaline or dematiaceous conidia (Phillips et al. 2013). There are 24 genera hosting more than 200 species in the family (Burgess et al. 2019). *Botryosphaeriaceae* taxa can be cosmopolitan and are common endophytes, saprobes, or plant pathogens on various hosts in terrestrial and aquatic environments (Phillips et al. 2019). Controlling *Botryosphaeriaceae* pathogens becomes a great challenge in commercial agriculture as many taxa have the ability to be persistent as endophytes and shift to a pathogenic lifestyle when the host is under stress (Batista et al. 2020, 2021). The pathogens then cause diseases that eventually kill the host, emerge as saprobes on decaying tissue, and colonize new hosts (Batista et al. 2021). In this study, we found the endophytic and saprobic lifemodes of *Lasiodiplodia theobromae* on *Musa accuminata*, which further supports the hypothesis of lifestyle shifting of fungi in the same host to adapt to environmental pressures (McDowell 2013, Burgess et al. 2019, Hill et al. 2022).

Lasiodiplodia Ellis & Everh., Clendenin, Bot. Gaz. 21: 92 (1896)

Lasiodiplodia is well distributed in tropical and subtropical regions and occurs on a wide range of plant hosts (Phillips et al. 2013, Jayasiri et al. 2019, Hyde et al. 2020b, Senwanna et al. 2021, Tennakoon et al. 2021, Silva et al. 2022, 2023a, b, Abeywickrama et al. 2023, Chethana et al. 2023, Hattori et al. 2023, Rathnayaka et al. 2023, Senanayake et al. 2023). Most *Lasiodiplidia* species are causal agents of cankers, dieback, rots, and branch blights on many agricultural crops (de Silva et al. 2019, Gómez et al. 2021, Santos et al. 2023b, Wang et al. 2023). *Lasiodiplodia* can be distinguished from other genera in *Botryosphaeriaceae* by having longitudinal striations on the mature conidia (Phillips et al. 2013). At present, 64 *Lasiodiplodia* taxa are listed in the Index Fungorum (2024). Previous research has provided evidence for the occurrence of endophytic and saprobic lifestyles (Mohali et al. 2005, Huang et al. 2017, de Silva et al. 2019, Tennakoon et al. 2021, Abeywickrama et al. 2023) in many *Lasiodiplodia* species. *Lasiodiplodia theobromae* was reported as one of the causative organisms of the crown rot disease on *Musa* fruits worldwide (Sangeetha et al. 2012). In this study, we report the endophytic and saprobic life modes of *Lasiodiplodia theobromae* on Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak) leaves in Thailand. We can further predict that the endophytic *L. theobromae* has the potential to function as a saprobe during the senescence of Namwa banana leaves, which further validates the findings of Promputtha et al. (2007, 2010), Nelson et al. (2020) and Weatherhead et al. (2022).

Lasiodiplodia theobromae (Pat.) Griffon & Maubl., Bull. Soc. mycol. Fr. 25: 57 (1909) Fig. 1

Index Fungorum number: IF188476; Facesofungi number: FoF00167

Saprobic on dead leaves of *Musa*. Sexual morph: Not observed. Asexual morph: Coelomycetous. *Conidiomata* 180–190 × 165–175 µm ($\bar{x}$ = 185 × 171 µm, n = 20), pycnidial, semi-immersed and erumpent at maturity, black, globose to sub globose, uniloculate. *Peridium* 3–4 layered, 20–30 µm, with pale brown or dark brown pseudoparenchymatous cells, *textura angularis*. *Conidiophores* 15–18 × 2–4 µm ($\bar{x}$ = 16 × 3.5 µm, n = 20), reduced to conidiogenous cells, hyaline, simple, aseptate, unbranched, cylindrical, smooth, erect from the cells of the pycnidial cavity. *Conidia* (20–) 25–30 × 12–15 µm ($\bar{x}$ = 26.5 × 13 µm, n = 40), immature condia, rough to smooth surfaces, simple, hyaline, aseptate; mature conidia 1-septate, dark brown, oblong or ovoid, straight, rounded at the apex and base, thick-walled, longitudinal striations are visible.

Cultural characteristics – Colonies on PDA, reaching 50 mm in diameter after 10 days at 25 °C, colonies initially dirty brownish white, later becoming brown and finally black at maturity, dusty, circular or irregular margined, entire edge, cottony or fluffy, reverse brown at the center, Sporulation was initiated after 14 days on PDA at 25 °C under light conditions.

Material examined – Thailand, Chiang Rai Province, Nang Lae, Rattana Dormitory area, on a dead leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 13 March 2019, B. C. Samarakoon, BNS60 (MFLU 23-0285), culture MFLUCC 23-0223.

Other materials examined – Thailand, Chiang Rai Province, Nang Lae, Rattana Dormitory area, fresh leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 12 October 2018, B. C. Samarakoon, EN15 (MFLU 23-0286), culture MFLUCC 23-0224.

GenBank numbers – MFLUCC 23-0224: ITS = PP809073, *tef*1 = PQ273161 and MFLUCC 23-0223: ITS = PP809074, *tef*1 = PQ273162

Notes – In the multigene phylogeny of combined ITS and *tef*1 sequence data (Fig. 2), the endophytic isolate (MFLUCC 23-0224) and the saprobic strain (MFLUCC 23-0223) nested together with *Lasiodiplodia theobromae* (CBS 164.96, CBS 124.13, CBS 11530) with ML = 71%, PP = 0.94 statistical support. The BLAST search results for ITS and *tef*1 sequence data indicate that our endophytic isolate (MFLUCC 23-0224) exhibits the highest percentage similarity to *L. theobromae* (CBS 11530) (ITS = 100%, *tef*1 = 100%) with a 100% query cover. The saprobic strain (MFLUCC 23-0223) shows 100% similarity in ITS to *L. theobromae* (CBS 164.96) and 100% similarity in *tef*1 to *L. theobromae* (CBS 11530), both with a 100% query cover. There are no noticeable morphological differences between the endophytic and saprobic strains. There is a possibility that the endophytic lifestyle of *L. theobromae* can shift to saprobic upon the decay of Namwa banana leaves. Salvatore et al. (2020) studied the lifestyle shift of *L. theobromae* from endophytic to pathogenic based on taxonomic and phylogenetic approaches. In this study, we report the endophytic and saprobic lifestyle occurrences of *L. theobromae* associated with *Musa acuminata* leaves from Thailand.

Pleosporales Luttr. ex M.E. Barr

Pleosporales account for a quarter of the dothideomycetous taxa (Hongsanan et al. 2020). The taxa have a wide global geographic distribution, representing several lifestyles (*i.e.*, epiphytic, endophytic, fungicolous, lichenicolous, plant and human pathogenic, and saprobic lifestyles) (Ren et al. 2022, Tennakoon et al. 2021, He et al. 2024). The order accommodates sexual morphs with perithecioid, papillate ascomata, bitunicate and fissitunicate asci, septate, hyaline, or pigmented ascospores with or without a gelatinous sheath (Hongsanan et al. 2020). The asexual morphs can usually be coelomycetous or hyphomycetous, with various morphologies such as hyaline or pigmented, septate or aseptate conidia (Wijayawardene et al. 2016, Wanasinghe et al. 2018, Li et al. 2020b). Hongsanan et al. (2020) accepted 91 families in *Pleosporales*. In this study, we present different sexual and asexual morphs of *Pleosporales* species in 11 families (*viz*., *Corynesporascaceae*, *Dictyosporiaceae*, *Didymosphaeriaceae*, *Lentimurisporaceae*, *Lophiotremataceae*, *Periconiaceae*, *Phaeosphaeriaceae*, *Pleosporaceae*, *Pyrenochaetopsidaceae*, *Roussoellaceae* and *Torulaceae*) associated with *Musa* leaves.

Corynesporascaceae Sivan.

The family was established by Sivanesan (1996), based on *Corynesporasca*. It was previously placed in *Melanommatales* and accepted in *Pleosporales* by Hyde et al. (2013). *Corynesporascaceae* comprises *Corynesporasca* and *Corynespora* (Voglmayr & Jaklitsch 2017). *Corynesporascaceae* has saprobic, pathogenic and endophytic lifestyles, which have mainly been discovered in the tropics and subtropics (Kumar et al. 2021, Liu et al. 2023b). In this study, we report the saprobic and endophytic lifestyle of *Corynespora torulosa* found on *Musa acuminata* in Thailand.

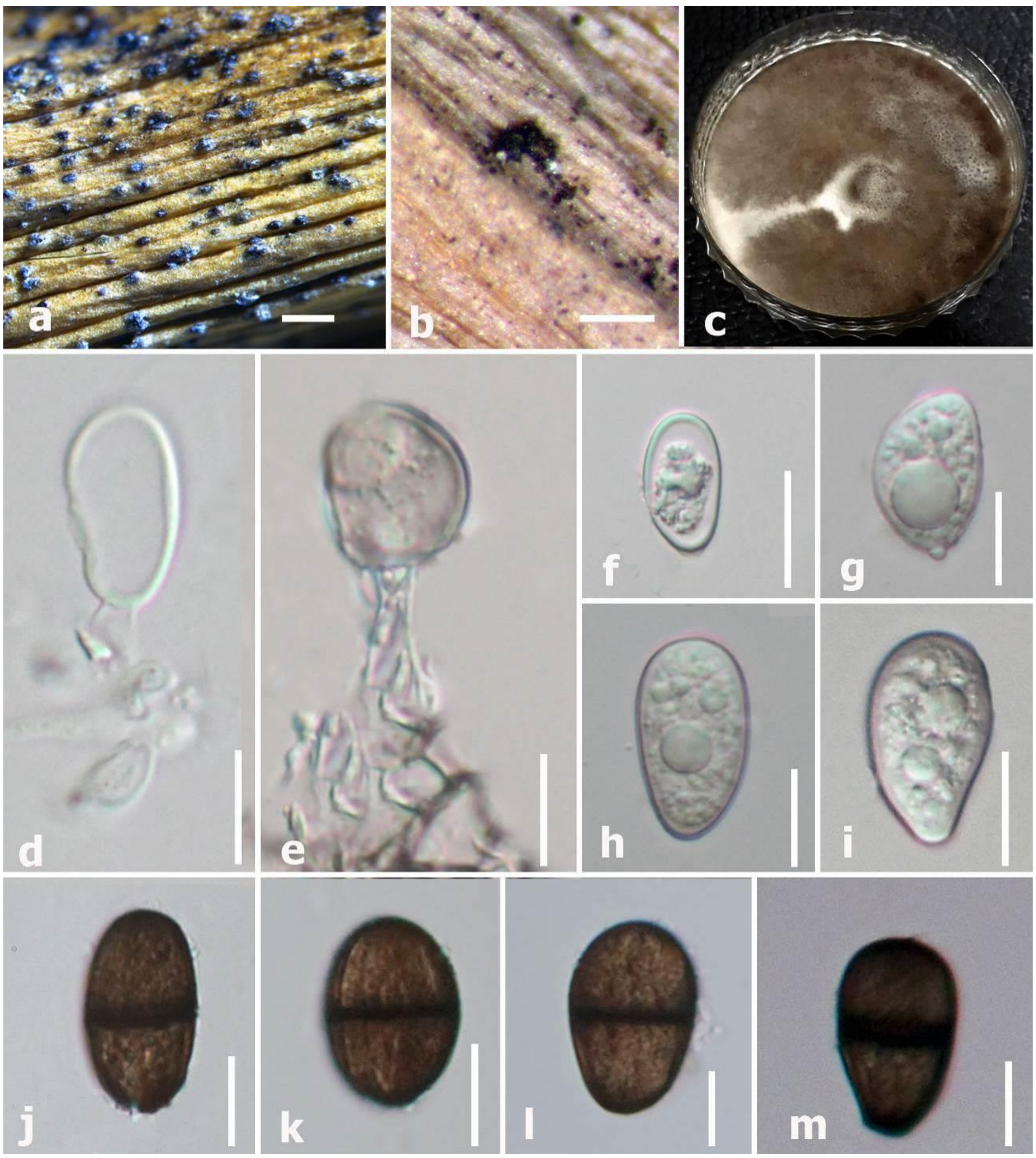

Figure 1 – *Lasiodiplodia theobromae* (MFLU 23-0285 and MFLU 23-0286). a, b Saprobic occurrence on and the conidiomata on host. c Colony on PDA after 14 days (endophytic isolate). d, e Conidiogenesis. f–i Immature conidia. j–m Mature conidia. Scale bars: a, b = 500 µm, d–m = 10 µm.

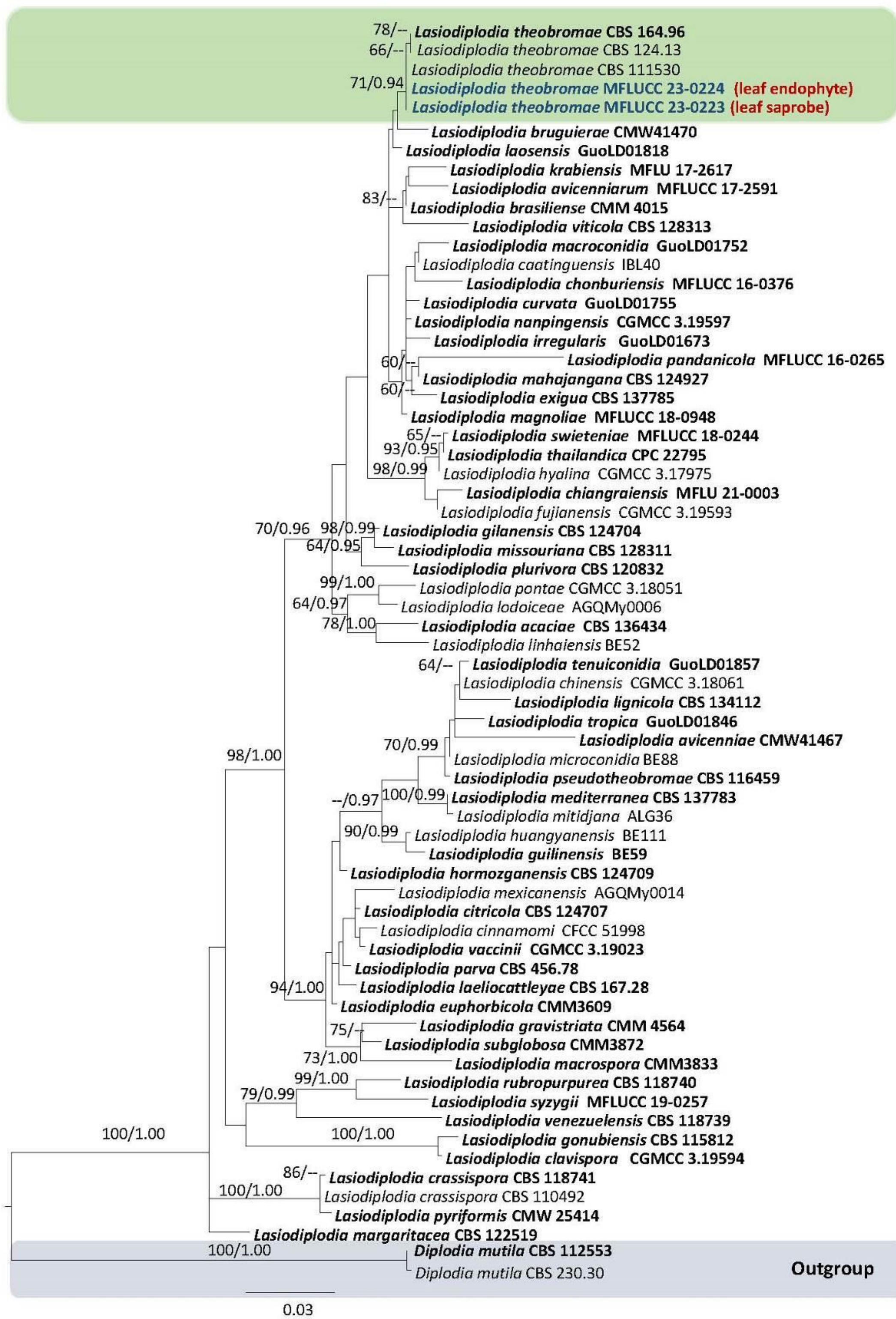

Figure 2 – Maximum likelihood tree revealed by RAxML analyses of ITS and *tef*1 sequence data of the taxa of *Lasiodiplodia,* showing the phylogenetic position of *Lasiodiplodia theobromae* (MFLUCC 23-0224, the endophytic isolate and MFLUCC 23-0223, the saprobic isolate). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.90 PP) are shown. The tree is rooted in *Diplodia mutila* (CBS 112553 and CBS 230.30) in the *Botryosphaeriaceae*. Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of

nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Tennakoon et al. (2021), with a final ML optimization likelihood value of -4413.294. The matrix had 306 distinct alignment patterns with 14.33% of undetermined characters or gaps. Estimated base frequencies were: A = 0.212005, C = 0.286080, G = 0.262629, T = 0.239286; substitution rates: AC = 0.926683, AG = 3.303305, AT = 0.960552, CG = 0.908132, CT = 4.479909, GT = 1.0000; proportion of invariable sites: I = 0.530197; gamma distribution shape parameter (α) = 0.665388.

Corynespora Güssow, J. Royal Agric. Soc. England 65: 272 (1905)

Corynespora was established by Güssow (1906) to accommodate *Corynespora melonis* (= *Cercospora melonis*). The genus is pathogenic on several agricultural crops (*i.e.*, cotton, papaya, pepper, roselle, rubber and tomato) worldwide, causing leaf and fruit spots (Conner et al. 2013, Ortega-Acosta et al. 2015, Tsai et al. 2015, Butler et al. 2016, Salunkhe et al. 2019, Kumar & Singh 2021). In addition, *Corynespora* exhibits saprobic and endophytic lifestyles (Kumar & Singh 2016, Xu et al. 2020). The genus has also been discovered in air, lower plants, lichens and soil in terrestrial environments and aquatic habitats (Hyde et al. 2020a, Kumar & Singh 2021).

Corynespora torulosa (Syd. & P. Syd.) Crous, Persoonia 31: 211 (2013) Fig. 3

Index Fungorum number: IF805829; Facesoffungi number: FoF14164

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* effuse, grey, brown or black, often hairy. *Mycelium* immersed, occasionally superficial. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* erect from the mycelium, (29–) 55–63 (–70) × 4–6 µm ($\bar{x}$ = 57 × 5 µm, n = 30), 9–12 µm wide at the base, 1–3 µm near the apex, arising singly, simple, torsive, straight or flexuous, unbranched, pale brown to dark brown, septate, 4–5 thin flange of tissue parts appearing as wings on the surface. *Conidiogenous cells* monoblastic, integrated, terminal, percurrent, doliiform, collarette, producing hyaline spherical immature conidia at terminal end. *Conidia* (20–) 24–28 (–32) × 7–9.5 µm ($\bar{x}$ = 24.5 × 7.9 µm, n = 40) with blackish-brown scar at the base, formed singly, cylindrical, straight or slightly curved, tapering towards the rounded apex, mid brown or golden brown, smooth or verruculose, with 0, 1, 2, 3 or more transverse pseudosepta.

Material examined – Thailand, Chiang Rai Province, Nang Lae, Rattana Dormitory area, on a dead leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 20 July 2019, Binu Samarakoon, BNS288 (MFLU 23-0287), culture MFLUCC 23-0241.

Other material examined – Thailand, Chiang Rai Province, Nang Lae, Rattana Dormitory area, on a fresh leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 16 May 2021, Binu Samarakoon, EN06 (MFLU 23-0319), culture MFLUCC 23-0031.

GenBank numbers – MFLUCC 23-0031: LSU = PP800315, ITS = PP809076 and MFLUCC 23-0241: LSU = PP800314, ITS = PP809075

Notes – *Corynespora torulosa* was previously known as *Deightoniella torulosa* (= *Brachysporium torulosum*) and was accommodated in the *Corynesporascaceae* by Crous et al. (2013c) based on molecular data. The taxon has been previously reported to cause black leaf spots on banana leaves in Georgia, India, Jamaica and Thailand (Meredith 1961, Koné et al. 2008, Tongsri et al. 2017, Vardhana 2017, Jones 2018). In addition, *C. torulosa* was reported to cause fruit speckles on banana fruits at the pre-harvest stage in Jamaica and Cuba (Meredith 1961, Almenares & Pérez-Vicente 2019). The fungus also has saprobic and endophytic lifestyles, which have primarily been discovered in terrestrial habitats (Meredith 1962, Photita et al. 2001a, b, Photita et al. 2004). The morphology of our strains is similar to the illustration of *C. torulosa* in Ellis (1971b). In the phylogeny based on LSU and ITS (Fig. 4), the endophytic isolate (MFLUCC 23-0031) and the saprobic isolate (MFLUCC 23-0241) grouped with *C. torulosa* isolates with ML = 100%, PP = 1.00 statistical support. The BLAST search results for LSU and ITS sequence data indicate that MFLUCC 23-0031 exhibits the highest percentage similarity to *C. torulosa* (CBS 136419: LSU = 100%, ITS = 100%) with a 100% query cover. The saprobic strain shows 100% similarity in LSU to *C. torulosa* (CPC 15989) and 100% similarity in ITS to *C. torulosa* (CATAS-XJC796), both with a 100% query cover. The findings of our study further witness the lifestyle transition of endophytic fungi to the saprobic mode upon host senescence (Promputtha et al. 2010). Future chemical evaluations, such as cellulase, β-mannanase, polygalacturonase and xylanase like enzymatic evaluations, are necessary to check this hypothesis (Promputtha et al. 2007, 2010). Based on morphological illustrations and strong molecular justification, we document the endophytic and saprobic occurrence of *C. torulosa* associated with Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak) in Thailand.

Dictyosporiaceae Boonmee & K.D. Hyde

Dictyosporiaceae was erected by Boonmee et al. (2016) and typified by *Dictyosporium*. Hongsanan et al. (2020) accepted 15 genera and Jiang et al. (2021b) accommodated *Immotthia* in the *Dictyosporiaceae*. In addition, *Neodigitodesmium* (Tian et al. 2022a), *Paradictyocheirospora* (Rajeshkumar et al. 2021) and *Verrucoccum* (Atienza et al. 2021) were recently added as new genera to the family. Taxa of *Dictyosporiaceae* are found on plant litter and wood in terrestrial and aquatic habitats. The sexual morph is characterized as perithecial, superficial and somewhat soft ascomata that collapse when dry. An apical ostiole is present in the ascomata with a wall of *textura epidermoidea*. Asci are bitunicate, cylindrical and pedicellate. Ascospores are bi seriate and fusiform and are often hyaline, 1-septate, with or without mucilaginous sheaths. The hyphomycetous asexual morphs are sporodochial, effuse and often dark brown (Boonmee et al. 2016). Conidiophores are sometimes reduced to conidiogenous cells and often unbranched or rarely branched. Conidiogenesis occurs in the terminal or intercalary parts of the conidiophore. Conidia can be acrogenous or pleurogenous, simple, dry, complanate or non-complanate, and brown. Some genera possess aseptate conidia, but most genera have multi-septate, euseptate or distoseptate conidia, with or without appendages (Hongsanan et al. 2020). *Dictyosporiaceae* taxa are saprobes, discovered on decaying wood and plant debris in terrestrial and freshwater habitats (Boonmee et al. 2016, Liu et al. 2017, Hyde et al. 2018).

Dendryphiella Bubák & Ranoj., Ranojevic, Annls mycol. 12: 417 (1914)

The genus was established by Ranojevic (1914) and is typified by *Dendryphiella interseminata*. Sixteen species epithets are currently listed in Index Fungorum (2024). Seven *Dendryphiella* species have DNA sequence data in GenBank. The sexual morph of the genus has not been reported. The asexual morph is hyphomycetous and is characterized by macronematous conidiophores and polytretic, integrated conidiogenous cell apex and intercalary parts. The conidiogenous areas are often swollen and produce simple conidia or conidial chains (Ellis 1971b, Hyde et al. 2018, 2020b, Chethana et al. 2021b). Liu et al. (2017) updated the taxonomy of *Dendryphiella* with the addition of novel taxa. Dong et al. (2020) synonymized *D. phitsanulokensis* under *D. vinosa*. The genus has only been reported as saprobes. The taxa were often found in aquatic and terrestrial environments and were also associated with woody debris (Liu et al. 2017). We could not find any literature on the occurrence of this genus in the *Musaceae*. *Dendryphiella fasciculata* and *D. vinosa* were previously documented from Thailand by (Liu et al. 2017). This study presents the first occurrence of *Dendryphiella* on *Musaceae* as a saprobe from Thailand.

Dendryphiella vinosa (Berk. & M. A. Curtis) Reisinger, Bull. trimest. Soc. mycol. Fr. 84: 27 (1968) Fig. 5

Index Fungorum number: IF329796; Facesoffungi number: FoF08673

Saprobic on the mid rib of the leaf of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* on host superficial, effuse, brownish black. *Mycelium* immersed, septate, pale brown to brown, smooth, thick-walled hyphae. *Conidiophores* 70–130 (–250) × 3–5 µm ($\bar{x}$ = 90 ×

4.3 μm, n = 30), macronematous, mononematous, sometimes fasciculate, unbranched or branched,

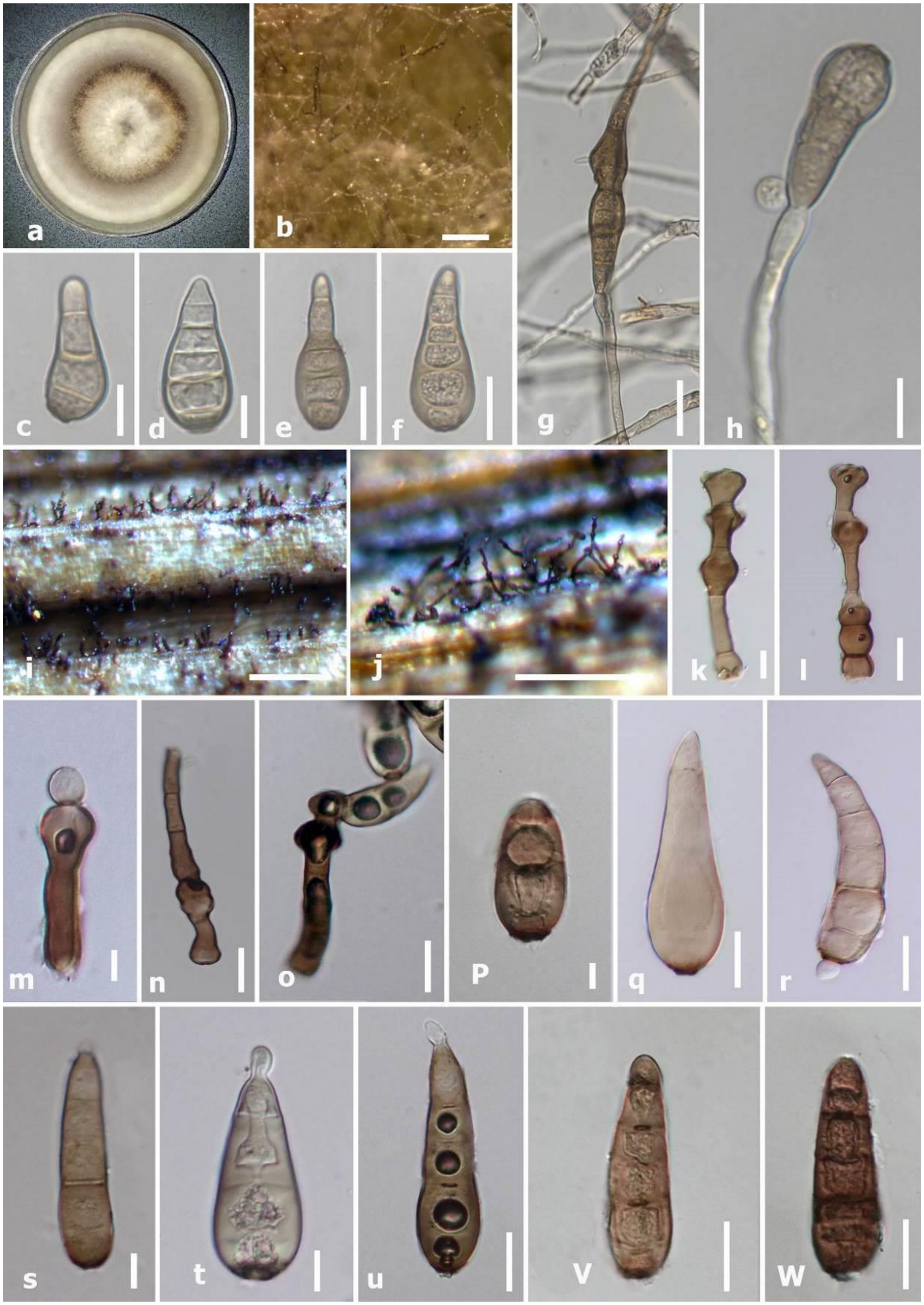

Figure 3 – *Corynespora torulosa* (MFLU 23-0287 and MFLU 23-0319). Colony on oat meal agar after 3 weeks (endophytic isolate). b Sporulation on OMA. c–f, p–w Conidia. g, h, o Conidiogenesis. i, j Saprobic colony on *Musa* host. k–n Conidiophores. Scale bars: b = 1000 μm, c–h = 10 μm, i = 500 μm, j = 100 μm, k–w = 5 μm.

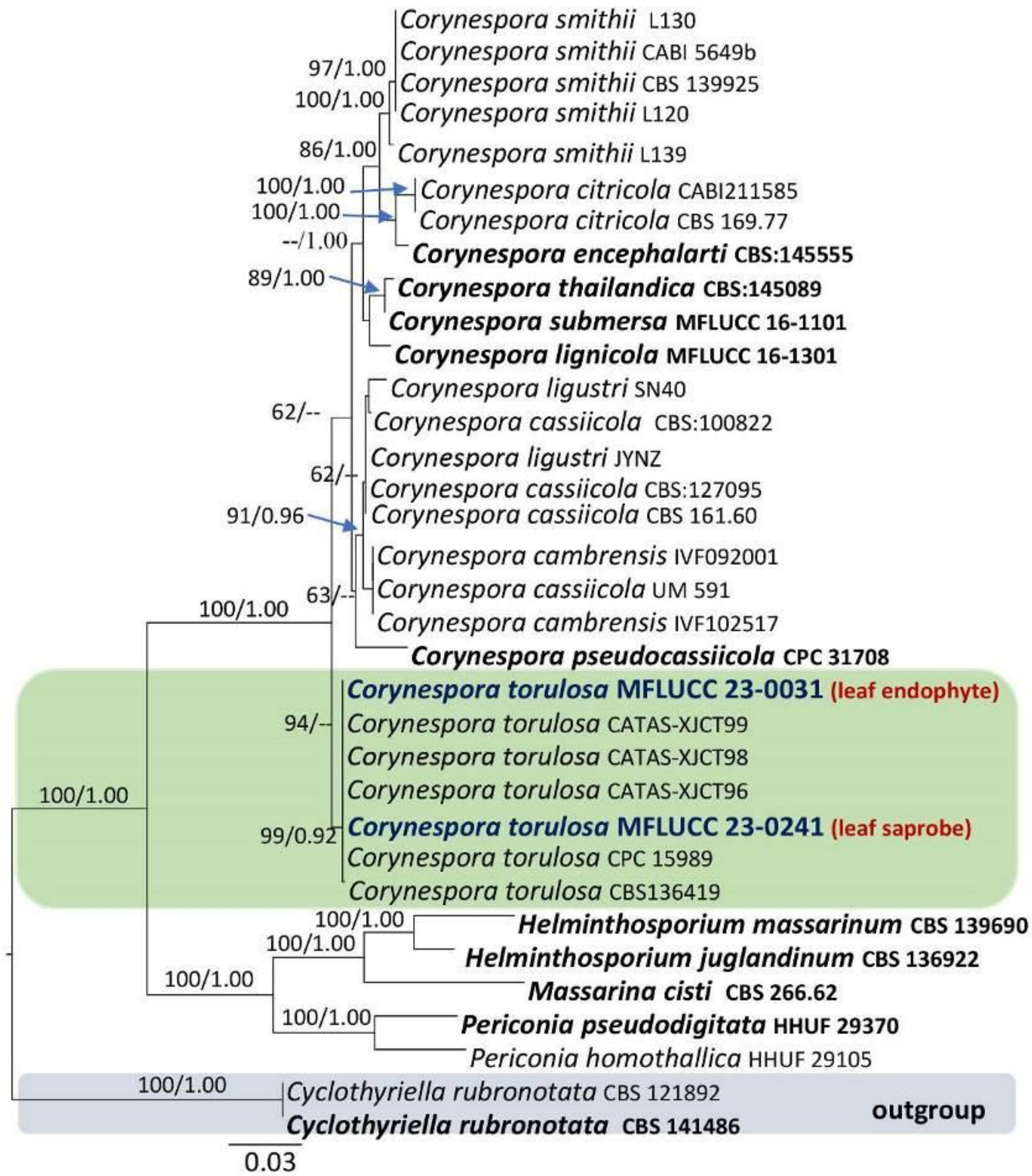

Figure 4 – Maximum likelihood tree revealed by RAxML analyses of LSU and ITS sequence data of selected genera of *Pleosporales*, showing the phylogenetic position of *Corynespora torulosa*, the leaf endophyte (MFLUCC 23-0031) and the saprobe (MFLUCC 23-0241). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.90 PP) are shown. The tree is rooted in *Cyclothyriella rubronotata* (CBS 141486 and CBS 121892) in the *Cyclothyriellaceae*. Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree agrees with Voglmayr & Jaklitsch (2017), with a final ML optimization likelihood value of -4840.65. The matrix had 344 distinct alignment patterns with 21.40% of undetermined characters or gaps. Estimated base frequencies were: A = 0.238317, C = 0.247411, G = 0.290022, T = 0.224249; substitution rates AC = 3.340170, AG = 3.161593, AT = 1.586743, CG = 1.699826, CT = 10.049079, GT = 1.0000; proportion of invariable sites: I = 0.415725; gamma distribution shape parameter: (α) = 0.560028.

swollen from the middle and gives a gall or spherical shape 5–6 μm in width, un swollen parts are cylindrical, thick-walled, septate, slightly constricted at the septa, clavate or straight, unevenly thickened, smooth or slightly verruculose, base is globular to spherical, apex is flat or spherical or bulbous, brown to reddish brown, becoming paler and tapering towards the apex, slightly swollen at nodes where branching starts. *Conidiogenous cells* polytretic, terminal or intercalary, proliferating asymmetrically, smooth, subcylindrical, with 1–2 conidiogenous loci, brown to reddish brown, somewhat paler than the conidiophore. *Conidia* 18–25 × 4–5.5 μm ($\bar{x}$ = 22.5 × 4.5 μm, n = 30), simple, dry, acrogenous or pleurogenous, oblong, obtuse ends, 2-septate or aseptate and verruculose at immature stage, 3-septate at maturity, thick-walled, brown to reddish brown, hilum is visible at immature stage, dry, smooth at maturity.

Cultural characteristics – On PDA, colony circular, reaching 40 mm in 15 days at 25 °C, pale yellow-brown to white from above, yellow-brown from below, surface rough, with dense mycelium in the middle, sparse mycelium in outer layer, dry, raised, edge entire.

Material examined – Thailand, Tak Province, Pradang, on dead leaf petiole of *Musa* sp., 4 August 2019, Erandi Yasanthika, BNS293 (MFLU 23-0288), culture MFLUCC 23-0242.

GenBank numbers – LSU = PP800316, ITS = PP809077

Notes – *Dendryphiella vinosa* was found in different geographical localities as a saprobe (*i.e.*, Belgium, Ghana, India, Kenya, Malaysia, Myanmar, New Caledonia, Taiwan, Zambia) on many plant hosts (*Allamanda*, *Abelmoschus*, *Bactris*, *Bauhinia*, *Carica*, *Cassia*, *Citrus*, *Collinsonia*, *Crotalaria*, *Hibiscus*, *Passiflora*, *Pisum*, *Sauropus*, *Sesbania*, *Vanilla*) in terrestrial environments (Farr & Rossman 2024). In addition, the species has been reported from marine and freshwater habitats (Jones et al. 2008, Dong et al. 2020). In the analyses using LSU and ITS sequence data, our strain (MFLUCC 23-0242) grouped with *D. vinosa* strains retrieved from GenBank with strong statistical support (Fig. 6). Based on the BLASTn search results of LSU and ITS sequences, our strain (MFLUCC 23-0242) demonstrated a high similarity to *D. vinosa* (MFLU 20-0444) as follows: LSU = 100%, ITS = 99.23%, with query covers of 100% and 96%, respectively. Notably, a 0.76% (4/521; without gaps) base pair difference in ITS sequences was observed between our isolate and *D. vinosa* (MFLU 20-0444). However, the morphological illustrations of *D. vinosa* by Jones et al. (2008) and Dong et al. (2020) are similar to our collection. Hence, we report *D. vinosa* on *Musa* spp. as a saprobe for the first time in Thailand.

Didymosphaeriaceae Munk

The family was introduced by Munk (1953) and is typified by *Didymosphaeria epidermidis*. Ariyawansa et al. (2014) confirmed the taxonmic position of *Didymosphaeriaceae* in *Pleosporales* based on morpho-molecular data. The family comprises saprobes, endophytes and pathogens associated with plant hosts over a large geographical distribution (Mapook et al. 2020, Ren et al. 2022, Hu et al. 2023, Wanasinghe et al. 2024). The sexual morph is characterized by ostiolate ascomata, cellular or trabeculate pseudoparaphyses (Liew et al. 2000) and bitunicate, fissitunicate asci with pedicells. The ascospores are often septate or muriform, 2–4-spored or 8-spored, 1–2-seriate, and ellipsoid to oblong. The asexual morphs of *Didymosphaeriaceae* are diverse (*i.e.*, camarosporium-like, diplodia-, fusicladium-, pithomyces-, phoma-, and spegazzinia-like) (Wijayawardene et al. 2022). Currently, ten genera of *Didymosphaeriaceae* (*Alloconiothyrium*, *Cylindroaseptospora*, *Dictyoarthrinium*, *Neptunomyces*, *Paraconiothyrium*, *Paracamarosporium*, *Pseudocamarosporium*, *Pseudopithomyces*, *Spegazzinia*, and *Xenocamarosporium*) have been described based solely on asexual characteristics (Hongsanan et al. 2020).

Dictyoarthrinium Hughes, Mycol. Pap. 48: 29 (1952)

Dictyoarthrinium was introduced by Hughes (1952) using *D. quadratum* as the type species. Previously, the genus was placed in *Apiosporaceae* (*Sordariomycetes*) and Samarakoon et al. (2020b) accommodated the genus in *Didymosphaeriaceae* based on morphology and molecular data. Nine species epithets of *Dictyoarthrinium* are listed in Index Fungorum (2024). Five *Dictyoarthrinium* taxa (*D. africanum*, *D. microsporum*, *D. lilliputeum*, *D. synnematicum*, *D. rabaulense*) were established based only on morphology. *Dictyoarthrinium hydei*, *D. musae*, *D. sacchari*, and *D. thailandicum* have been recently introduced based on morpho-molecular data (Samarakoon et al. 2020b, Maharachchikumbura et al. 2021, Ren et al. 2022). *Dictyoarthrinium* is characterized by having basauxic conidiophores (Hughes 1952, Damon 1953, Matsushima 1971). Conidiophores of *Dictyoarthrinium* are minutely verruculose, sub-hyaline and transversely septate (Elis 1971a). Usually, the septa are dark brown and appear as thick stripes on the conidiophores. The conidiophore mother cell is usually hyaline or pale brown and cup-shaped (Hughes 1952) or subspherical (Elis 1971a). The length of conidiophore varies within the genus but in some species, the lengths are similar.

Figure 5 – *Dendryphiella vinosa* (MFLU 23-0288). a, b Conidiophores on the host. c, f, h Attachment of conidia and conidiophores. d, e Conidiophores. g Base of a conidiophore. i–m Conidia. Scale bars: a = 500 µm, b = 100 µm, c–h = 20 µm, i–m = 10 µm.

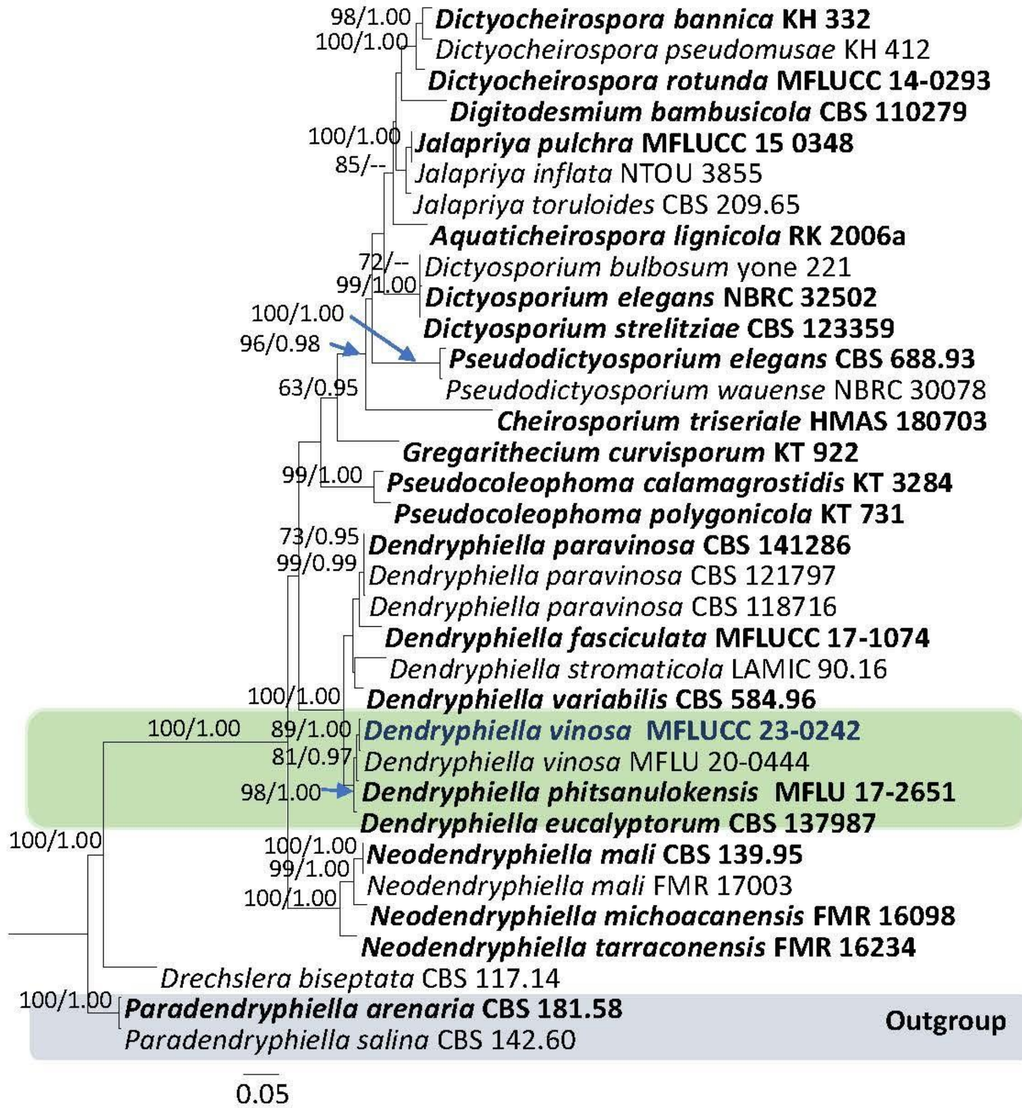

Figure 6 – Maximum likelihood tree revealed by RAxML analyses of LSU and ITS sequence data of the selected genera of *Dictyosporiaceae* and *Pleosporaceae*, showing the phylogenetic position of *Dendryphiella vinosa* (MFLUCC 23-0242). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Paradendryphiella arenaria* (CBS 181.58) and *P. salina* (CBS 142.60) (*Pleosporaceae*). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Dong et al. (2020), with a final ML optimization likelihood value of -8083.078. The matrix had 528 distinct alignment patterns with 14.75% of undetermined characters or gaps. Estimated base frequencies were: A = 0.237326, C = 0.233704, G = 0.277201, T = 0.251769; substitution rates: AC = 1.481213, AG = 2.595546, AT = 2.570283, CG = 0.406928, CT = 6.261590, GT = 1.0000; proportion of invariable sites I = 0.492239; gamma distribution shape parameter (α) = 0.576967.

The conidia of *Dictyoarthrinium* arise from the terminal or lateral parts of the conidiophore. Conidiogenesis is monoblastic or polyblastic and integrated (Elis 1971a). Conidia are simple, solitary, pigmented, and often comprise 4 cells. Some taxa rarely produce 16-celled conidia (such as *D. africanum*). The surface of conidia is verruculose and most of the species have warts on the surface.

The shape of conidia varies within the genus, such that they are either square, spherical, subspherical or oblong. The conidia usually appear to be flattened in one plane. The sexual morph of *Dictyoarthrinium* has yet to be determined. The majority of the taxa are saprobes that colonize dead plant materials, but *D. rabaulense* was recorded from soil (Kobayasi et al. 1971) and air (Elis 1976). Endophytic or pathogenic lifestyles of *Dictyoarthrinium* have also not been recorded (Wijayawardene et al. 2022). Most of the species are recorded from monocot plants and the genus is widely distributed across the tropics and only in terrestrial environments (Samarakoon et al. 2020a). In this study, we report the occurrence of *Dictyoarthrinium musae* as a new collection from Thailand.

Dictyoarthrinium musae Samarakoon, Chomnunti & K. D. Hyde, MycoKeys 71: 109 (2020) Fig. 7

Index Fungorum number: IF835764; Facesoffungi number: FoF08467

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* powdery, black, shiny, superficial. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* (40–) 72–80 × 3.8–4.5 µm ($\bar{x}$ = 75.6 × 4.3 µm, n = 40), basauxic, simple, unbranched, erect from subspherical, pale brown conidiophore mother cells 4–5 × 3.5–4.5 µm ($\bar{x}$ = 4.5 × 3.9 µm, n = 10), macronematous, mononematous, often straight or sometimes flexuous, cylindrical, sub-hyaline, dark brown transverse septa appearing as stripes, surface rough. *Conidiogenous cells* 4–5 × 3.5–4 µm ($\bar{x}$ = 4.4 × 3.8 µm, n = 10), terminal and intercalary, cylindrical, sub-hyaline to pale brown. *Conidia* 6–9.5 × 7–8.5 µm ($\bar{x}$ = 8 × 7 µm, n = 40), simple, dark brown or blackish brown, dry, acropleurogenous, square rounded, often 4-celled, verrucose, with light brown to dark brown warts on the cellular surface. Immature conidia 1–2-celled and sub-hyaline or pale brown. The terminal conidium is 4-celled, falling down before lateral conidia.

Material examined – Thailand, Chang Rai, Mae Chan, on dead leaves of *Musa* sp. (*Musaceae*), 7 June 2019, B. C. Samarakoon, BNS333 (MFLU 23-0289).

GenBank numbers – SSU = PP811804, LSU = PP800319, ITS = PP809080

Notes – In the multi-gene phylogeny, our strain (MFLU 23-0289) was grouped with the ex-type strain of *Dictyoarthrinium musae* (MFLUCC 20-0105), sister to *D. thailandicum* with ML = 99%, PP = 0.95 statistical support (Fig. 10). Based on BLAST search results of SSU, LSU, ITS, and *tef*1 sequence data, MFLU 23-0289 exhibited high similarity to *D. musae* (MFLUCC 20-0105) as follows: SSU = 99.8%, LSU = 100%, ITS = 100%, and *tef*1 = 99.8%, all with 100% query covers. *Dictyoarthrinium musae*, *D. sacchari* and *D. synnematicum* were previously found on *Musa* spp. in Thailand. Our collection has similar morphology to the holotype of *D. musae* except for the length of the conidiophore, which is a factor that is highly variable with environmental stresses and geographical localities (Treseder & Lennon 2015). Based on the similar morphology and strong statistical support from our molecular phylogeny, we report *D. musae* as a saprobe on *Musa* sp. from Thailand. This is the second occurrence of *D. musae* on *Musa* sp. after the findings of Samrakoon et al. (2020a) in Thailand.

Dictyoarthrinium thailandicum G. C. Ren & K. D. Hyde, Biology 11: 15 (2022) Fig. 8

Index Fungorum number: IF559807; Facesoffungi number: FoF10705

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* sparse, powdery, black, flat, superficial, minute. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* 50–55 × 3.8–4.5 µm ($\bar{x}$ = 52 × 4.3 µm, n = 40), basauxic, sometimes minute, simple, unbranched or branched, erect from spherical, brown conidiophore mother cells 4–5 × 3.5–4.5 µm ($\bar{x}$ = 4.5 × 3.9 µm, n = 10), macronematous, mononematous, flexuous, cylindrical, sub-hyaline, transversely septate, notably rough, slightly constricted at septa. *Conidiogenous cells* 5–6 × 3–4 µm ($\bar{x}$ = 5.5 × 3.5 µm, n = 10), terminal and intercalary, cylindrical, sub-hyaline to pale brown. *Conidia* 9–10.5 × 8.5–10 µm ($\bar{x}$ = 10 × 9.8 µm, n = 40), conidial formation initiating from the conidiophore and budding occurs forming conidial chains, immature conidia pale brown and dark brown at maturity, simple, dry, acropleurogenous, square rounded, often 4-celled, deeply constricted at septa, verrucose, with light brown to dark brown warts on the cellular surface, 1–2-celled at immature stage. The terminal conidium is 4-celled and persists with lateral conidia, forming terminal conidial chains. Comparatively large when compared with lateral conidia and deeply constricted at septa. Conidial splitting was not observed.

Cultural characteristics – Conidia germinating on PDA within 12 hrs. Colonies on PDA, reaching a diameter of 55 mm after 10 days at 25 °C, slightly raised, pinkish white, moderately dense, middle light gray, periphery white, reverse white to grayish white.

Material examined – Thailand, Chiang Rai, Doi Chang, on dead leaves of *Musa* sp. (*Musaceae*), 17 July 2022, B. C. Samarakoon, MN12 (MFLU 23-0290), culture (MFLUCC 23-0280).

GenBank numbers – LSU = PP800320, ITS = PP809081, *tef*1 = PP817246

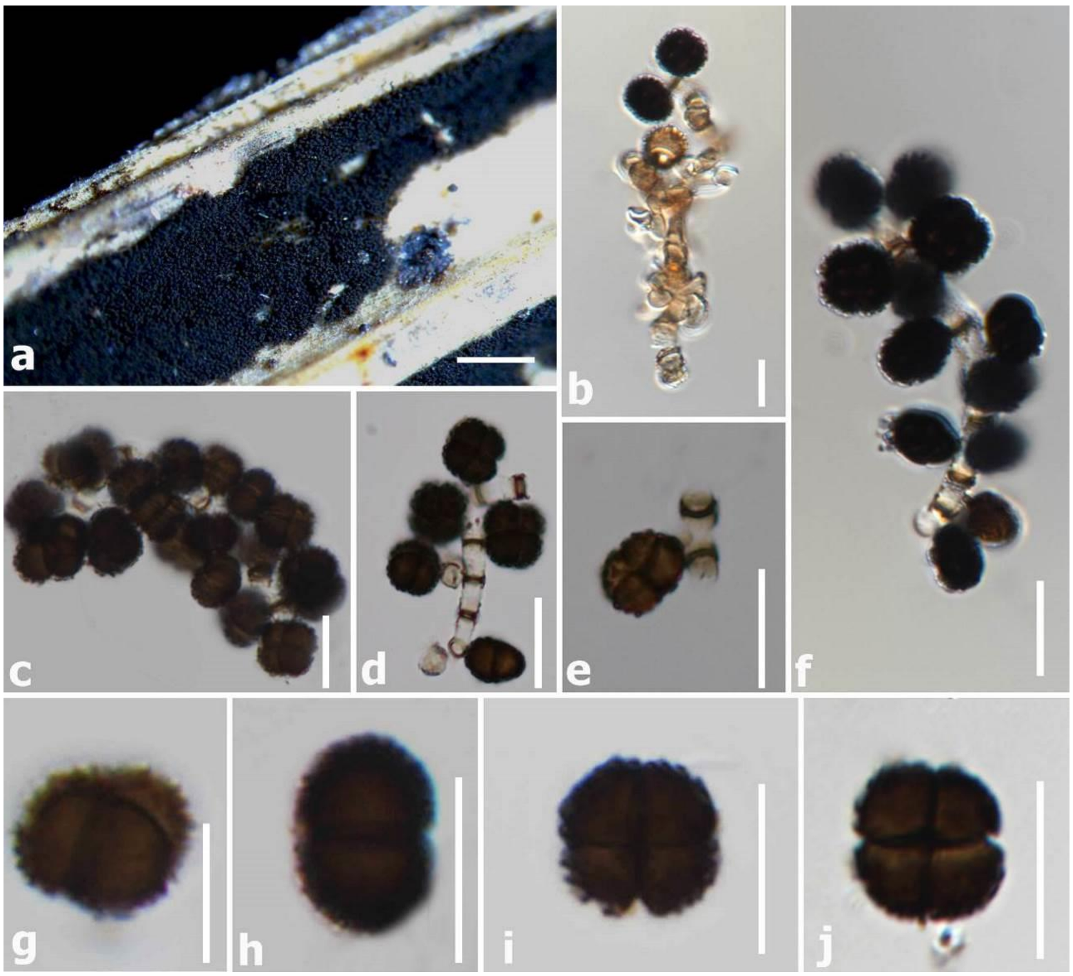

Figure 7 – *Dictyoarthrinium musae* (MFLU 23-0289) a. Colonies on the host. b, c–f Conidiophores and conidial attachments. g–j Mature conidia. Scale bars: a = 500 µm, b–j = 10 µm.

Notes – *Dictyoarthrinium thailandicum* was described by Ren et al. (2022) on a dead twig of *Castanopsis* sp. in Thailand. The colony was very young on the *Musa* host when we collected the sample. Hence, the basauxic conidiogenesis and formation of the first terminal conidium were clearly visible (Fig. 8i) in our collection. *Dictyoarthrinium thailandicum* differs from other taxa of the genus by forming conidial chains and budding in mature conidia. In the multi-gene phylogeny (Fig. 10), our strain (MFLUCC 23-0280) grouped with *D. thailandicum* (KUMCC 21-0664 and KUMCC 21-0665), sister to *D. musae* (MFLUCC 20-0105) with ML = 97%, PP = 0.95 statistical support. Based on BLAST search results of SSU, LSU, ITS, and *tef*1 sequence data, our strain shows high similarity to *D. thailandicum* (KUMCC 21-0664) with the following percentages: SSU = 99.8%, LSU = 99%, ITS = 100%, and *tef*1 = 100%, all with 100%, 99.53%, 100%, and 99% query covers, respectively. The base pair differences between our strain and *D. thailandicum* (KUMCC 21-0664) are as follows: LSU = 0.47% (4/848), ITS = 0% (0/547), and *tef*1 = 0% (0/770) without gaps. Based on morphology and phylogeny, we report the saprobic occurrence of *D. thailandicum* on *Musa* as a new host record.

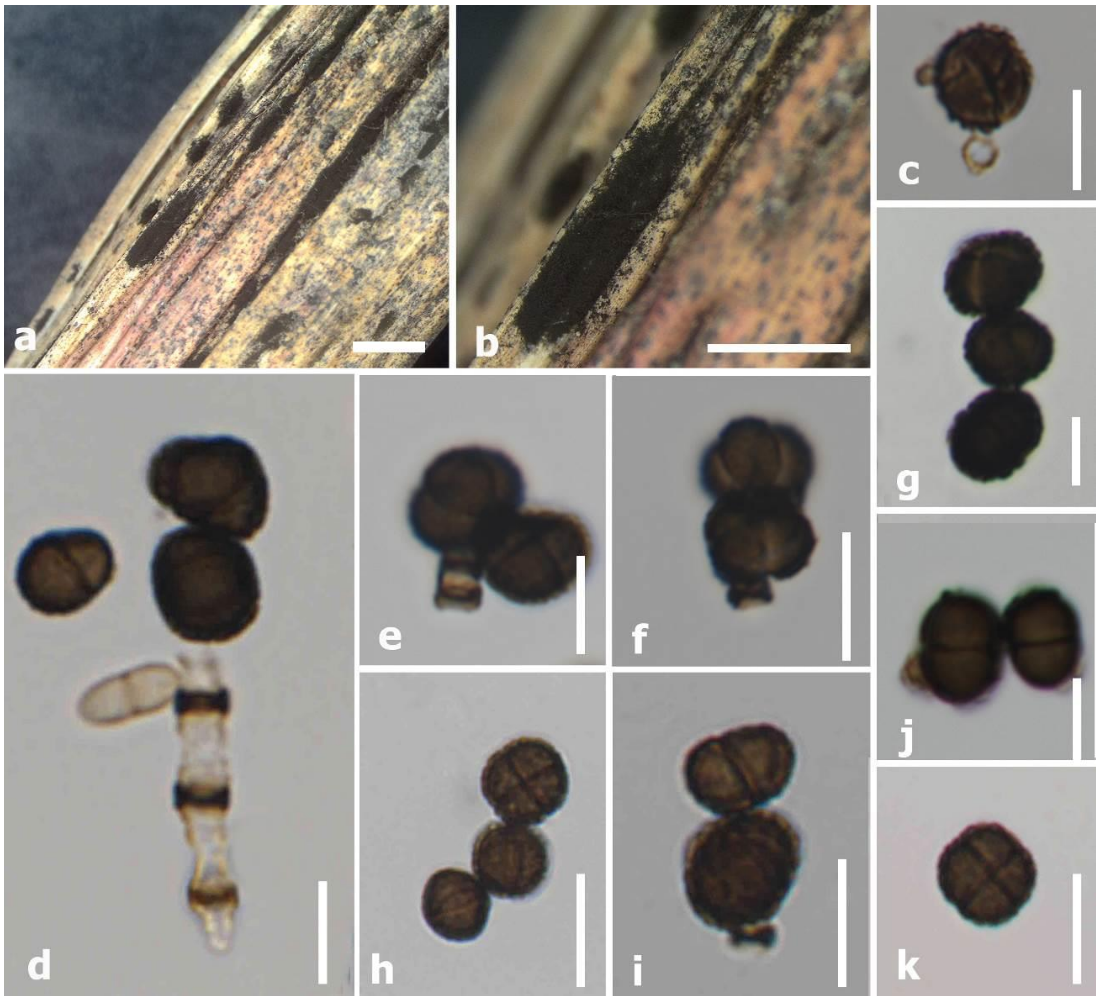

Figure 8 – *Dictyoarthrinium thailandicum* (MFLU 23-0290). a. b Colony on the host. c Occurrence of the terminal conidium and the conidiophore mother cell. d–i Conidiophores and conidial chains. j–k Mature conidia. Scale bars: a, b = 100 µm, c–k = 10 µm.

Pseudopithomyces Ariyawansa & K. D. Hyde, Fungal Diversity 75: 64 (2015)

Pseudopithomyces exhibits endophytic, saprobic, and pathogenic life modes on plants and also associates with humans. Additionally, pathogens in the genus are also the causative agents of facial eczema disease in animals (*i.e*., sheep, cattle, and deer) (Jayasiri et al. 2019, Yuan et al. 2020, Senwanna et al. 2021, Tennakoon et al. 2021, Silva et al. 2022, Abeywickrama et al. 2023, Chethana et al. 2023, Tian et al. 2024). *Pseudopithomyces* was introduced by Ariyawansa et al. (2015) to accommodate *Pithomyces chartarum*, *P. maydicus*, *P. sacchari*, and some of the unidentified *Pithomyces* strains that clustered in *Didymosphaeriaceae*. Thirteen species epithets are listed in Index

Fungorum (2024). *Pseudopithomyces chartarum* (Africa, Jamaica, Solomon Islands and Thailand), *P. sacchari* (Trinidad and Tobago) and *P. maydicus* (China, Taiwan) were previously reported on *Musa* spp. (Ellis 1971b, Matsushima 1971, Matsushima 1980, Lumyong et al. 2003). Da-Cunha (2014) identified *Leptosphaerulina chartarum* as the sexual morph of the genus. The asexual morph of *Pseudopithomyces* is hyphomycetous and appears as black or brownish colonies on the host. The septate or muriform multicellular conidia are notably verruculose and often have a spherical to fusiform shape (Ariyawansa et al. 2015). In this study, we report the endophytic and saprobic lifestyles of *P. chartarum* associated with living asymptomatic leaves and decaying leaves of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak) plants in Thailand. Our phylogenetic evaluation gives some insights into the lifestyle change of fungi on the same host (Promputtha et al. 2007, Rai & Agarkar 2016) and the transition of the endophytic lifestyle of *P. chartarum* to the saprobic mode during the senescence of the leaves.

Pseudopithomyces chartarum (Berk. & M. A. Curtis) J. F. Li, Ariyawansa & K. D. Hyde, Fungal Diversity 75: 64 (2015) Fig. 9

Index Fungorum number: IF551393; Facesoffungi number: FoF00938

Saprobic on the dead leaves of *Musa acuminata*. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* effuse, dark brown to black, powdery, scattered. *Vegetative hyphae* septate, branched, sub-hyaline to pale brown or hyaline, rough. *Conidiophores* 8–10 × 4–5µm ($\bar{x}$ = 9 × 4.5 µm, n = 20) micronematous, mononematous, unbranched, hyaline, thin-walled, septate or aseptate, smooth to rough, unbranched, with globular base and a truncate apex. *Conidiogenous cells* 5–8 × 3–5 µm ($\bar{x}$ = 7.8 × 4.6 µm, n = 20), holoblastic, terminal, hyaline, globose or subglobose, phialide-like, integrated. *Conidia* (14–) 18–20 × (8–) 10–12 µm ($\bar{x}$ = 18.5 × 11 µm, n = 40), brown and muriform at maturity, subglobose, 3–4-transversely septate, with 1-3 longitudinal septa, darken at the septa, verruculose, echinulate, amygdaliform or ovoid, thick-walled, sometimes slightly constricted at septa. Immature conidia are light brown, single celled, septation was visible at maturity.

Cultural characteristics – Conidia germinate on PDA within 14–15 hours. Colonies on PDA, cottony, pinkish white, light brown to brown, reaching 5 cm in 14 days at 25 °C. Mycelia are superficial, effuse and radially striate with a regular edge. Sporulation is usually observed after 30 days under 25 °C.

Material examined – Thailand, Chiang Rai Province, Nang Lae, on a dead leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 18 May 2019, B. C. Samarakoon, BNS249 (MFLU 23-0291), culture MFLUCC 23-0225.

Other materials examined – Thailand, Chiang Rai Province, Nang Lae, isolated from a fresh leaf of Namwa banana (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak), 6 September 2018, B. C. Samarakoon, 24-6 (MFLU 23-0320), culture MFLUCC 23-0226.

GenBank numbers – MFLUCC 23-0225: SSU = PP811802, LSU = PP800317, ITS = PP809078, *tef*1 = PP817242, MFLUCC 23-0226: SSU = PP811803, LSU = PP800318, ITS = PP809079, *tef*1 = PP817243.

Notes – In the multi-gene phylogeny of combined SSU, LSU, ITS and *tef*1 sequence data, the endophytic isolate (MFLUCC 23-0226) and the saprobic isolate (MFLUCC 23-0225) grouped together with *Pseudopithomyces chartarum* with ML = 100%, PP = 0.98 statistical support (Fig. 10). There are some noticeable morphological differences between the endophytic and saprobic collections of *P. chartarum*. The shape and dimensions of the conidiophores and conidia are different in the endophytic collection as compared to the saprobic specimen. We noticed comparatively elongate conidiophores and enlarged conidia in the endophytic isolate, while the saprobic collection of *P. chartarum* has shortened conidiophores with globular bases and rough surfaces as well as comparatively thick-walled and verruculose conidia. Such morphological differences may be accounted for by the fact that the endophytic collection has grown in an artificial medium while the saprobic strain has been more adapted to the natural environment and withstood environmental stresses (Powell & Koch 1977). There is a possibility that the endophytic lifestyle of *P. chartarum* can manifest itself as a saprotroph upon host decay. Future scientific research such as enzymatic assays (cellulase, β-mannanase, polygalacturonase and xylanase activity) is necessary to evaluate our hypothesis (Promputtha et al. 2007, 2010). We report the endophytic and saprobic occurrence of *P. chartarum* associated with Namwa (*Musa acuminata* × *M. balbisiana*; ABB genomic group; Pisang Awak) leaves from Thailand.

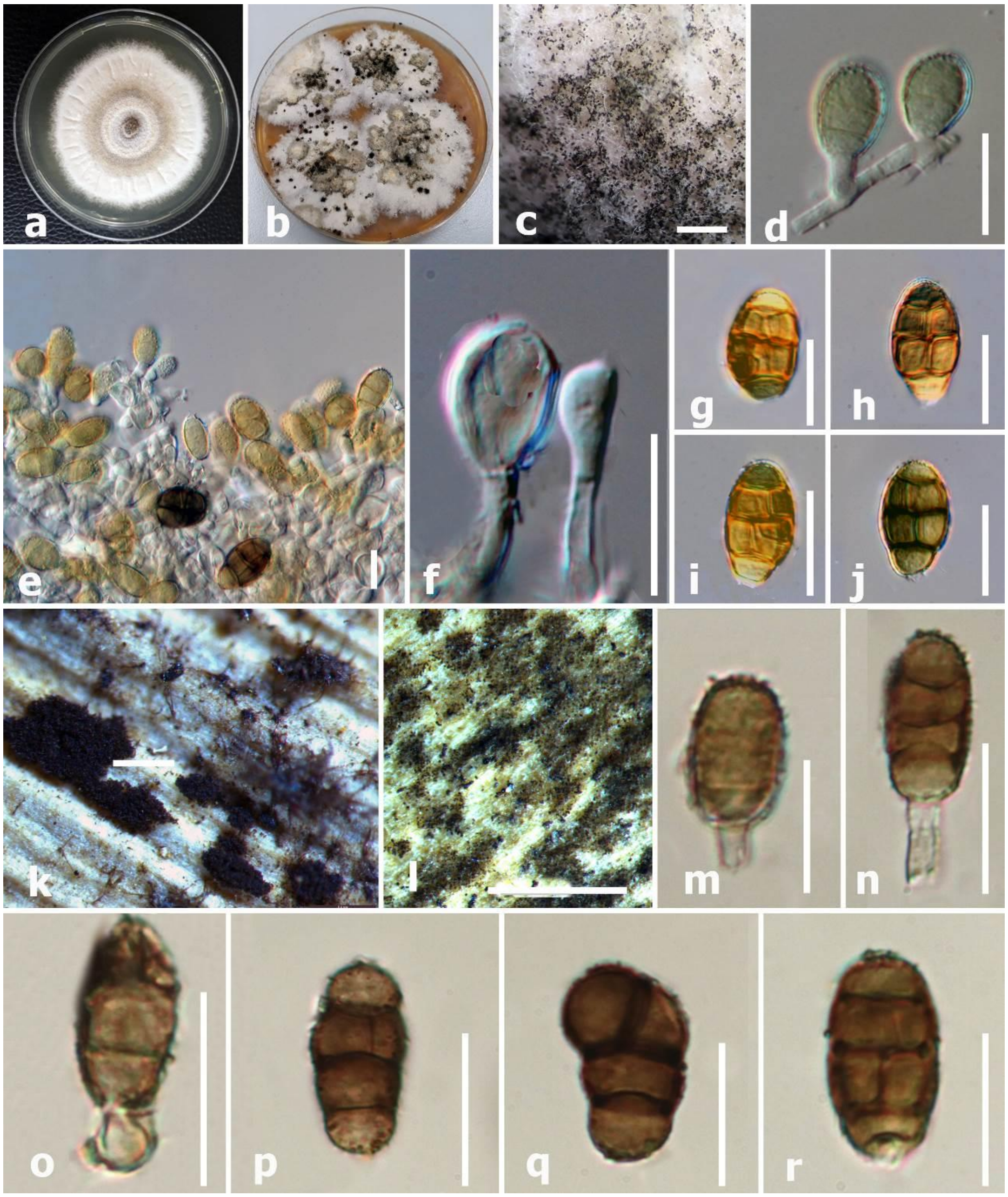

Figure 9 – *Pseudopithomyces chartarum*. (MFLU 23-0291 and MFLU 23-0320). a Colony on PDA after 3 weeks (endophytic isolate). b Colony on PDA after 8 weeks (endophytic isolate). c Conidiomata on PDA. d–f Conidial attachments and conidiogenous cells. g–j Conidia. k–l Colonies on a natural dead host as a saprobe. m–o Conidia and conidiophores. p–r Conidia. Scale bars: c, k, l = 2 mm, d–j = 15 µm.

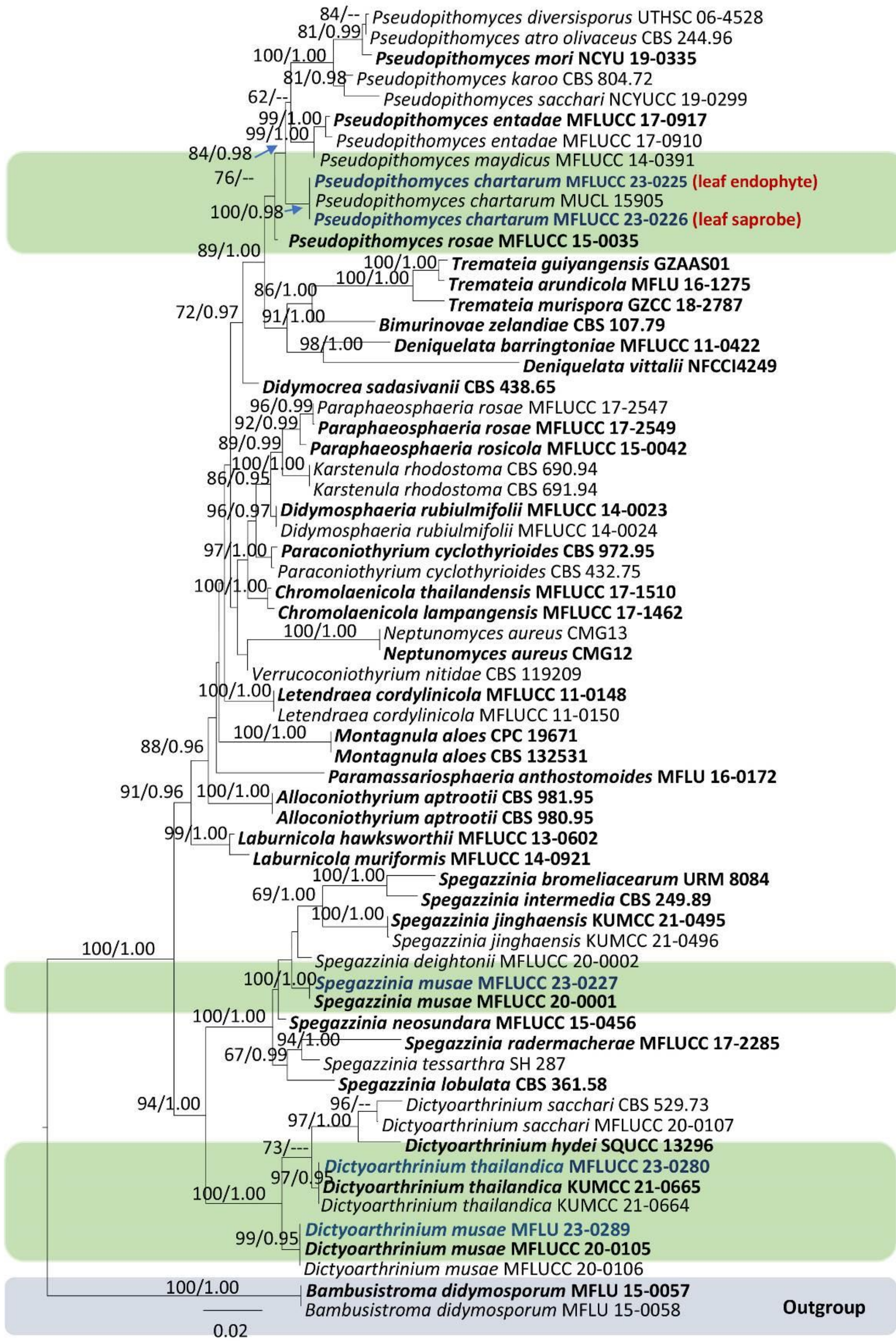

Figure 10 – Maximum likelihood tree revealed by RAxML analyses of SSU, LSU, ITS, and *tef*1 sequence data of the selected genera of *Didymosphaeriaceae*, showing the phylogenetic position of *Dictyoarthrinium musae* (MFLU 23-0289), *D. thailandicum* (MFLUCC 23-0280), and the endophytic and saprobic isolates of *Pseudopithomyces chartarum* (MFLUCC 23-0226, MFLUCC 23-0225) and *Spegazzinia musae* (MFLUCC 23-0227). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted to *Bambusistroma didymosporum* (MFLU 15-0057 and MFLU 15-0058). Strains generated in this study are shown in blue, with ex-type

strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Ren et al. (2022), with a final ML optimization likelihood value of -13294.28. The matrix had 769 distinct alignment patterns with 30.65% of undetermined characters or gaps. Estimated base frequencies were: A = 0.233754, C = 0.256194, G = 0.275842, T = 0.234210; substitution rates AC = 0.935028, AG = 2.175795, AT = 1.265459, CG = 0.911561, CT = 6.030124, GT = 1.0000; proportion of invariable sites: I = 0.584665; gamma distribution shape parameter: (α) = 0.565173.

Spegazzinia Sacc. Michelia 2: 37 (1880)

Spegazzinia was established by Saccardo (1880) and is typified by *S. ornata*. At present, 18 taxa are listed in Species Fungorum (2024). Based on morphology, the genus was accommodated in *Apiosporaceae* (*Sordariomycetes*) by Hyde et al. (1998). Using the SSU, LSU, ITS and *tef*1 sequence data, Tanaka et al. (2015) established the genus in *Didymosphaeriaceae* (*Dothideomycetes*). This was supported by a phylogenetic analysis that placed *Spegazzinia* in a basal clade in *Didymosphaeriaceae* (Thambugala et al. 2017, Jayasiri et al. 2019, Samarakoon et al. 2020a, Ren et al. 2022). Hughes (1953) characterized *Spegazzinia* as a genus with a unique basauxic conidiophore ontogeny (conidiophores that erect and elongate from a basal conidiophore mother cell). The conidia of *Spegazzinia* are dematiaceous, and of two types in most species, with a disc-shaped form and a stellate form (Ellis 1971b). *Spegazzinia* is widespread in various environments. The genus was discovered as saprobes associated with dead material of tropical, subtropical, and temperate vascular plant substrates (Jayasiri et al. 2019, Boonmee et al. 2021, Chethana et al. 2021b, 2023, Tennakoon et al. 2021, Jayawardena et al. 2022, Ren et al. 2022).

Spegazzinia musae Samarakoon, Phookamsak, Wanas., Chomnunti & K. D. Hyde, MycoKeys 70: 27 (2020) Fig. 11

Index Fungorum number: IF835298; Facesoffungi number: FoF07237

Saprobic on *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* on host, black, scattered powdery mass. *Conidiophore mother cells* 10–11 × 7–8.5 µm ($\bar{x}$ = 10.5 × 7.5 µm, n = 10), hyaline or pale brown, subspherical or sometimes lobate from the base. *Conidiophores* elongated type and shortened type, hold two types of conidia referred to herein as α and β. *Conidiophores of α conidia* (60–) 80–100 × 4–5 µm ($\bar{x}$ = 89 × 4.5 µm, n = 40), sub- hyaline, pale brown to dark golden brown, verruculose, rough to smooth-walled, straight to slightly flexuous, narrow branched or often unbranched. *Conidiophores of β conidia* 12–15 × 11–12 µm ($\bar{x}$ = 13.8 × 11.5 µm, n = 10), erect, unbranched, hyaline. *Conidiogenous cell development* basauxic, occuring as single, terminal holoblastic conidium at the apex of conidiophore. *Conidial development* holoblastic. *Conidia* solitary, dry, powdery, dimorphic; *α conidia* (35–) 45–48 × (32–) 40–45 µm ($\bar{x}$ = 48 × 42.5 µm, n = 40), stellate, 4–6-celled, globose to subglobose, deeply constricted at the septa, conspicuously spinulate, 4–6 spines in each cell, each 2–8 µm long, erect from the outer wall of each cell; *β conidia* 27–29 × 26–27 µm ($\bar{x}$ = 27.5 × 26.5 µm, n = 10), disc-shaped, initially hyaline, dark brown to brown at maturity, 4-celled, crossed-septate, notably constricted at the septa, one side flattened.

Cultural characteristics – Colonies on PDA, reaching a diameter of 10 mm after 7 days at 25 °C, greyish white, evenly raised, smooth, moderately dense, margin entire to crenulate; reverse white to pinkish white. Sporulation was not observed.

Material examined – Thailand, Chiang Rai Province, Doi Thun, on a dead leaf on *Musa* sp. (*Musaceae*), 20 July 2021, B. C. Samarakoon, MN01 (MFLU 23-0292), culture MFLUCC 23-0227.

GenBank numbers – SSU = PP838745, LSU = PP800321, ITS = PP809082

Notes – *Spegazzinia musae* was introduced by Samarakoon et al. (2020b) as a saprobe on *Musa* sp. in Thailand. Morphologically, our new collection has short conidiophores in stellate conidia when compared with the type. Based on BLAST search results of SSU, LSU, ITS, and *tef*1 sequence data, our strain shows high similarity to the ex-type of *Spegazzinia musae* (MFLUCC 20-0001) with the following percentages: SSU = 99.73%, LSU = 99.88%, ITS = 100%, and *tef*1 = 100%, all with 100%, 99.53%, 100%, and 100% query covers, respectively. The base pair differences between our strain and *S. musae* (MFLUCC 20-0001) are as follows: SSU = 0.27%, LSU = 0.12% (2/848), ITS = 0% (0/540), and *tef*1 = 0% (0/778) without gaps. The molecular phylogeny of LSU, SSU, ITS and *tef*1 has suggested that our new collection belongs to *Spegazzinia musae* with ML = 100% and PP = 1.00 statistical supports (Fig. 10). *Spegazzinia musae* was also reported from *Morus australis* (*Moraceae*) in Taiwan. This is the second report of *S. musae* in Thailand from *Musa*. Previously, *S. deightonii* and *S. radermacherae* were reported in Thailand on *Musa* sp. (Samarakoon et al. 2020b, Chethana et al. 2021b).

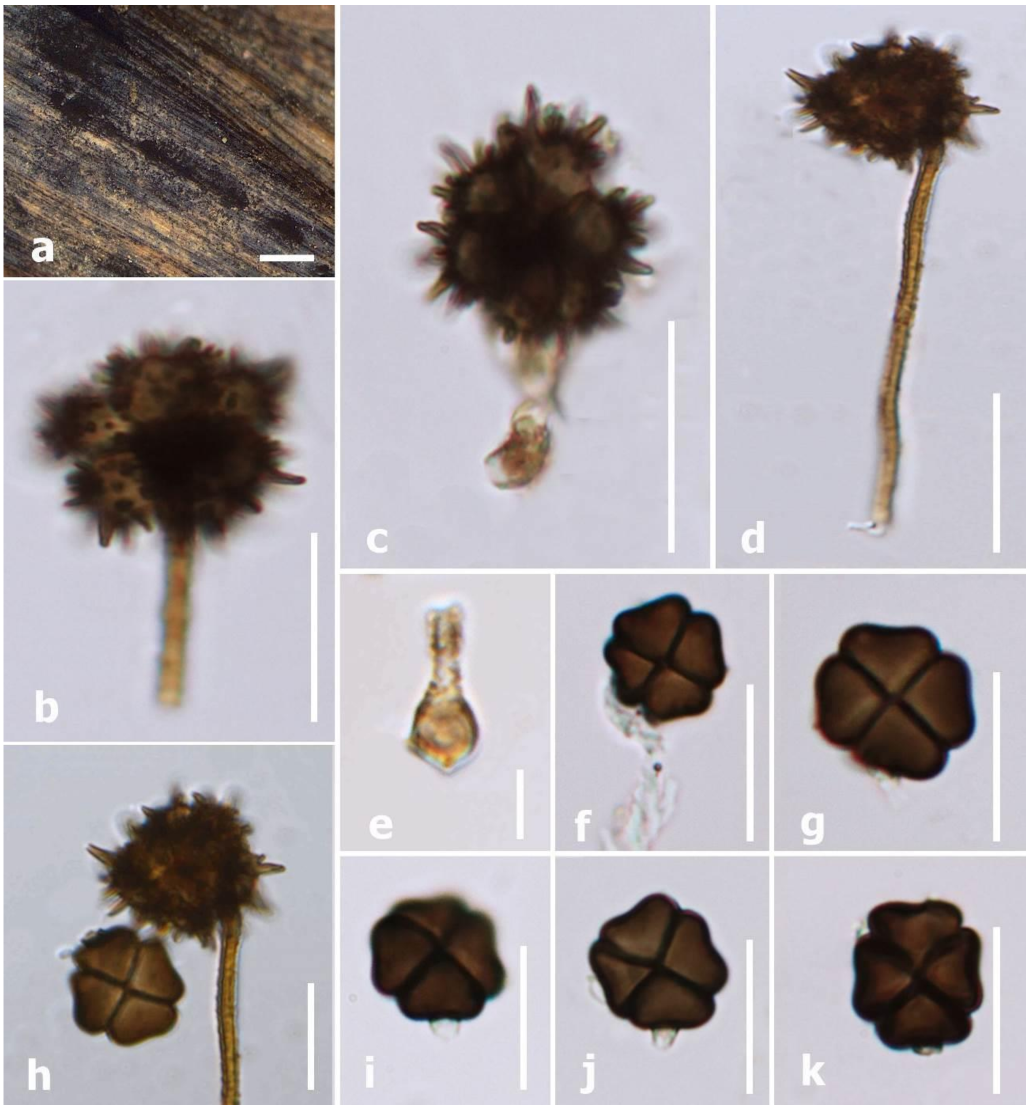

Figure 11 – *Spegazzinia musae* (MFLU 23-0292). a Colony on host. b–d, h Stellate conidia with the conidiophores. e Conidiophore mother cell. f–k Disk-shaped conidia. Scale bars: a = 200 µm, b, c, d = 20 µm, e = 5 µm, f, g, i–k = 15 µm, h = 10 µm.

Lentimurisporaceae N.G. Liu, J.K. Liu & K.D. Hyde

Lentimurisporaceae was introduced by Liu et al. (2018) and currently accommodates *Bahusandhika* and *Lentimurispora*. The taxa in the family are saprobes or soil-inhabiting fungi in terrestrial habitats. The hyphomycetous asexual morph has been reported from *Lentimurisporaceae* while the sexual morph remains unknown (Hongsanan et al. 2020). The asexual morph appears as powdery, scattered, brown or black colonies on the natural substratum with sporodochial conidiomata (Liu et al. 2018). The genera have brown or black, muriform to fusiform, cylindrical to rhomboidal, solitary or catenate conidia (Liu et al. 2018).

Bahusandhika Subram., J. Indian bot. Soc. 35: 469 (1956)

Bahusandhika was introduced by Subramanian (1956) to accommodate *Polydesmus indicus* and *Septonema intercalare*. Four species are now accepted in the genus (Index Fungorum 2023). *Bahusandhika* is characterized by catenate, cylindrical or rhomboidal, phragmoseptate conidia. Pratibha et al. (2014) accommodated the genus in *Pleosporales* based on molecular data (ITS and LSU). *Latorua* was placed under *Bahusandhika* by Crane & Miller (2016) based on morphology. Liu et al. (2018) treated *Latorua* as a distinct genus in *Pleosporales* with molecular support. Most of the *Bahusandhika* taxa were found in *Arecaceae*, *Dipterocarpaceae*, *Poaceae* and *Rubiaceae* (Hongsanan et al. 2020) in China, Costa Rica, India, Mexico, New Zealand, Panama and Venezuela (Xia et al. 2014, Crane & Miller 2016).

Bahusandhika indica (Subram.) Subram., J. Indian bot. Soc. 35: 469 (1956) Fig. 12

Index Fungorum number: IF293586; Facesoffungi number: FoF09666

Saprobic on dead leaf sheath of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* on natural substrate dry, powder-like, effuse, black, glistening, conidia are liberated when disturbed. *Mycelium* partly superficial to immersed, brown, pale brown or sub-hyaline, septate, thick-walled, branched. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* 8–18 × 2–3 μm ($\bar{x}$ = 10.2 × 2.4 μm, n = 20), micronematous, erect from the lateral hyphae, pale brown, often flexuous, or straight, septate, thick-walled, smooth, cylindrical or constricted at septa, each cell is spherical. *Conidiogenous cells* 2–4 × 2–3 μm ($\bar{x}$ = 3.4 × 2.5 μm, n = 20), monotretic or bytretic, integrated or discrete, terminal, formed on conidiophores as well as on conidia, light to pale brown, subspherical, spherical or bulbous, smooth, thick- or thin-walled. *Conidia* 10–15 × 5–7 μm ($\bar{x}$ = 13.3 × 6 μm, n = 40), catenate, long, branched chains, brownish black or dark brown, thin-walled or often thick-walled, ellipsoidal, with rounded ends, cylindrical or one side flattened, 1–3-septate, sometimes geniculate from the first septum, have 1–2 connecting cells on top; connecting cells 3–4 × 2–3 μm ($\bar{x}$ = 3.6 × 2.9 μm, n = 40) spherical, paler than conidia, pale brown, smooth, thick walled, 3–4 μm.

Cultural characteristics – Colonies reaching 25 mm in 7 days at 25 °C, sparse and flat, greyish brown, irregular margined, wrinkled appearance, radially striated, mouse gray to black from the top view; reverse smoke grey. Sporulation was not observed. The culture medium notably turns pale red after one week.

Material examined – Thailand, Chiang Mai Province, Mushroom Research Centre, on a dead leaf of *Musa* sp., 11 November 2021, Milan C. Samarakoon, MN54 (MFLU 23-0293), culture MFLUCC 23-0304.

GenBank numbers – SSU = PP811805, LSU = PP800322, ITS = PP809083, *tef*1 = PP817245

Notes – *Bahusandhika indica* (= *Polydesmus indicus*) was previously isolated from coconut litter in Himalaya region, India (Subramanian 1956, Prasher & Verma 2012). It has also been reported from Xishuangbanna, Yunnan Province, China on unidentified wood as a saprobe by Xia et al. (2014). BLAST search results of SSU, LSU, and ITS sequence data indicate that our strain has a high percentage similarity to taxa in GenBank as follows: SSU = 99.26% to *Lentimurispora urniformis* (MFLUCC 18-0497) with a 100% query cover, LSU = 99.88%, and ITS = 99.38% to *B. indica* (GUFCC 18001) with query covers of 96% and 92%, respectively. The base pair differences between our strain and the mentioned isolates are as follows: SSU = 0.74% with *L. urniformis* (MFLUCC 18-0497) (6/810), LSU = 0.12% (1/818), and ITS = 0.62% (3/483) with *B. indica*, all without gaps. In the multi-gene phylogeny of SSU, LSU, ITS and *tef*1 sequence data of *Lentimurisporaceae* (Fig. 13), our strain (MFLUCC 23-0304) was grouped with *B. indica* with ML = 100%, PP = 1.00 statistical support. There have been no endophytic or pathogenic occurrences of the species worldwide. This is the first report of the genus in Thailand and of *Musaceae*.

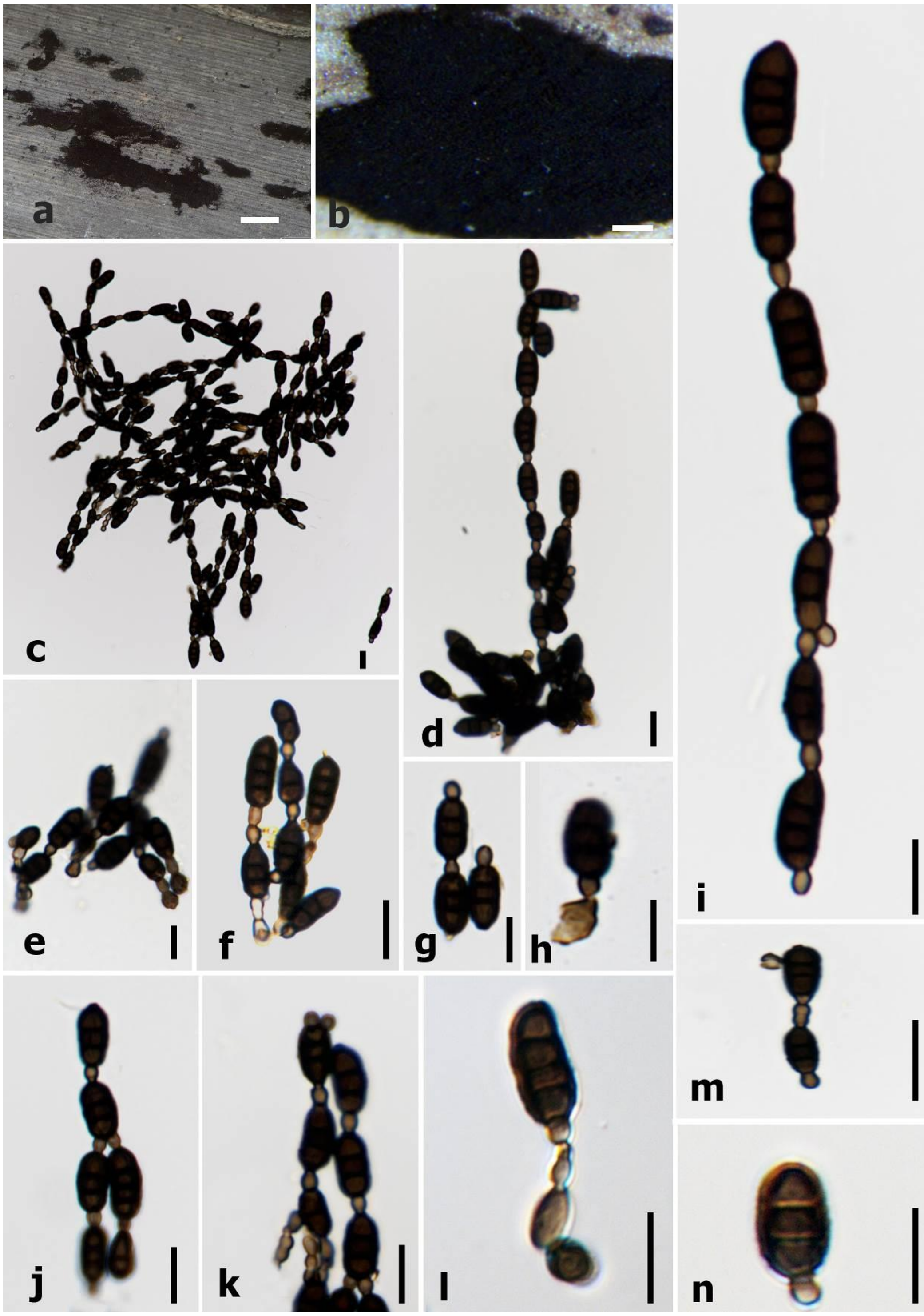

Figure 12 – *Bahusandhika indica* (MFLU 23-0293). a, b Colonies on dead *Musa* leaf sheath. c–m Conidiophores and conidial chains. n Conidia. Scale bars: a = 100 μm, b = 25 μm, c–n = 10 μm.

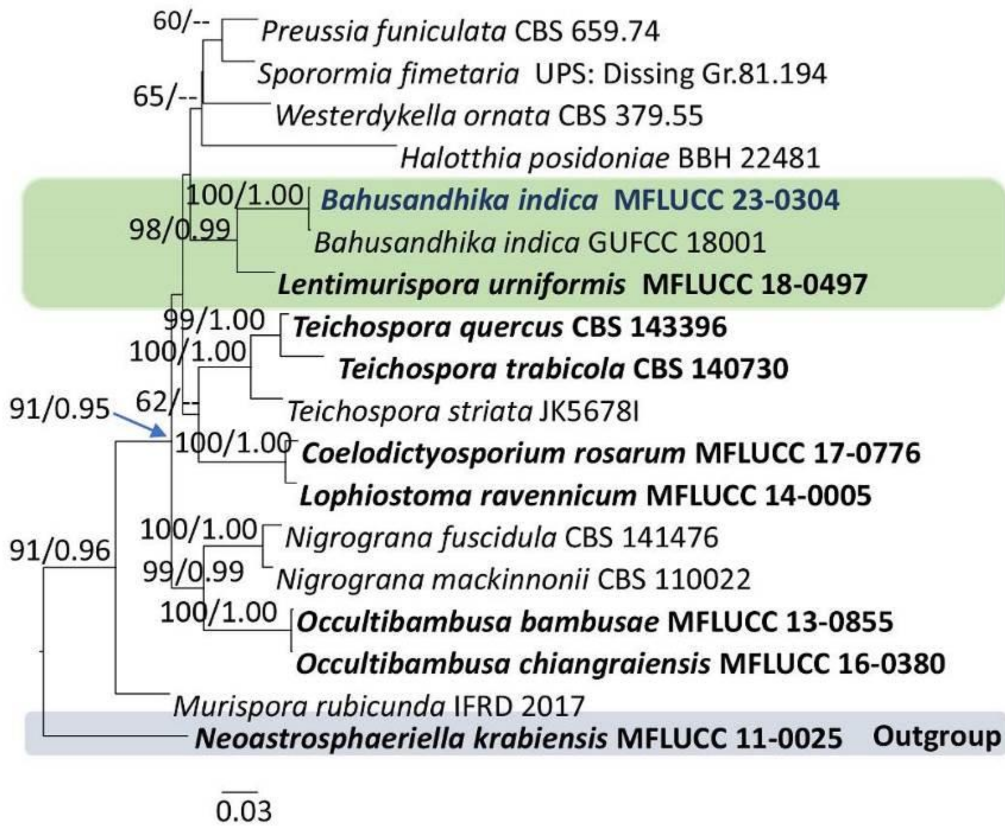

Figure 13 – Maximum likelihood tree revealed by RAxML analyses of SSU, LSU, ITS and *tef*1 sequence data of selected genera of *Pleosporales*, showing the phylogenetic position of *Bahusandhika indica* (MFLUCC 23-0304). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Neoastrosphaeriella krabiensis* (MFLUCC 11-0025) in *Aigialaceae*. Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar in topology to Liu et al. (2018), with a final ML optimization likelihood value of -11791.114. The matrix had 818 distinct alignment patterns with 29.20% of undetermined characters or gaps. Estimated base frequencies were: A = 0.241613, C = 0.251575, G = 0.277261, T = 0.229551; substitution rates AC = 1.269454, AG = 2.612160, AT = 1.526132, CG = 1.266502, CT = 7.872040, GT = 1.0000; proportion of invariable sites: I=0.523039; gamma distribution shape parameter: (α) = 0.549519.

Lophiotremataceae K. Hiray. & Kaz. Tanaka

Lophiostoma and *Lophiotrema* were earlier accommodated in *Lophiostomataceae*. The phylogenetic analyses (LSU and SSU) of Hirayama & Tanaka (2011) however, separated the two genera into two distinct families. Hence, *Lophiotremataceae* was erected to accommodate *Lophiotrema* and is typified by *L. nucula* (Hirayama & Tanaka 2011). Hashimoto et al. (2017) later introduced five genera (*viz*., *Atrocalyx*, *Crassimassarina*, *Cryptoclypeus*, *Galeaticarpa*, and *Pseudocryptoclypeus*) to *Lophiotremataceae* using morphology and molecular evidence. The sexual morph of *Lophiotremataceae* is characterized by beak-compressed ascomata with slit-like ostioles. The asci are cylindrical, short-pedicellate, bearing fusiform or cylindrical, 1-to multi-septate, hyaline to brown ascospores. In addition, some taxa of the family have a gelatinous sheath surrounding the ascospores

(Hirayama & Tanaka 2011). The family consists of saprobic taxa with a wide geographical distribution (Hongsanan et al. 2020).

Lophiotrema Sacc., Sacc., Michelia 1: 338 (1878)

Lophiotrema comprises species with hyaline and multi-septate ascospores (Saccardo 1883). In addition, the sexual morph also bears slit-like ostioles, cylindrical to cylindric-clavate asci, and a peridium of equal thickness (Hirayama & Tanaka 2011). The pycnidial asexual morph is reported in the genus and the hypomycetous morph was not observed (Hirayama & Tanaka 2011). The genus has a saprobic lifestyle and there are no reports on pathogenic or endophytic modes (Hongsanan et al. 2020, Hyde et al. 2020b, Boonmee et al. 2021, Zhang et al. 2023). There were some taxonomic confusions regarding *Lophiostoma*, but with the integration of molecular data, *Lophiotrema sensu lato* was reclassified as new genera in *Lophiotremataceae* (Hashimoto et al. 2017).

Lophiotrema hydei J. F. Zhang, J. K. Liu & Z. Y. Liu, Phytotaxa 379: 172 (2018) Fig. 14

Index Fungorum number: IF555509; Facesoffungi number: FoF05216

Saprobic on dead petiole of *Musa* sp. Sexual morph: *Ascomata* 500–800 μm high, 200–300 μm diam. ($\bar{x}$ = 650 × 250 μm, n = 10), dark brown to black, scattered, immersed, conical, notably elongated with flattened base, uni-loculate, ostiolate. *Ostioles* central or lateral, carbonaceous, with a pore-like opening, notably elongated until 500–550 μm and compressed laterally, periphyses observed, carbonaceous, masses of asci immersed as slimy heads from ostiolar canal. *Peridium* up to 25–30 μm thick, composed of several layers of pale brown, dark-brown to black, thick-walled pseudoparenchymatous cells, arranged in a *textura angularis* or *textura prismatica*, becoming pale towards the inner layer, outermost layer fused with host tissues. *Pseudoparaphyses* 1.5–2 μm ($\bar{x}$ = 1.8 μm, n = 40), branched, cellular, numerous, anastomosing among and between the asci, embedded in a gelatinous matrix, hyaline, cylindrical, tubular, rough or smooth surfaced, notably curved, sometimes coiling, aseptate, fasciculate, with rounded apex. *Asci* 100–150 (–200) × 3–6 μm ($\bar{x}$ = 130 × 5.2 μm, n = 40), 8-spored, bitunicate, fissitunicate, cylindrical, pedicellate, apically rounded, obtuse or acute, ocular chamber well developed. *Ascospores* 23–28 × 4.5–5.5 μm ($\bar{x}$ = 24.5 × 4.8 μm, n = 40), often overlapping bi-seriate, hyaline, fusiform, straight or slightly curved, 4–5 distinctly guttulate at immature stage, narrower towards both ends, smooth-walled, often 4–6-septate or multi-septate at maturity, with or without surrounded by a mucilaginous sheath. Asexual morph: Not observed.

Cultural characteristics – Colonies on PDA in circular, irregular margined, profuse growth at 25 °C, reaching 50 mm in diameter after 3 weeks, brownish-black from above, reverse grayish-brown, areal mycelium present, cottony and concentric ring patterns are visible. Sporulation was not observed.

Material examined – Thailand, Chiang Rai Province, Tap Tao, on a dead leaf of *Musa* sp., 18 October 2021, B. C. Samarakoon, MN48 (MFLU 23-0294), Cultures MFLUCC 23-0281 and MFLUCC 23-0303.

GenBank numbers – MFLUCC 23-0281: LSU = PP800328, ITS = OR206386, *rpb*2 = OR206055, *tef*1 = OR206051, MFLUCC 23-0303: LSU = PP800329, ITS = PP809655.

Notes – The BLAST search results of LSU, ITS, and *tef*1 sequence data reveal that our strains have the highest percentage similarity to *L. mucilaginosum* (HMAS 255437) (LSU = 100%, ITS = 99.34%, *rpb*2 = 99%) with 100%, 95%, and 97% query coverage. In addition, our strains show 98.20% (*tef*1) similarity to *L. hydei* (MFLU 18-2075) with 100% query coverage. The base pair differences of the *tef*1 gene between our strains and *L. mucilaginosum* (HMAS 255437) are 2.1% (17/821) without gaps. Additionally, *L. hydei* (MFLU 18-2075) shows a 1.8% (15/834) base pair difference (without gaps) with our collection. The ITS region of our strain and the latter *Lophiotrema* species was noticed to be more or less similar, with slight base pair changes as follows: *L. hydei* 0.2% (1/477), and *L. mucilaginosum* 0.42% (2/467).

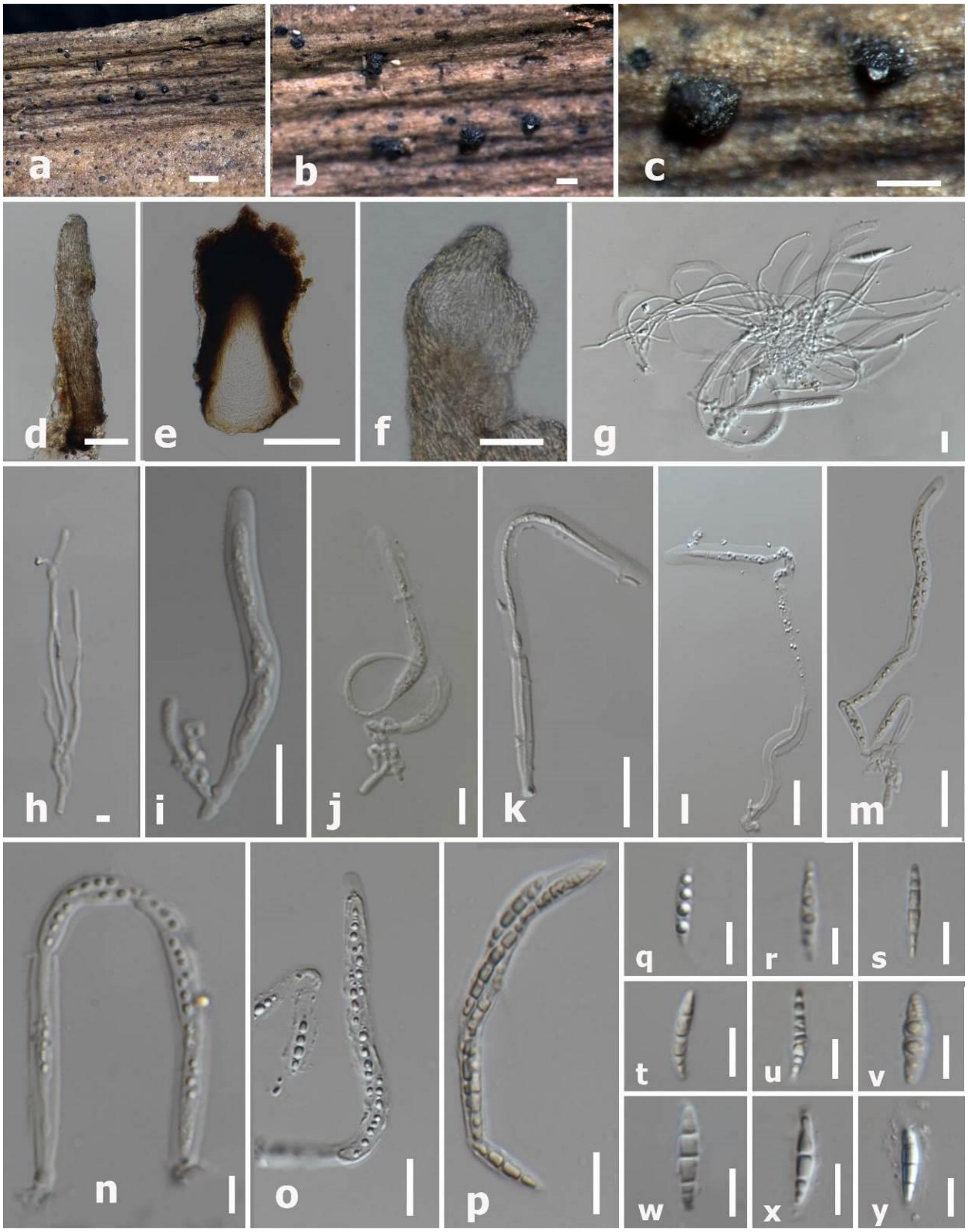

Figure 14 – *Lophiotrema hydei* (MFLU 23-0294). a, b, c Ascomata on *Musa* sp. d–f Ostiolar canal. g Asci and pseudoparaphyses. h Pseudoparaphyses. i–o Immature asci. p Asci. q–y Ascospores. Scale bars: a = 500 µm, b–e = 100 µm, f = 50 µm, g, q–y = 10 µm, h = 2 µm, i–p = 20 µm.

In the phylogenetic analyses of combined LSU, ITS, *rpb*2 and *tef*1 sequence data, MFLU 23-0294 and MFLUCC 23-0303 were grouped with *L. hydei* (MFLU 18-2075) and *L. mucilaginosum* (HMAS 255437) with strong statistical support (ML = 100%, BI = 1.00) (Fig. 15). We could not find any notable morphological differences in our collection compared to *L. mucilaginosum* and *Lophiotrema hydei*. When we compare the ITS sequences of *L. mucilaginosum* (HMAS 255437) and *L. hydei* (MFLU 18-2075), only one base pair difference was noticed. The LSU base pair difference between these two species is 0.66% (6/903). In addition, the *tef1* base pair difference between the latter two species is only 1.3% (11/904). We have noticed that the *tef*1 sequences in *Lophiotremataceae* species have notable changes, even in the same species as *L. vagabundum*. We were unable to find enough evidence to identify *L. mucilaginosum* (HMAS 255437) in Phookamsak et al. (2019) as an independent lineage based on morphology and molecular sequences. In addition, our new collection (MFLU 23-0294; Fig. 14) resembles the morphology of *L. mucilaginosum* and *L. hydei* when disregarding the length of the ostiolar canal, which is a factor that can be variable with environmental pressures. Hence, we identify our two strains as *L. hydei*. In addition, we synonymize *L. mucilaginosum* (Phookamsak et al. 2019) as *L. hydei* based on our morpho-molecular observations. This is the first geographical occurrence of *Lophiotrema* in Thailand and in *Musaceae*. *Lophiotrema hydei* was introduced by Zhang et al. (2018) on a dead branch found in karst landforms in southwest China. We report the first occurrence of *L. hydei* on *Musa* in Thailand.

Periconiaceae (Sacc.) Nann.

Periconiaceae was accommodated as a distinct lineage in *Massarineae* by Tanaka et al. (2015) based on morpho-molecular data. Four genera (*viz*., *Bambusistroma*, *Flavomyces*, *Noosia* and *Periconia*) are accepted with endophytic, saprobic and pathogenic lifestyles (Sarkar et al. 2019, Hongsanan et al. 2020, Samarakoon et al. 2021b).

Periconia Tode, Fung. mecklenb. sel. (Lüneburg) 2: 2 (1791)

Periconia was introduced by Tode (1791) and is typified by *P. lichenoides*. Both the sexual and asexual (hypomycetous) morphs are recorded in *Periconia* (Tanaka et al. 2015, Liu et al. 2017, Samarakoon et al. 2021a, Senwanna et al. 2021, Tennakoon et al. 2021, Silva et al. 2022, Jayawardena et al. 2022, Tian et al. 2024). The sexual morph bears an immersed or erumpent ascomata with an ostiolar neck. The eight ascospores are biseriate, bear a gelatinous sheath and are broadly fusiform with a nearly median septum (Tanaka et al. 2015). The asexual morph of *Periconia* has pale to dark brown branched or unbranched conidiophores (referred to as stipes). Conidiogenous cells of *Periconia* can be monoblastic or polyblastic, and form at the terminal ends or intercalary parts of the conidiophore. *Periconia* usually produces spherical, aseptate, catenate or solitary, pale to dark brown conidia (Ellis 1971b, 1976, Seifert 2011). Taxa of the genus have been reported as plant pathogens, endophytes and common saprobes in terrestrial and aquatic environments worldwide (Ellis 1971b, 1976, Markovskaja & Kačergius 2014, Liu et al. 2017). At present, 187 epithets are listed under *Periconia* (Index Fungorum 2023). *Periconia byssoides* (Venezuela, Cuba, and Somalia), *P. cortaderiae*, *P. digitata* (Thailand, Malaysia), *P. delonicis* (Thailand), *P. lateralis* (Thailand) and *P. minutissima* (Ghana) were previously reported on *Musa* spp. (Samarakoon et al. 2021b, Farr & Rossman 2024). This study presents the occurrence of *P. echinochloae* as a saprobe on *Musa* leaves from Thailand for the first time.

Periconia echinochloae (Bat.) M. B. Ellis, Dematiaceous Hyphomycetes (Kew): 347 (197) Fig. 17

Index Fungorum number: IF319348; Facesoffungi number: FoF15200

Saprobic on a dead leaf of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* on host scattered, with a stipe and spherical to rod-shaped head. *Conidiophores* (650–) 800–850 × 15−18 µm ($\overline{x}$ = 823 × 16.5 µm, n = 30), macronematous, mononematous, single or rarely 2–3 together, branched from the apex or unbranched, erect, thick-walled, dark brown to black, paler towards the apex, sub-hyaline at the apex where conidiogenesis occurs, septate, rough, base swollen and spherical, apex cylindrical, mature wall at the base masking the immature apical parts and resulting in an uneven width of the conidiophore, straight or flexuous. *Conidiogenous cells* 20–23.5 × 19.5–21 µm ($\overline{x}$ = 22 × 20 µm, n = 10), discrete on stipe and branches, determinate, spherical. *Conidia* (15–) 18–20 × 13–18 µm ($\overline{x}$ = 18.5 × 17 µm, n = 40), catenate, one-celled, spherical, hyaline to pale brown at immature stage, becoming brown to dark brown, smooth or minutely verruculose, rarely guttulate.

Cultural characteristics – Colonies on PDA, reaching a diameter of 30 mm after 14 days at 25 °C, flat at immature stage and raised at maturity, smooth to cottony or slightly hairy, with an entire edge, white to grey near the margin, moderately dense, circular; reverse white to greenish olivaceous.

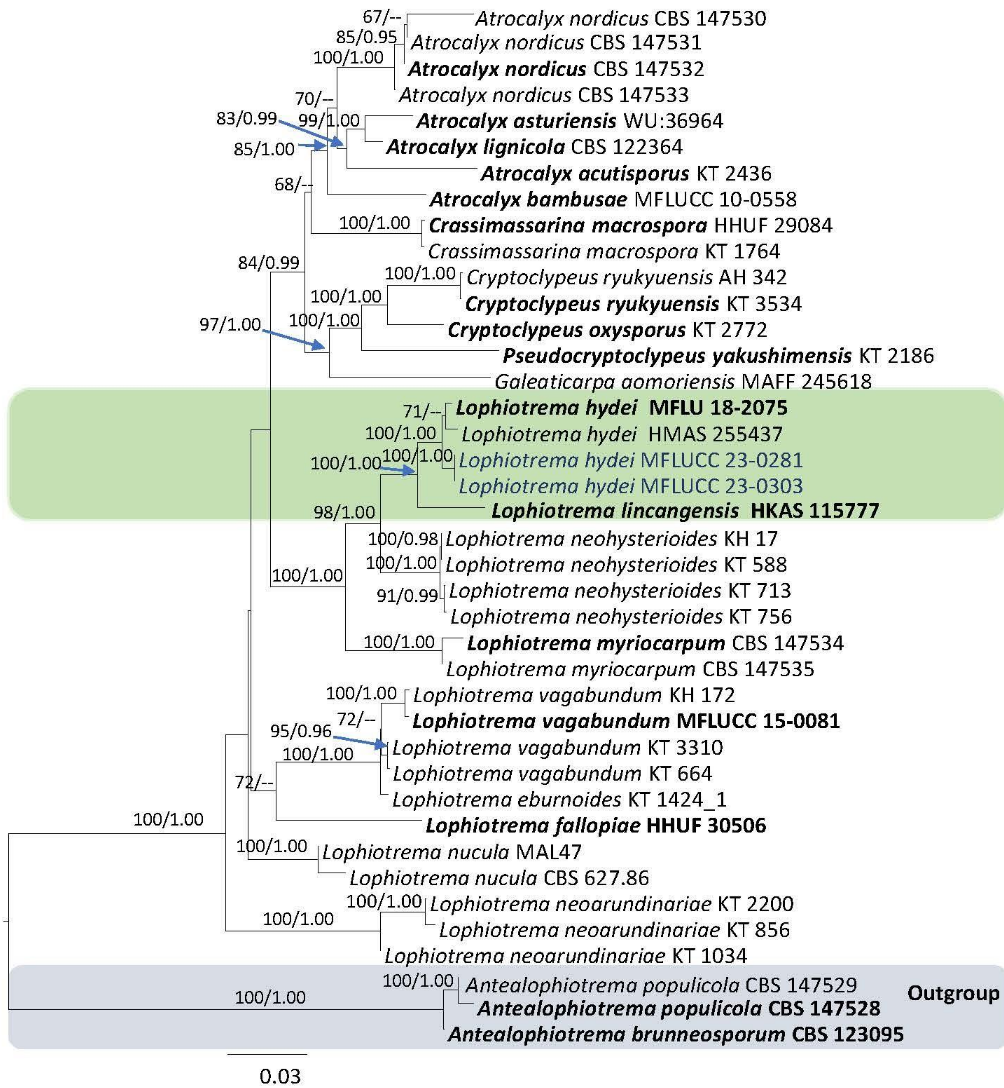

Figure 15 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *rpb*2 and *tef*1 sequence data of the taxa of *Pleosporales*, showing the phylogenetic position of *Lophiotrema hydei* (MFLUCC 23-0281 and MFLUCC 23-0303). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Antealophiotrema brunneosporum* (CBS 123095) and *A. populicola* (CBS 147528, CBS 147529). Isolates from this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree agrees with the previous taxonomic findings of Hashimoto et al. (2017) and Hongsanan et al. (2020), with a final ML optimization likelihood value of -15315.94. The matrix had 934 distinct alignment patterns with 15.35% of undetermined characters or gaps. Estimated base frequencies were: A = 0.241601, C = 0.274035, G = 0.269732, T = 0.214631; substitution rates AC = 1.616994, AG = 4.111512, AT = 1.235181, CG = 1.285721, CT = 9.343373,

GT = 1.0000; proportion of invariable sites I = 0.395580; gamma distribution shape parameter (α) = 0.427433.

Material examined – Thailand, Chiang Rai Province, Doi Mae Sa Long, on the mid-rib of a dead leaf of *Musa* sp., 9 September 2018, B.C. Samarakoon, BNS11 (MFLU 23-0295), culture MFLUCC 23-0228.

GenBank numbers – SSU = PP811806, LSU = PP800323, ITS = PP809084

Notes – *Periconia echinochloae* has a cosmopolitan distribution and has been found on many plant hosts as a saprobe (i.e., *Andropogon*, *Brachiaria*, *Cenchrus*, *Cordia*, *Cynodon*, *Echinochloa*, *Heteropogon*, *Juncus*, *Monochoria*, *Pandanus*, *Panicum*, *Paspalum*, *Phragmites*, *Saccharum*, *Schoenoplectus*, *Sorghum*, *Zea mays*) (Ellis 1971a, 1976, Farr & Rossman 2024). BLAST search results of SSU, LSU, and ITS sequence data indicate that our isolate has a high percentage similarity to taxa in GenBank as follows: ITS = 100% to *P. echinochloae* (strain 3-F26), LSU = 100% to *P. echinochloae* (isolate extr22) with a 100% query cover. The SSU shows 98.57% similarity to *P. byssoides* (MFLUCC 17-0292) with 99% of total cover. The description of the holotype of *P. echinochloae* by Ellis (1971a) is similar to our new collection except for the verruculose conidia, whereas our collection has smooth conidia without warts. However, in the phylogenetic analyses (combined SSU, LSU, ITS and *tef*1), our strain (MFLUCC 23-0228) was grouped with the *P. echinochloae* strains, sister to *P. submersa* (MFLUCC 16−1098) with ML = 100%, BI = 1.00 statistical support (Fig. 16). This is the first report of *P. echinochloae* in Thailand and on *Musa*.

Phaeosphaeriaceae M.E. Barr

Barr (1979) introduced the family and *Phaeosphaeria* was designated as the type genus. *Phaeosphaeriaceae* accommodates several groups of species exhibiting saprobic, endophytic and pathogenic lifestyles with a global ecological distribution (Phookamsak et al. 2014, Hongsanan et al. 2020). The family often has coelomycetous asexual fruiting structures and rarely comprises the hyphomycetous morph (Phookamsak et al. 2014, Wanasinghe et al. 2018, Hongsanan et al. 2020). More than 80 genera have been accepted in *Phaeosphaeriaceae* (Hongsanan et al. 2020, Jayawardena et al. 2022).

Phaeosphaeria Miyake, Bot. Mag., Tokyo 23: 93 (1909)

Phaeosphaeria taxa are reported from temperate and tropical geographical localities (Hyde et al. 2017, Phookamsak et al. 2014, Silva et al. 2022, Farr & Rossman 2024, Tian et al. 2024). The genus comprises saprobes, endophytes or pathogens and is notably associated with monocotyledon plants (Phookamsak et al. 2014, Hyde et al. 2017, Farr & Rossman 2024). Some taxa (such as *P. nodorum*) cause serious foliar diseases in wheat and maize (Shoemaker & Babcock 1989). *Phaeosphaeria* is polyphyletic and several *sensu lato* taxa were grouped with various genera in *Phaeosphaeriaceae* (*i.e.*, *Amarenomyces*, *Juncaceicola*, *Neosetophoma*, *Parastagonospora*, *Phaeopoacea*, *Pseudophaeosphaeria*, *Septoriella*) and also in other familial positions in *Pleosporales* (Phookamsak et al. 2014). *Phaeosphaeria musae* has been previously described on *Musa cavendishii* in Taiwan by Sawada (1959). This study reports the first occurrence of *P. oryzae* on *Musa* in Thailand.

Phaeosphaeria oryzae I. Miyake, Bot. Mag., Tokyo 23: 93 (1909) Fig. 18

Index Fungorum number: IF142561; Faces of Fungi number: FoF00234

Associated with the necrotic area of the leaf spots on *Musa* sp. Sexual morph: *Ascomata* 180–210 × 162–180 µm ($\bar{x}$ = 190 × 170 µm, n = 20) scattered, rarely clustered, immersed, slightly raised from the host tissue, appearing as minute, black dots, uniloculate, often globose or subglobose, glabrous, golden brown to dark brown. *Ostioles* central, papillate. *Peridium* 20–30 µm wide, composed of 2–3 layers of thin-walled, brown to dark brown, flattened pseudoparenchymatous cells, arranged in *textura* angularis. *Pseudoparaphyses* 2–3 µm wide, filiform, broad, septate, but septa are difficult to distinguish, hyaline, rough, cylindrical to clavate, constricted at the septa, sometimes connected from

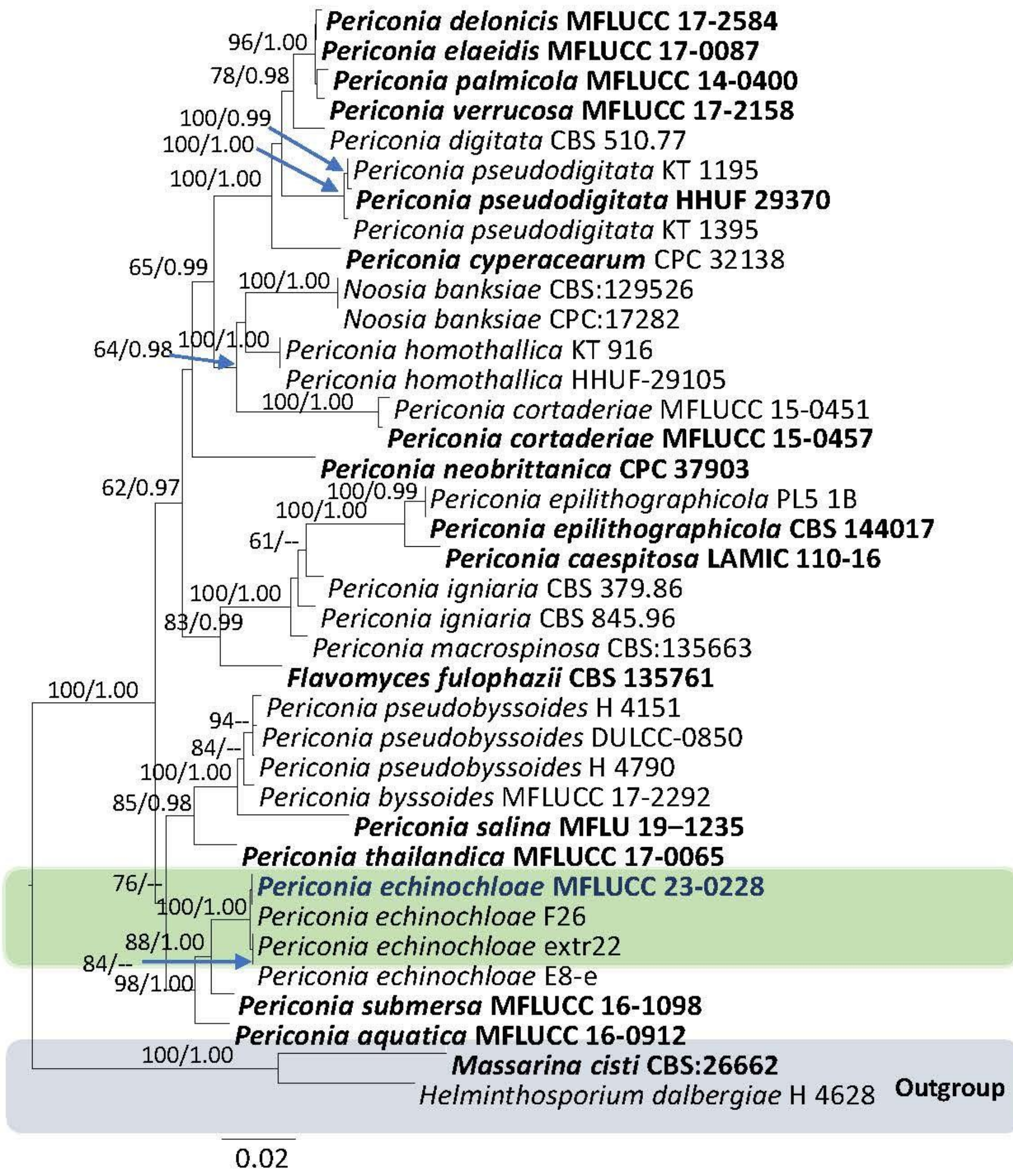

Figure 16 – Maximum likelihood tree revealed by RAxML analyses of comnined SSU, LSU, ITS and *tef*1 sequence data of the selected taxa of *Massarinaceae* and *Periconiaceae* showing the phylogenetic position of *Periconia echinochloae* (MFLUCC 23-0228). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Helminthosporium dalbergiae* (MAFF 243853) and *Massarina cisti* (CBS 266.62). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Samrakoon et al. (2021a), with a final ML optimization likelihood value of -9461.87. The matrix had 553 distinct alignment patterns with 31.36% of undetermined characters or gaps. Estimated base frequencies were: A = 0.233074, C = 0.256119, G = 0.274249, T = 0.236557; substitution rates AC = 2.223755, AG = 2.801504, AT = 1.728235, CG = 1.316046, CT = 10.820110, GT = 1.0000; proportion of invariable sites I = 0.618621; gamma distribution shape parameter (α) = 0.606025.

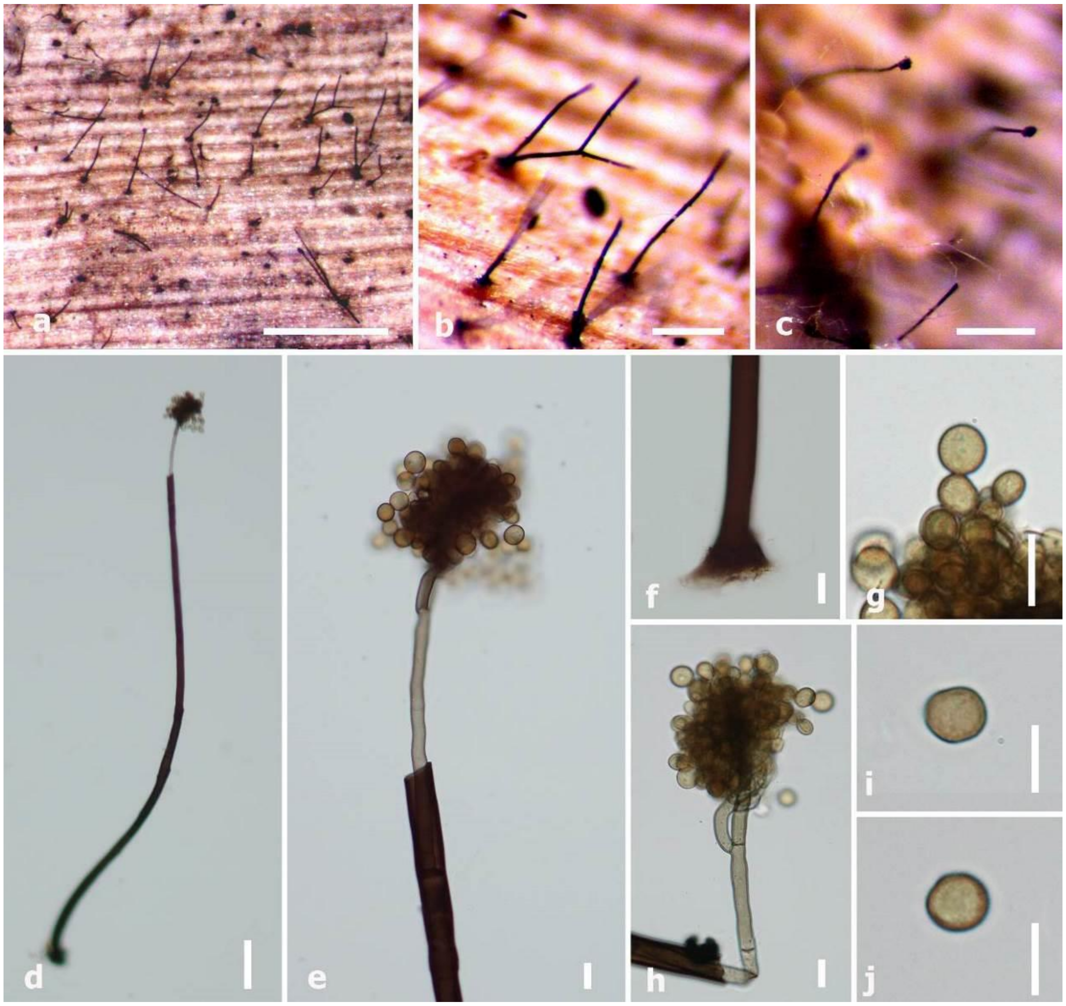

Figure 17 – *Periconia echinochloae* (MFLU 23-0295). a–c Conidiophores bearing conidia on host. d, e, h Conidia and conidiophores. f Base of the conidiophore. g Conidiogenesis from terminal mother cells. i, j Conidia. Scale bars: a = 1 mm, b = 100 µm, d = 50 µm, f = 25 µm. c, e, g–j = 20 µm.

the apex. *Asci* (34–) 40–55 (−70) × 10–13 (−14) µm (x̅ = 48.5 × 12.6 µm, n = 40), fissitunicate, bitunicate, often 8-spored, broadly cylindrical, short-pedicellate or sometimes subsessile, apically rounded with distinct ocular chamber, sometimes ocular chamber indistinct. *Ascospores* (15–) 18–21 × 3–4 µm (x̅ = 19 × 3.5 µm, n = 30), phragmosporous, overlapping 2-seriate, narrowly fusiform, hyaline or often brown, 3-septate, rarely 2-septate, constricted at the septa in some spores, slightly curved, or sometimes straight, smooth to rough-walled. Asexual morph: Not observed.

Cultural characteristics – Colonies on PDA brown from above, cottony, hairy, raised, concentric ring patterns are visible, irregular margin, profuse growth at 25 °C, reaching 30 mm in diameter after 3 weeks; reverse grayish-brown, areal mycelium is not visible. Sporulation was not observed.

Material examined – Thailand, Chiang Rai Province, Mae Fah Luang, on leaf spots on *Musa* sp., 20 June 2021, B.C. Samarakoon, 449 (MFLU 23-0296), MFLUCC 23-0244.

GenBank numbers – SSU = PP837496, LSU = PP800324, ITS = PP809085, *tef*1 = PP817244

Notes – *Phaeosphaeria oryzae* was discovered in the Asian region, causing leaf spots on rice plants and also being found as a saprobe (Phookamsak et al. 2014). The species was later reported from a few plant hosts (*i.e.*, *Bambusa multiplex*, Japan; *Cyperus monti*, Italy; *Etlingera* sp., Thailand; and *Phragmites australis*, Japan) (Shoemaker & Babcock 1989, Tanaka & Harada 2004, Phookamsak et al.

2014). The fungus has not been reported on *Musa* sp. and this is its first occurrence. Interestingly, our strain was isolated from the leaf spots and may have pathogenicity for *Musa* sp. However, the artificial innoculation of the fungus should be conducted to prove the pathogenicity of *P. oryzae* in a natural setting. We have noticed some morphological differences between our collection (*i.e.*, the dimensions of ascospores and asci) and the lectotype of *P. oryzae* described by Phookamsak et al. (2014). These variations can be regarded as environmental and host adaptations, and the molecular data of our strain are almost identical with the ex-type. In addition, the morphology of our collection is similar to the illustrations of Shoemaker & Babcock (1989). The BLAST search results of LSU, ITS, *rpb*2 and *tef*1 sequence data revealed that our new collection has the highest percentage similarity to *P. oryzae* (CBS 110110) (LSU = 100% and ITS = 100%, *rpb*2 = 100% and *tef*1 = 100%) with 100% and 99% query cover. In the multi-gene analyses of combined LSU, ITS, *rpb*2 and *tef*1 sequence data, our strain (MFLUCC 23-0244) was grouped with *P. oryzae* (CBS 110110) with ML = 90%, BI = 1.00 statistical support (Fig. 19).

Pleosporaceae Nitschke

The taxa in this family represent various lifemodes, such as plant and human pathogens, woody and leaf saprobes, and endophytes (Woudenberg et al. 2013). The sexual morph is distinguished by perithecial, hairy or setose, ostiolate ascomata that range from erumpent to nearly superficial. The asci are 8-spored, bitunicate, and cylindric-clavate, with 1–2-seriate, partially overlapping, phragmosporous or muriform, brown or pale brown ascospores (Ariyawansa et al. 2015). The asexual morphs of the family are hyphomycetous and the conidiogenous cells are annellidic, sympodial blastic, and sometimes phialidic. The conidia are usually large, brown, septate, and have various shapes (Kodsueb et al. 2006). The most researched asexual morphs with a high propensity to become pathogens in terrestrial habitats are *Alternaria*, *Bipolaris*, *Curvularia*, and *Stemphylium* (Woudenberg et al. 2013). Hongsanan et al. (2020) accepted 23 genera in *Pleosporaceae*. Torres-Garcia et al. (2022) added two novel genera, *Neostemphylium* and *Scleromyces*, to the family.

Curvularia Boedijn, Bull. Jard. bot. Buitenz, 3 Sér. 13: 123 (1933)

Curvularia includes pathogens and saprobes on a wide range of plant hosts worldwide (Hyde et al. 2020b, Marin-Felix et al. 2020, Ferdinandez et al. 2021, Jayawardena et al. 2022, Olivas-Peraza et al. 2022, Tian et al. 2024). The pathogenic taxa of the genus target agricultural commercial crops of *Poaceae* such as maize, wheat, sorghum and rice (Tan et al. 2018). Recent studies report that *Curvularia* causes infections in immunocompromised patients (Carter & Boudreaux 2004). The genus has also been discovered in air, aquatic environments and soil (Manamgoda et al. 2015). The asexual morph of *Curvularia* resembles brown distoseptate conidia with a characteristic curvature. This differentiates the genus morphologically from *Bipolaris* (Manamgoda et al. 2015). Molecular data is essential to distinguish *Curvularia* at the species level since several taxa have shared phenotypic characters with overlapping structural dimensions (Marin-Felix et al. 2020). Furthermore, Manamgoda et al. (2015) and Marin-Felix et al. (2020) revised the phylogeny of *Curvularia* and currently, there are around 114 confirmed taxa with molecular data. Previously, several taxa were reported on *Musa* spp. (*viz*., *C. clavata*, Bangladesh; *C. coatesiae*, Iran; *C. eragrostidis*, Brunei Darussalam; *C. fallax*, Solomon Islands and Malaysia; *C. geniculata*, Cuba and Thailand; *C. lunata*, Ghana and Taiwan; *C. lunata*, *C. pallescens*, *C. senegalensis*, *C. verruculosa*, West Indies (Farr & Rossman 2024).

Curvularia umbiliciformis M. Raza, K. D. Hyde & L. Cai, Fungal Diversity 99: 72 (2019) Fig. 21

Index Fungorum number: IF556671; Facesoffungi number: FoF06161

Associated with the necrotic area of the leaf spots on *Musa* sp. Sexual morph: Not observed. Asexual morph: Hypomycetous. *Colonies* eye-shaped, effuse, brown or black, hairy or cottony. *Mycelium* immersed in the substrate. *Stromata* not observed on the host. *Conidiophores* (30–) 40–50 (–

65) × 5–7 µm ($\bar{x}$ = 44.5 × 6.4 µm, n = 30) macronematous, mononematous, straight or flexuous, sub-hyaline or pale brown, verruculose, thick-walled, septate, globose or spherical apex, base wider or lobate. *Conidiogenous cells* 8–10 × 5–6 µm ($\bar{x}$ = 8.8 × 5.2 µm, n = 30), polytretic, integrated, terminal,

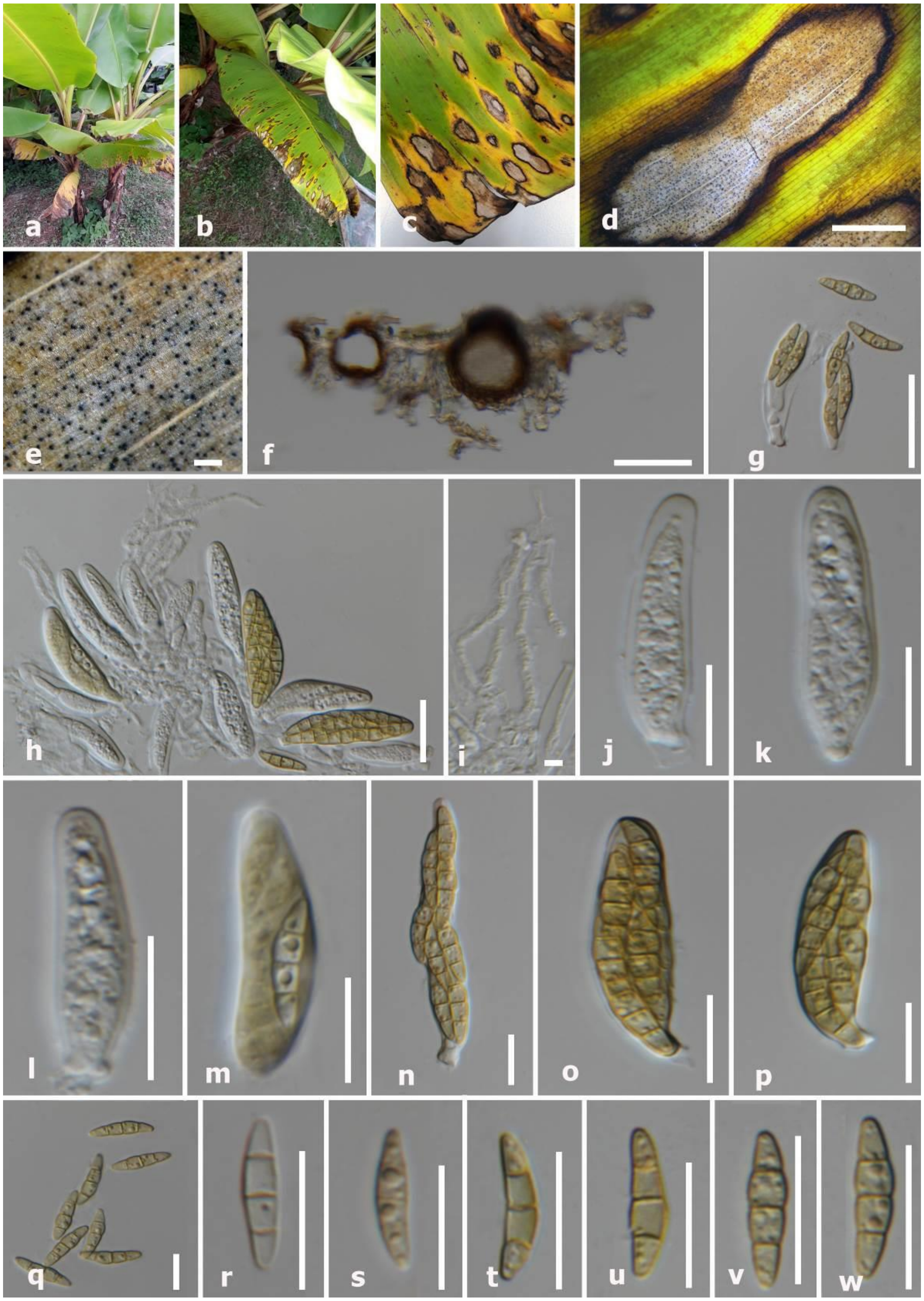

Figure 18 – *Phaeosphaeria oryzae* (MFLU 23-0296). a, b, c Leaf spot symptoms on *Musa* sp. d, e Ascomata on the necrotic patch. f Transverse section of the ascomata. h Asci and pseudoparaphyses. i Pseudoparaphyses. g Deliquescing asci, j–m Immature asci. n–p Asci. r Immature

spore. q, s–w Ascospores. Scale bars: d = 1000 µm, e = 100 µm, f, h, j–l = 20 µm, g = 30 µm, i = 2 µm, m–w = 15 µm.

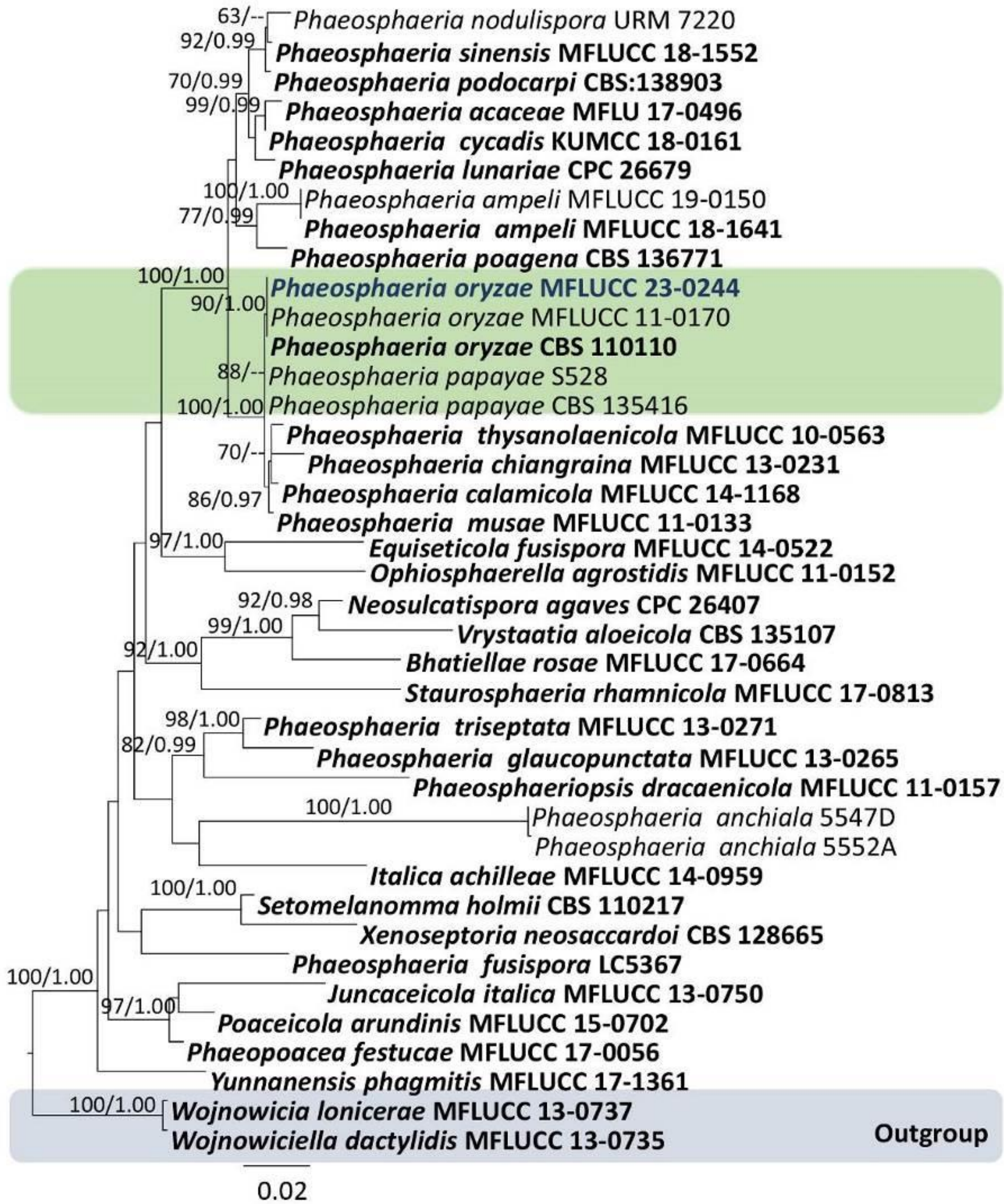

Figure 19 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *rpb*2 and *tef*1 sequence matrix of some selected genera in *Pheosphariaceae*, showing the phylogenetic position of *Phaeosphaeria oryzae* (MFLUCC 23-0244). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Wojnowicia lonicerae* (MFLUCC 13-0737) and *W. dactylidis* (MFLUCC 13-0735). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Phookamsak et al. (2014), with a final ML optimization likelihood value of -12989.17. Estimated base frequencies were: A = 0.242342, C = 0.235441, G = 0.265837, T = 0.256380; substitution rates AC = 1.561507, AG = 3.785414, AT = 3.839060, CG = 0.836765, CT = 8.666533, GT = 1.0000; proportion of invariable sites I = 0.663431; gamma distribution shape parameter (α) = 0.448326.

sympodial, cylindrical, cicatrized. *Conidia* (30–) 35–40 × 13–17 µm ($\bar{x}$ = 38 × 14.8 µm, n = 40) solitary, acropleurogenous, simple, often curved, geniculate clavate, ellipsoidal, broadly fusiform, obovoid or pyriform with 3 or more transverse septa, pale or dark brown, immature conidia are hyaline, sometimes with dark bands at the septa, occasionally pseudo-septate, smooth or verrucose; hilum is present at the base.

Cultural characteristics – Colonies on PDA reaching 35 mm diameter after 2 weeks at 25 °C, sparse, embed, flat, radially striated, slightly wrinkled appearance, grayish black from the top view; reverse mouse gray, aerial mycelium absent, undulate to lobate margined. Sporulation was observed after 3 weeks.

Material examined – Thailand, Chiang Rai Province, Mae Lao, on a fresh leaf spot on *Musa* sp. (*Musaceae*), 14 May 2021, B.C. Samarakoon, 433A (MFLU 23-0298), culture MFLUCC 23-0245.

GenBank numbers – ITS = PP809086, *tef*1 = PP840920

Notes – *Curvularia umbiliciformis* was introduced by Raza et al. (2019) in Guangxi Province, China, and is associated with the leaf spots of *Saccharum officinarum*. Our new collection was discovered from the leaf spots on *Musa* sp., and there might be a potential pathogenicity. However, challenge inoculations should be conducted in the future to confirm this hypothesis. There has not been any occurrence of the species since the first discovery by Raza et al. (2019). The holotype has been described from the structures that have grown in an artificial medium, and there are few morphological differences in spore dimensions and conidiophore morphology between the holotype and our collection. However, molecular evidence (Fig. 20) supports the conspecificity of our strain (MFLUCC 23-0245) with *C. umbiliciformis* in the multi-gene analysis of ITS, *gapdh* and *tef*1 sequence data (statistical support: ML = 100%, BI = 1.00) sister to *C. chiangmaiensis*, *C. dactylocteniicola* and *C. lunata*. BLAST search results of ITS, *gapdh*, and *tef*1 sequence data indicate that our isolate shows 100% similarity to *C. umbiliciformis* (CGMCC3.19346) in GenBank with a 100% query cover. This is the first report of *C. umbiliciformis* on *Musaceae* from Thailand.

Pyrenochaetopsidaceae Valenzuela-Lopez, Crous, Cano, Guarro & Stchige

The family was introduced by Valenzuela-Lopez et al. (2018) to accommodate *Pyrenochaetopsis* (type genus), *Neopyrenochaetopsis* and *Xenopyrenochaetopsis*. Previously, only the asexual morphic taxa were described, and recently, the sexual morph was described from *Pyrenochaetopsis chromolaenae* and *P. yunnanensis* (Mapook et al. 2020, Phookamsak et al. 2022). The asexual morph in *Pyrenochaetopsidaceae* comprises pycnidial, glabrous or setose, subglobose to ovoid conidiomata with papillate or apapillate ostioles. The conidiophores are hyaline, acropleurogenous and phialidic (Phookamsak et al. 2022). Most species produce numerous conidia, which are usually aseptate, hyaline, and ovoid, ranging from cylindrical to allantoid (Valenzuela-Lopez et al. 2018). The genera of the family can be saprobes, endophytes, or opportunistic pathogens for humans (Hongsanan et al. 2020).

Pyrenochaetopsis Gruyter, Aveskamp & Verkley, Mycologia 102: 1076 (2010)

The genus was introduced by de Gruyter et al. (2010) to include phoma-like taxa. Nineteen *Pyrenochaetopsis* species epithets can be found in the Index Fungorum (2024). The taxa have been found in different ecological niches as saprobes, endophytes, and pathogens associated with plants (de Gruyter et al. 2010). In addition, some *Pyrenochaetopsis* are facultative lichenicolous coelomycetes and have also been discovered on cysts of nematodes. Some species have been discovered in aquatic habitats, soil, dung, and air samples (de Gruyter et al. 2010, 2013, Crous et al. 2014), and recent scientific studies have recovered a variety of bioactive compounds from their members (Nogawa et al. 2018, Fan et al. 2020). *Pyrenochaetopsis chromolaenae* has been previously reported from Thailand by Mapook et al. (2020), but there is no report on the occurance of the genus on *Musa* spp. In this study, we introduce *Pyrenochaetopsis musae* as a novel taxon, which we report from the leaf spots on *Musa* sp. from Thailand. This is the first occurrence of *Pyrenochaetopsis* in *Musaceae* and the second report from Thailand.

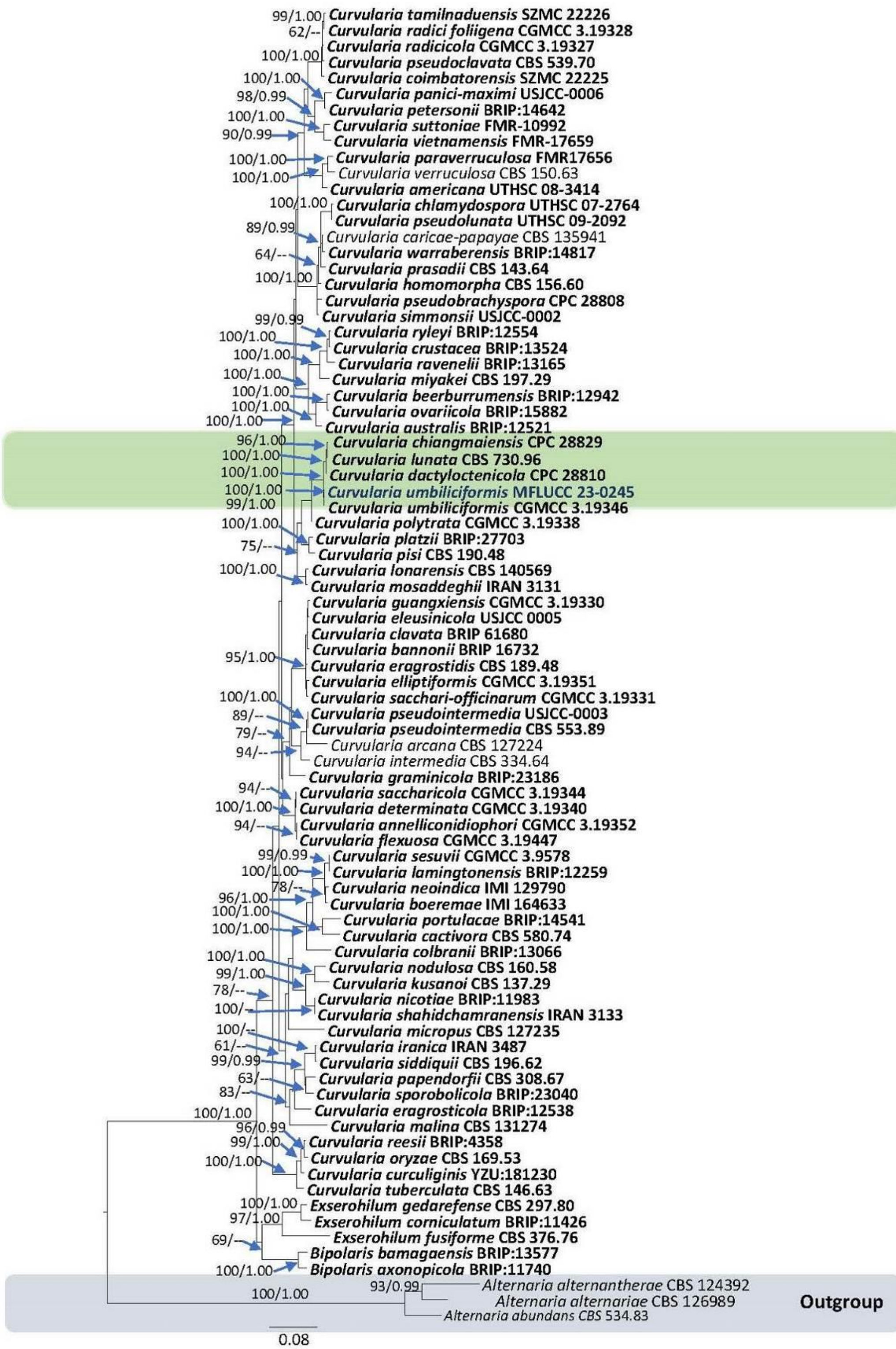

Figure 20 – Maximum likelihood tree revealed by RAxML analyses of ITS, *gapdh* and *tef*1 sequence data of the selected genera of *Pleosporaceae*, showing the phylogenetic position of (MFLUCC 23-0245). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are

shown. The tree is rooted with *Alternaria abundans* (CBS 534.83), *A. alternantherae* (CBS 124392 and CBS 126989). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar in topology to the phylogenetic analysis of Raza et al. (2019), with a final ML optimization likelihood value of -22329.10. The matrix had 992 distinct alignment patterns with 22.39% of undetermined characters or gaps. Estimated base frequencies were: A = 0.233931, C = 0.302099, G = 0.238268, T = 0.225702; substitution rates AC = 0.884968, AG = 2.800765, AT = 0.865999, CG = 1.067695, CT = 5.505473, GT = 1.0000; proportion of invariable sites I = 0.372638; gamma distribution shape parameter (α) = 0.431919.

Pyrenochaetopsis musae Samarakoon, K.D. Hyde & Chomnunti, sp. nov. Fig. 22

Index Fungorum number: IF901534; Facesoffungi number: FoF15202

Holotype – MFLU 23-0299

Etymology – The species epithet represents the host genus *Musa* from which the novel taxon has been found.

Associated with the necrotic area of the leaf spots with a black leaf streak lesion on *Musa* sp. Sexual morph: Not observed. Asexual morph: Coelomycetous. *Conidiomata* 90–110 × 70–80 µm ($\bar{x}$ = 96 × 74 µm, n = 20), pycnidial, pale brown to brown or black, solitary, scattered, often apapillate or sometimes papillate, immersed to superficial, globose to subglobose, uni-loculate. *Peridium* 10–12 µm wide from the side view, thin-walled in the middle and thick-walled at the periphery, 1–4 layers, hyaline, composed of sub-hyaline or pale to dark brown pseudoparenchymatous cells of *textura angularis* or sometimes *textura globulosa*. *Conidiophores* reduced to conidiogenous cells and produce simple conidia. *Conidiogenous* cells 4–6 × 1–2 µm ($\bar{x}$ = 5.2 × 1.5 µm, n = 20), phialidic, elliptic, thick-walled, hyaline, discrete, aseptate, erect from the inner cavity of the wall of pycnidia. *Conidia* 4–6 × 2–3 µm ($\bar{x}$ = 5 × 2.5 µm, n = 40), numerous, hyaline, guttulate at immature stage, subglobose to oblong or spherical, sometimes kidney-shaped, aseptate, thick-walled at times.

Cultural characteristics – Conidia germinating on PDA within 18 hours. Colonies on PDA reach 25 mm diameter after one week at 25 °C. Colonies on PDA dense, irregular in shape, sometimes entire margined or lobate, mouse gray, black or brown, flat to slightly raised, surface smooth or rough, somewhat cottony; after one month, colony from above initially gray or golden brown or black; with time, cottony mycelium is reducing and becoming sparse, flat and immersed; after two months, the colony is radially striated, golden brown or black, leathery, shiny, pycnidial masses with numerous spores are visible, solitary or fused, uni-loculate or multi-loculate, conidial masses appear on the ostiole as slimy heads.

Material examined – Thailand, Chiang Rai Province, Doi Mae Sa Long, associated with the leaf spot on *Musa* sp., 24 June 2021, B.C. Samarakoon, 451 (MFLU23-0299, holotype), ex-type MFLUCC 23-0305. Other strain MFLUCC 23-0306

GenBank numbers – MFLUCC 23-0305: LSU = PP800332, ITS = OR206388, *tub*2 = PP840935, *rpb*2 = OR209486, MFLUCC 23-0306: LSU = PP800333, ITS = PP809656, *tub*2 = PP840936, *rpb*2 = PP840923.

Notes – The BLAST search results of LSU, ITS, *tub*2 and *rpb*2 sequence data revealed that *Pyrenochaetopsis musae* has the highest percentage similarity to *P. botulispora* (UTHSC: DI16-289) (LSU = 99.88% and ITS = 99.17%) with 100% and 97% query covers. The new taxon shows 94.65% (*tub*2) similarity to *P. kuksensis* (MEND-F-0058) and 96.15% (*rpb*2) match to *P. paucisetosa* (CBS 142460) with 97% and 96% query cover. In the multi-gene phylogeny of LSU, ITS, *tub*2 and *rpb*2 sequence data (Fig. 23), *P. musae* isolates (MFLUCC 23-0305 and MFLUCC 23-0306) formed an independent lineage, with closer phylogenetic affinity to *P. botulispora*, *P. Paucisetosa*, and *P. tabarestanensis* with ML = 100%, BI = 1.00 statistical support. Our new strains have 1.2% (LSU = 11/859), 0.62% (ITS = 3/478), 7.93% (*tub*2 = 35/441) and 3.85% (*rpb*2 = 31/805) base pair differences with *P*. *paucisetosa* (CBS 142460). Our new species morphologically differs from *P*. *paucisetosa* in lacking setae and having elliptic-shaped, thick-walled phialides. The phialides of *P*. *paucisetosa* are rather ampulliform and notably thin-walled (Valenzuela Lopez et al. 2018). Based on morpho-molecular evidence, *P*. *musae* is introduced in this study as a new coelomycetous taxon associated with leaf spots on *Musa* sp. from Thailand.

Figure 21 – *Curvularia umbiliciformis* (MFLU 23-0298). a, b Leaf spots on bananas show a wide necrotic diseased area and the chlorotic region. c–e Conidiophores on the host resembling eye-shaped

colonies. f Conidiogenesis. g–i Conidiophores. j Polytretic, integrated, terminal, cicatrized conidiogenous cells. k–v Conidia. Scale bars: c = 1 cm, d = 50 μm, e = 100 μm, f–i, l–w = 10 μm, j, k = 1 μm.

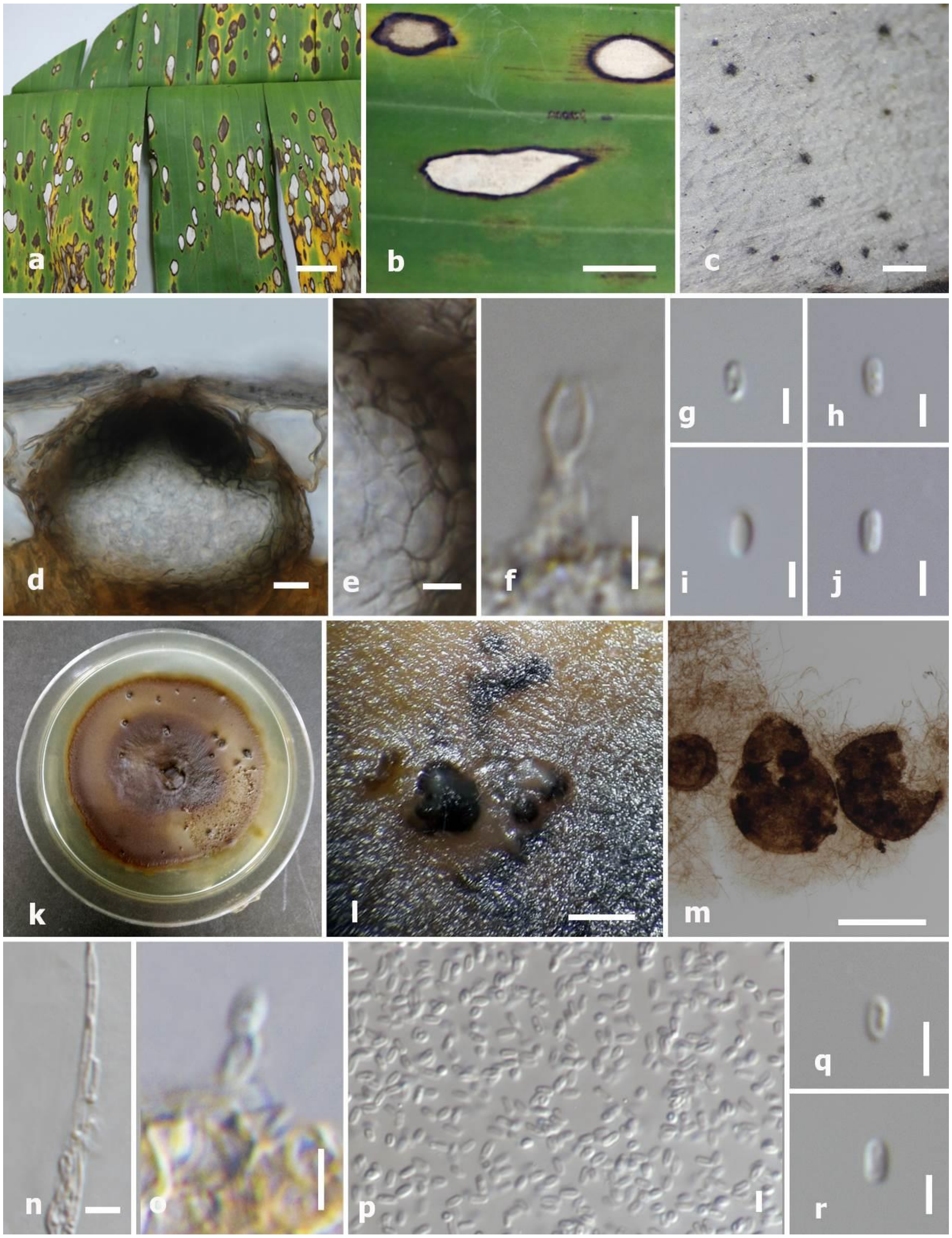

Figure 22 – *Pyrenochaetopsis musae* (MFLU 23-0299, Holotype). a, b Leaf spots with a black leaf streak lesion on *Musa* sp. c Appearance of conidiomata on the white necrotic center. d Transverse section of conidiomata. e Conidiomatal wall. f Conidiogenous cells. g–j, p–r Conidia. k Colonies on PDA after two months. l Conidiomata on PDA. m Squash mount of conidiomata. n Mycelium. o Conidiogenesis. Scale bars: a = 15 cm, b = 2 cm, l = 1 mm, c = 200 μm, m = 100 μm, d = 20 μm, e, f–j, o–r = 5 μm, n = 2 μm.

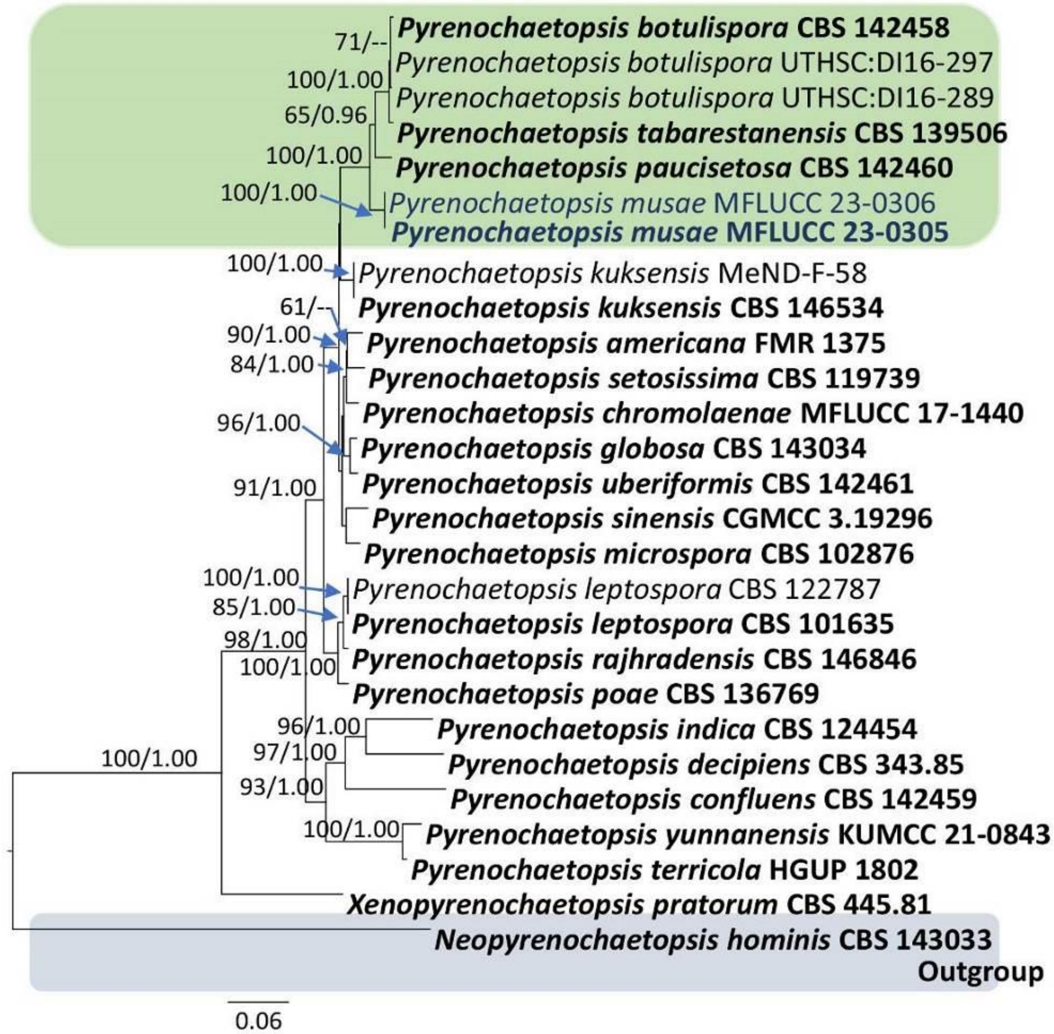

Figure 23 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *tub*2 and *rpb2* sequence data of the genera of *Pyrenochaetopsidaceae,* illustrating the taxonomic position of *Pyrenochaetopsis musae* (MFLUCC 23-0305 and MFLUCC 23-0306). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are indicated. The tree is rooted with *Neopyrenochaetopsis hominis* (CBS143033). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology of Phookamsak et al. (2022), with a final ML optimization likelihood value of -11630.31. The matrix had 702 distinct alignment patterns with 6.05% of undetermined characters or gaps. Estimated base frequencies were: A = 0.245208, C = 0.243002, G = 0.273277, T = 0.238513; substitution rates AC = 1.946761, AG = 5.277630, AT = 2.451768, CG = 1.235626, CT = 10.605563, GT = 1.0000; proportion of invariable sites I = 0.481751; gamma distribution shape parameter (α) = 0.417082.

Roussoellaceae Jian K. Liu, Phook., D.Q. Dai & K.D. Hyde

Roussoellaceae was introduced by Liu et al. (2014) to accommodate *Neoroussoella, Roussoella* and *Roussoellopsis*. Hongsanan et al. (2020) accepted 12 genera in the family. Most genera in *Roussoellaceae* exhibit a saprobic lifestyle on many plant hosts and are often discovered on bamboo and palms (Hongsanan et al. 2020). The sexual morph is represented by solitary or gregarious, loculate, ostiolate, or papillate ascostromata. The asci are 8-spored, bitunicate, and have a distinct ocular chamber. Ascospores are usually ellipsoidal to fusiform, septate and hyaline, and brown to dark brown. Sometimes the ascospores are constricted at the septum, have different ornamentations (*i.e.*, poroid, echinulate, striated, reticulate) and are surrounded by a wide mucilaginous sheath (Liu et al. 2014, Karunarathna et al. 2019).

Setoarthopyrenia Mapook & K. D. Hyde, Fungal Diversity 101: 92 (2020)

Setoarthopyrenia was established by Mapook et al. (2020) based on the multi-gene phylogeny of LSU, ITS, *tef*1, *rpb*2 and SSU sequence data, together with morphological evidence. *Setoarthopyrenia chromolaenae* was designated as the type and it was found on the dead stems of *Chromolaena odorata* (Siam Weed) as a saprobe in Thailand (Mapook et al. 2020). In this manuscript, we report the endophytic occurrence of *S. chromolaenae* associated with fresh leaves of *Musa* sp. from Thailand as a new host and lifestyle record.

Setoarthopyrenia chromolaenae Mapook & K. D. Hyde, Fungal Diversity 101: 92 (2020) Fig. 24

Index Fungorum number: IF557362; Facesofungi number: FoF07821

Endophytic on fresh leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Coelomycetous. *Colonies* on PDA reaching 45 mm diam. after 21 days at 25 °C in light conditions, circular, entire to irregular margined, sparse, flat or slightly raised, leathery, black or brownish black from top, shiny, olivaceous brown in reverse. *Mycelium* 2–4 µm ($\bar{x}$ = 3.4 µm) in width, thick-walled, hyaline, branched, septate, smooth. Sporulation was observed in mature cultures after 48 days. *Conidiomata* 500–550 × 480–500 µm ($\bar{x}$ = 560 × 485 µm, n = 20), pycnidial, solitary or aggregated, uni or multi-loculate, scattered, black, shiny, globose. *Pycnidial wall* 10–15 µm wide, composed of 2–3 layers of light brown cells of *textura angularis* or *textura prismatica*. *Conidiophores* 1.5–2.8 × 1–2.5 µm ($\bar{x}$ = 1.7 × 2 µm, n = 20) reduced to conidiogenous cells, ovate to obovate, hyaline, thick-walled unbranched. *Conidia* 2.5–3.8 × 1.5–1.8 µm ($\bar{x}$ = 3.4 × 1.7 µm, n = 40), minute, often rod-shaped, oblong or spherical, hyaline, aseptate, thick-walled, none-guttulated.

Material examined – Thailand, Chiang Rai Province, Doi Chang, on a fresh leaf of *Musa* sp. (*Musaceae*), 18 July 2021, B. C. Samarakoon, MN27Cul (MFLU 23-0300), culture MFLUCC 23-0249.

GenBank numbers – LSU = PP800439, *rpb*2 = PP840924, *tef*1 = PP840921

Notes – In the multi-gene phylogenetic analyses of LSU, ITS, *tef*1 and *rpb*2 sequence data, our strain (MFLUCC 23-0249) was grouped with the type strain of *Setoarthopyrenia chromolaenae* (MFLUCC 17-1444) and *Arthopyrenia* sp. (UTHSC: DI16-362) with ML = 100%, BI = 1.00 statistical support (Fig. 25). The BLAST search results of LSU, ITS, *tef*1 and *rpb2* sequence data revealed that *S. chromolaenae* has the highest percentage similarity to *Arthopyrenia* sp. (UTHSC: DI16-362) (LSU = 97%, *tef*1 = 100% and *rpb2* = 100%) with 100%, 99.87%, 99.87% query covers. We could not locate any valid morpho-molecular reference literature for *Arthopyrenia* sp. (UTHSC: DI16-362) and further taxonomic investigation is recommended for the latter strain. The sexual morph of the taxon was described by Mapook et al. (2020). The sporulation of the asexual cultures was observed as tiny pin heads (pycnidia). We could not locate any similar reference asexual morph to compare the morphology of our collection as because *Setoarthopyrenia* is monotypic. We describe the occurrence of *S. chromolaenae* as an endophyte associated with *Musa* leaves from Thailand.

Torulaceae Corda

The family was introduced by Sturm (1829) and is typified by *Torula*. Hongsanan et al. (2020) accepted six genera in *Torulaceae* (*viz. Dendryphion*, *Neotorula*, *Rostriconidium*, *Rutola*, *Sporidesmioides* and *Torula*). However, Boonmee et al. (2021) included *Cylindrotorula* as a new genus and at present, *Torulaceae* accommodates seven genera. The taxa primarily exhibit hyphomycetous asexual morphs characterized by erect, subcylindrical to ellipsoid or clavate conidiophores that bear dematiaceous, smooth to verruculose conidiogenous cells. Conidia are subcylindrical, brown, septate, phragmosporous, acrogenous, sub-hyaline to brown and are produced as branched chains (Hyde et al. 2016, Li et al. 2017, Mapook et al. 2020). Most of the taxa in the family are saprobes, which are associated with ligneous hosts in terrestrial and aquatic habitats (Hongsanan et al. 2020).

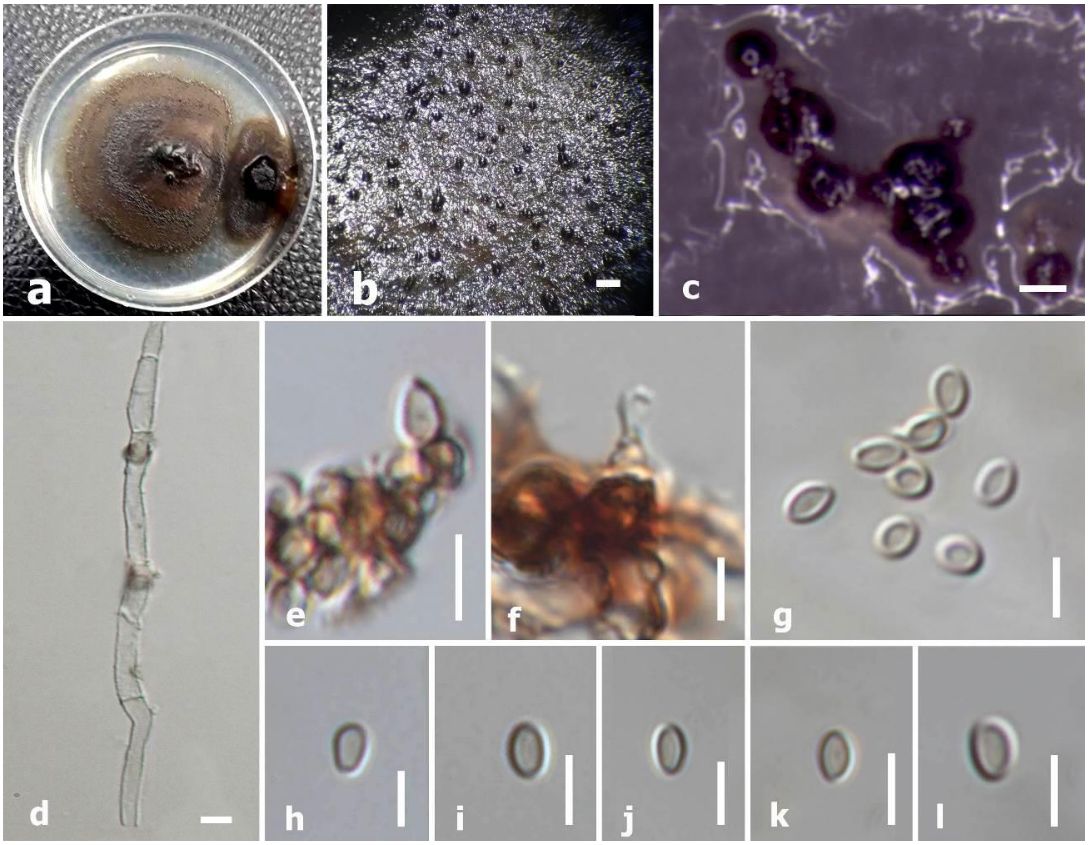

Figure 24 – *Setoarthopyrenia chromolaenae* (MFLU 23-0300). a Colony on PDA after 48 days. b–c Pycnidia on PDA. d Mycelium, e, f Conidiogenesis and conidiophores. g–i Conidia. Scale bars: b, c = 500 µm, d = 3 µm, e–i = 5 µm.

Torula Pers., Ann. Bot. (Usteri) 15: 25 (1795)

Torula was typified by *T. herbarum* (Pers.) Link, and the neotype specimen was designated by Crous et al. (2015). The genus is only known from its asexual morph, which is characterized by doliiform to ellipsoid or clavate, cupulate, conidiogenous cells (Crous et al. 2015, Li et al. 2017, 2020a). The conidiogenous cells have thick and heavily melanized walls at the base and are thin-walled at the apex. In addition, the conidiogenous cells frequently collapse and are coronate (Li et al. 2017, 2020a). The conidia appear as black, powdery masses on the host (Ellis 1971a, 1976). They are subcylindrical, phragmosporous, brown, smooth to verrucose and are produced in branched or unbranched chains (Crous et al. 2015, Li et al. 2017, 2020a). There are over 520 species epithets of *Torula* listed in the Index Fungorum (2024). *Torula* is common in terrestrial and aquatic habitats, mainly as a saprobe across tropical and temperate regions (Crous et al. 2015, Su et al. 2018, Hyde et al. 2020b, 2023, 2024, Li et al. 2020a, Boonmee et al. 2021, Samarakoon et al. 2021a, Tennakoon et al. 2021, Silva et al. 2022, Jayawardena et al. 2022, Manawasinghe et al. 2022, Tian et al. 2024). *Torula herbarum* was reported from *Musa* in Papua New Guinea, Somalia, Taiwan, Thailand and Zambia (Photita et al. 2001a, Photita et al. 2002). In addition, *T. chromolaenae*, *T. fici* and *T. masonii* were recently reported on *Musa* spp. from Thailand and China by Samarakoon et al. (2021b). In this study, we report the occurrence of *T. mackenziei* for the first time on *Musa* sp. from Thailand.

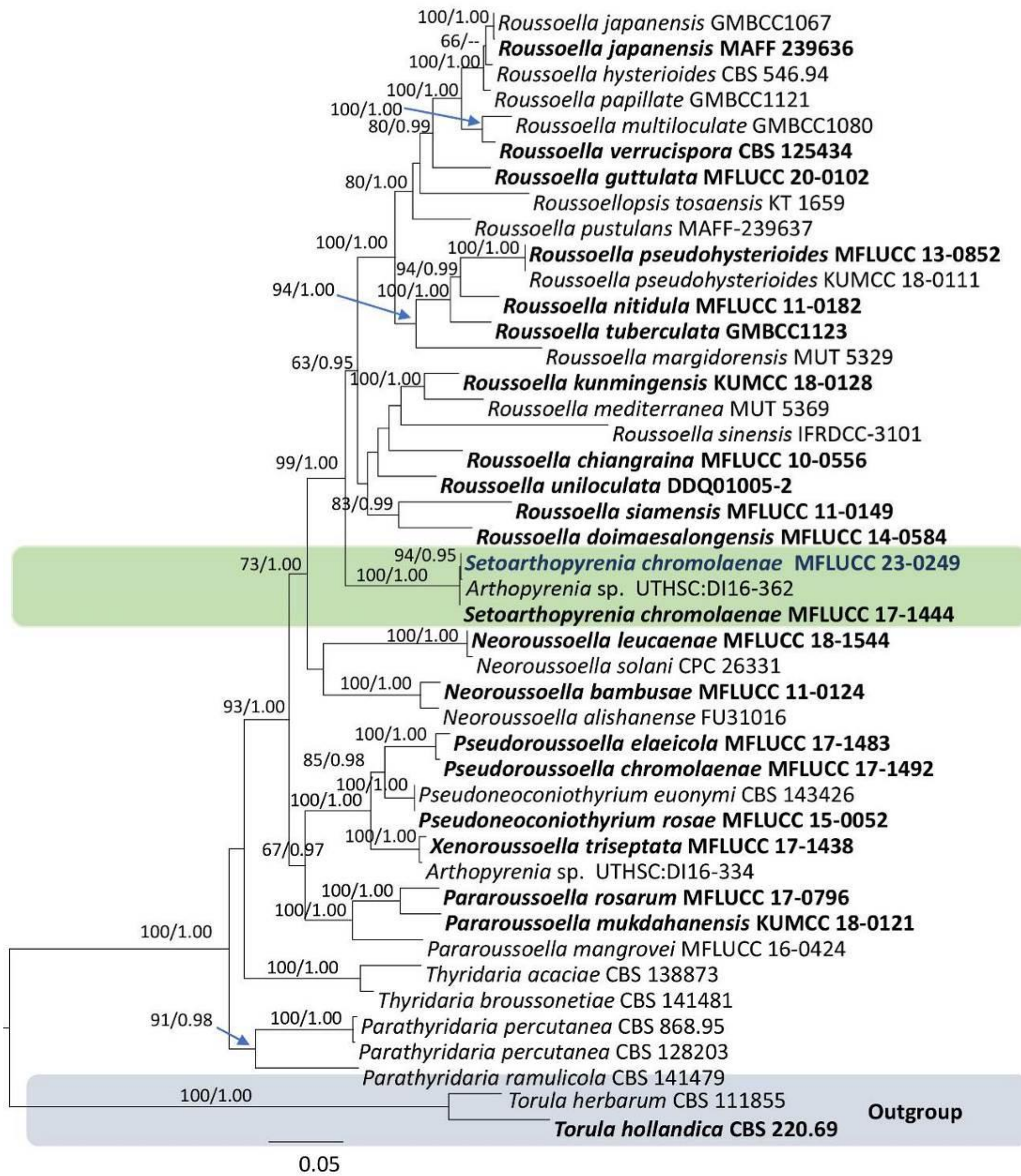

Figure 25 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *tef*1 and *rpb*2 sequences of some selected genera of *Roussoellaceae* illustrating the phylogenetic position of *Setoarthopyrenia chromolaenae* (MFLUCC 23-0249). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Torula herbarum* (CBS 111855) and *T. hollandica* (CBS 220.69) (*Torulaceae*). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree has no deviation from the tree topology of Mapook et al. (2020), with a final ML optimization likelihood value of -22123.84. Estimated base frequencies were: A = 0.239858, C = 0.268913, G = 0.268625, T = 0.222604; substitution rates AC = 1.796179, AG = 5.018581, AT = 2.054117, CG = 1.340719, CT = 10.549952, GT = 1.0000; proportion of invariable sites I = 0.548309; gamma distribution shape parameter (α) = 0.576288.

Torula mackenziei Jun F. Li, Phook. & K. D. Hyde, Mycol. Progr. 16: 455 (2017) Fig. 26

Index Fungorum number: IF819537; Facesoffungi number FoF02714

Saprobic on the mid rib of a leaf of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* erect or flat, black, powdery, branched and thread-like. *Mycelium* slightly immersed or often superficial, septate, branched, smooth. *Conidiophores* 2–3.5 × 1–3 µm ($\bar{x}$ = 2.8 × 1.9 µm, n = 20), macronematous, mononematous, unbranched, sub-hyaline, simple, erect, thick-walled, 2–3-celled, basal cell is corn-shaped or sub-cylindrical, globose to subglobose at apex, arising from prostrate hypha. *Conidiogenous cells* 11–13 µm × 9–10 µm ($\bar{x}$ = 12.5 × 9.5 µm, n = 10) polyblastic, terminal, pale or dark brown to black, thick-walled, ellipsoid, sub-hyaline at apex, dark at the base. *Conidia* (23–) 39–45 (–48) × (9–) 13–15 µm ($\bar{x}$ = 38 × 13.9 µm, n = 40), solitary to catenate, often 4-celled, sometimes 1 to 6-celled, moniliform, acrogenous, simple, phragmosporous, dark brown, thin or thick-walled, constricted at septa, darker at each septum, slightly flexuous or straight, rounded at both ends, apical cell partially sub-hyaline, spherical.

Figure 26 – *Torula mackenziei* (MFLU 23-0301). a Colony on host surface. b–p Budding, conidial formation and mature conidia. Scale bars: a = 500 µm, b–p = 20 µm.

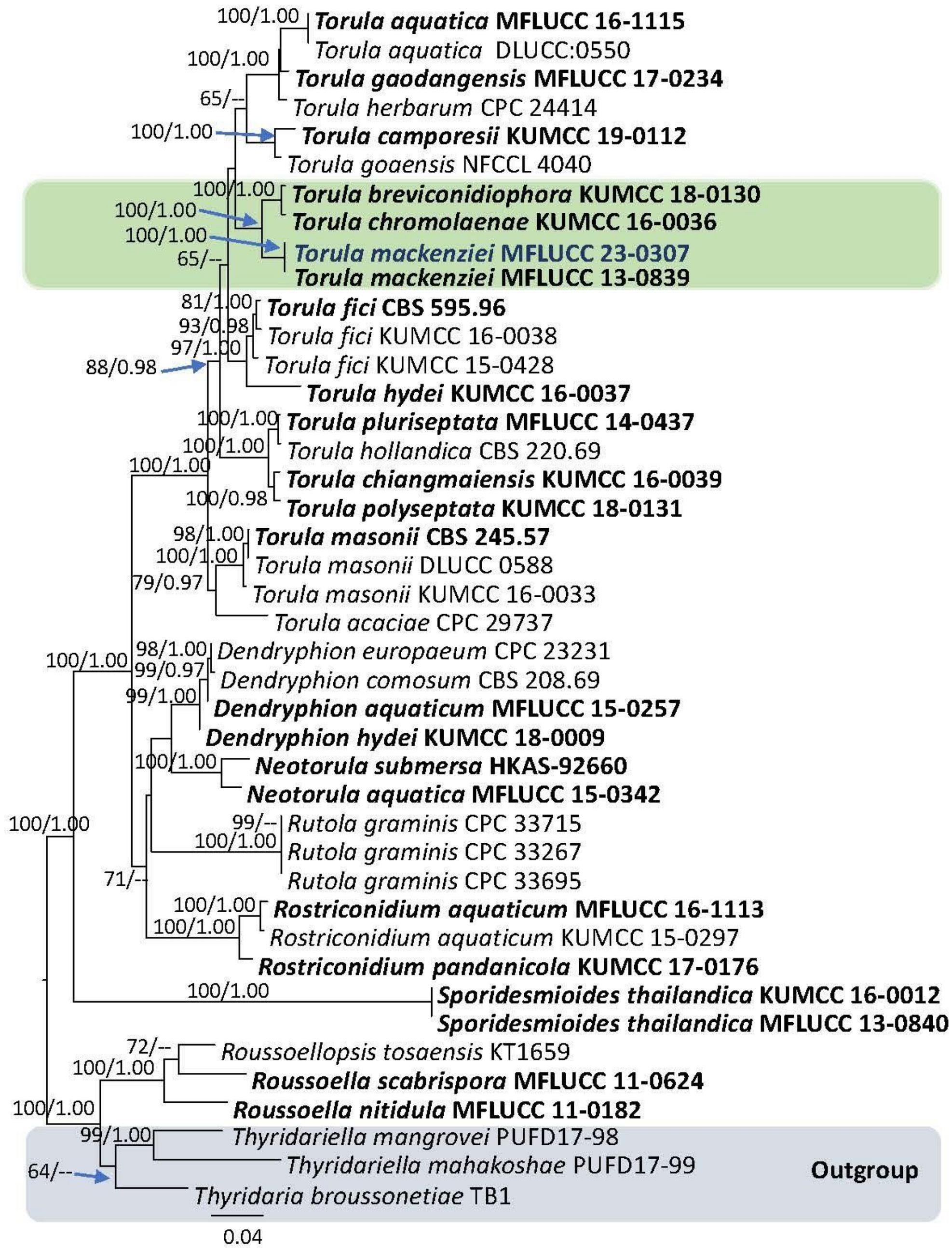

Figure 27 – Maximum likelihood tree revealed by RAxML analyses of SSU, LSU, ITS, *tef*1 and *rpb*2 DNA sequences of some seleted genera in *Torulaceae*, showing the phylogenetic position of *Torula mackenziei* (MFLUCC 23-0307). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Roussoella nitidula* (MFLUCC 11–0182), *R. scabrispora* (MFLUCC 11–0624) and *Roussoellopsis tosaensis* (KT 1659). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree agrees with Samarakoon et al. (2021a). The final ML optimization likelihood value is -19598.59. Estimated base frequencies were: A = 0.241485, C = 0.263244, G = 0.273827, T = 0.221444; substitution rates AC = 1.386145, AG = 3.024553, AT = 1.351436, CG = 0.935624, CT = 6.902053, GT = 1.0000; proportion of invariable sites I = 0.491530; gamma distribution shape parameter (α) = 0.486366.

Culture characteristics – Colonies on PDA, reaching 25 mm at 14 days at 25 °C, mycelium partly immersed to superficial, slightly raised, cottony and hairy, entire to irregular margined, whitish grey from the top view; reverse greenish white. Areal mycelium was not much visible, dense. Sporulation was not observed.

Material examined – Thailand, Chiang Mai Province, Chiang Dao, on the midrib of a dead leaf of *Musa* sp. (*Musaceae*), 20 July 2022, B.C. Samarakoon, MN40 (MFLU 23-0301), culture MFLUCC 23-0307.

GenBank numbers – SSU = PP811807, LSU = PP800440, ITS = PP809107, *tef*1 = PP840922, *rpb*2 = PP840925.

Notes – *Torula mackenziei* was described on a dead branch of *Bidens pilosa* (*Asteraceae*) in Doi Mae Salong, Thailand, by Li et al. (2017) based on morphology and phylogeny. There have been no other occurrences of the species, making this the first report of *T. mackenziei* on *Musa* in Thailand.When comparing the DNA sequences in BLAST search, our isolate showed a high percentage similarity to *T. mackenziei* (MFLUCC 13-0839) (SSU = 100%, LSU = 100%, ITS = 99.81%, *tef*1 = 100% and *rpb*2 = 100%) with 99%, 100%, 100% and 100% query covers. In the multi-gene phylogeny (SSU, LSU, ITS, *tef*1 and *rpb*2 sequence data), our strain (MFLUCC 23-0307) grouped with *T. mackenziei* strains with ML = 100%, BI = 1.00 statistical support (Fig. 27). Our new collection shares similar morphology with the holotype in having moniliform conidia. In addition, we have noticed some distinct branching patterns of conidial chains and the dark coloration of the cells at each septum. This is the second occurrence of *T. mackenziei* from Thailand and the first report on monocot plants.

Tubeufiales Boonmee & K.D. Hyde

The order was introduced by Boonmee et al. (2014) to accomodate *Tubeufiaceae*, based on morpho-molecular evidence. *Tubeufiales* hosts helicosporous hyphomycetes which produce bio-active secondary metabolites (Lu et al. 2018a). In addition, some taxa include dictyosporous, phragmosporousor globose to subglobose, chlamydospores forming asexual morphs (Tian et al. 2022b, Wanasinghe et al. 2023). There are three families (*viz*. *Bezerromycetaceae*, *Tubeufiaceae* and *Wiesneriomycetaceae*) in this order (Tian et al. 2022b, Wanasinghe et al. 2023). Two families (*Bezerromycetaceae* and *Wiesneriomycetaceae*) are so far only known in their sexual morphs. The taxa in the order are common saprobes on woody substrates or submerged decaying wood in terrestrial and aquatic environments (Boonmee et al. 2014, Lu et al. 2018b).

Tubeufiaceae M.E. Barr

The sexual morph of *Tubeufiaceae* is characterized by superficial, white to yellow, pale brown or black ascomata with or without setae which are seated on a subiculum. The ascospores are fasciculate in bitunicate asci, and are filiform to fusiform (Boonmee et al. 2014). The asexual morph is hyphomycetous and can be dictyosporous, helicosporous or phragmosporous-like (Lu et al. 2018b). *Tubeufia* is the generic type of the family (Boonmee et al. 2014). At present, the family hosts 46 genera of fungi (Tian et al. 2022b) with saprobic, hyperparasitic or hypersaprobic lifestyles in terrestrial and aquatic habitats (Jayasiri et al. 2017, Boonmee et al. 2021).

Neohelicosporium Y. Z. Lu, J. C. Kang & K. D. Hyde, Mycol. Progr. 17: 637 (2017)

Lu et al. (2018a) introduced the genus with new species and some extant taxa in *Helicosporium*, *Helicoma* and *Tubeufia* based on morphology and molecular data. Species of the genus are saprobic on decaying woody substrates in both aquatic and terrestrial habitats. The genus comprises helicosporous hyphomycetes as asexual morph and Jayasiri et al. (2017) introduced the first sexual morph of the genus on a decaying fruit of *Malvaceae* sp. in Thailand. Most of the other species in the genus have been introduced from submerged decaying woody substrates from freshwater streams in southern

China and Thailand (Lu et al. 2018a, Jayasiri et al. 2019, Tian et al. 2020, Boonmee et al. 2021, Yang et al. 2023).

Neohelicosporium terrestris Samarakoon, K.D. Hyde & Chomnunti, sp. nov. Fig. 28

Index fungorum number: IF901535; Facesoffungi number: FoF15203

Holotype – MFLU 23-0302

Etymology – "terrestris" is the Latin word for "terrestrial," and it refers to the new species discovered in terrestrial habitats.

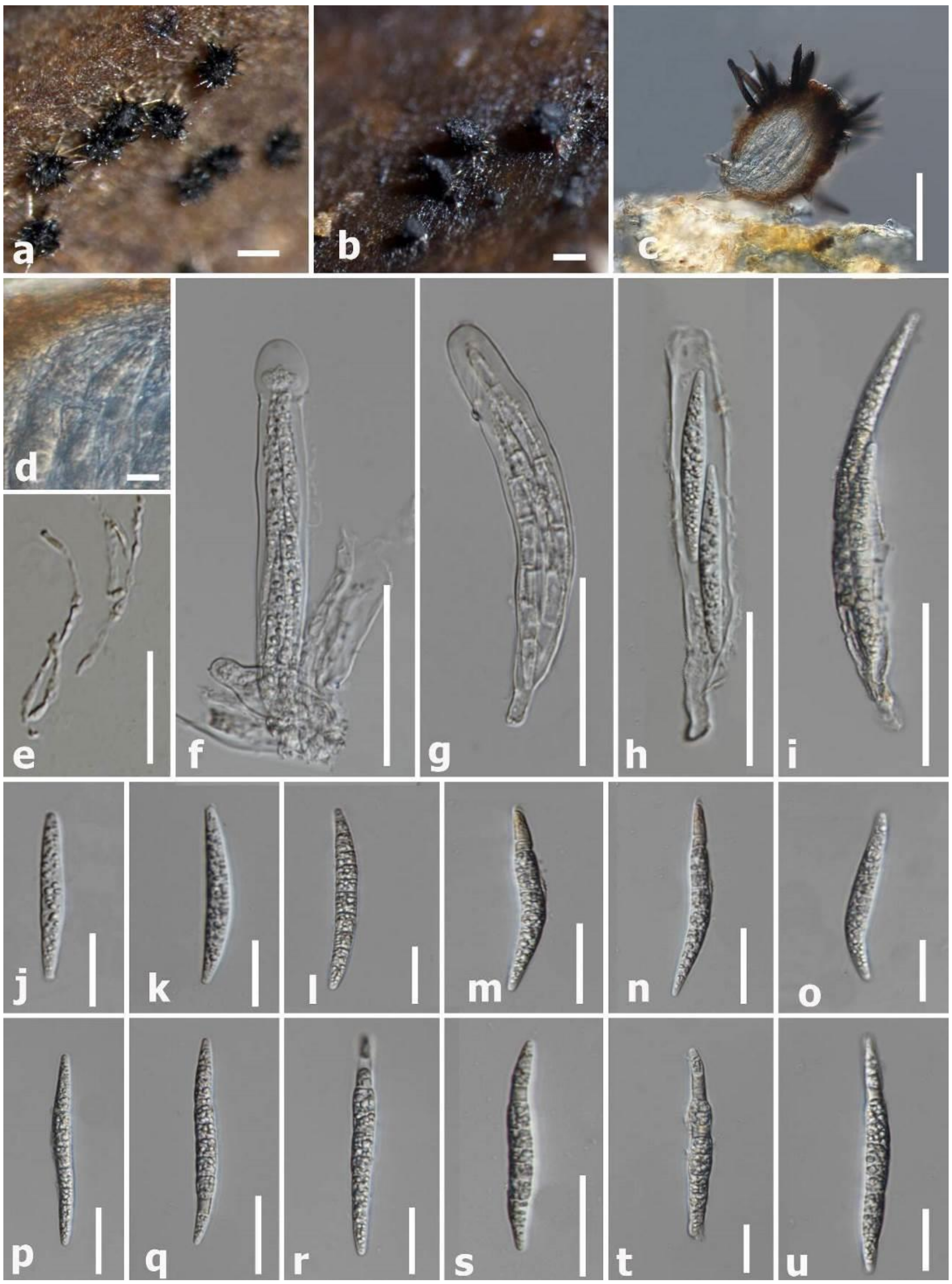

Figure 28 – *Neohelicosporium terrestris* (MFLU 23-0302, Holotype). a, b Ascomata on the host. c Transverse section of an ascoma. d Peridium. e–i Asci. j–u Ascospores. Scale bars: a–c = 100 µm, d = 10 µm, e = 20 µm, f–i = 50 µm, j–u = 25 µm.

Saprobic on dead leaf petiole of *Musa* sp. Sexual morph: *Ascomata* 120–150 µm high, 90–110 µm diam. ($\bar{x}$ = 139.5 × 95 µm, n = 20), superficial, seated on a subiculum, solitary, scattered or sometimes aggregated, in cross-section, globose to sub globose or spherical, dark brown to black, uni-loculate. *Setae* up to 70 µm long, 7–10 µm diam. ($\bar{x}$ = 56 × 8.5 µm, n = 20), surrounding the ascomata, arising from the periphery, brown to black, aseptate, tapering towards the apex, straight or slightly clavate, with flat base and acute apex. *Peridium* 10–20 µm wide, composed of several layers of hyaline to brown cells of *textura angularis*, with outer layer comprising darkened cells and inner layer made up of pale brown to hyaline cells. *Pseudoparaphyses* 0.8–1.5 µm ($\bar{x}$ = 1.2 µm, n = 40), numerous, clavate or coiled, thread-like, aseptate, unbranched, hyaline, smooth to rough-walled. *Asci* (80–) 120–160 × 9–14 µm ($\bar{x}$ = 140 × 12.5 µm, n = 30), 2–4–6-spored, bitunicate, cylindrical, straight or mostly clavate, thin-walled, apex obtusely rounded or square, short-pedicellate or sessile. *Ascospores* (45–) 60–85 × (4–) 6–8.5 µm ($\bar{x}$ = 73 × 6.5 µm, n = 40), overlapping, fusiform, with tapering or rounded ends, often straight or occasionally curved, septate, septa usually inconspicuous and difficult to distinguish, hyaline, rough surface, uni-seriate, bi-seriate or multi-seriate. Asexual morph: Not observed.

Culture characteristics – Conidia germinate on PDA after 36 to 48 hours. Colonies on PDA reaching 1–1.5 cm diam. after 4 weeks in the light condition at 25 °C, flat, sparse, mycelium is completely immersed, brownish black or black, radially striated or wrinkled. Sporulation was not observed.

Material examined – Thailand, Chiang Rai Province, Tap Tao, on dead leaf petiole of *Musa* sp., 18 October 2021, B. C. Samarakoon, MN50 (MFLU 23-0302, holotype), ex-type culture MFLUCC 23-0234. Other strain: MFLUCC 23-0246

GenBank numbers – MFLUCC 23-0234: LSU = PP800330, ITS = OR206384, *tef*1 = OR206052, *rpb*2 = PP840926, MFLUCC 23-0246: LSU = PP800331, ITS = OR206385, *tef*1 = OR206053, *rpb*2 = PP840927

Notes – When comparing the DNA sequences in BLAST search, *Neohelicosporium terrestris* showed a high percentage similarity to *N. hyalosporum* (GZCC 16-0063) (LSU = 99.64% and ITS = 92.72%) with 100% query cover. In addition, our new species shows 97.79% (*tef*1) and 98.03% (*rpb*2) similarities to *N. ovoideum* (GZCC 16-0064) with 99% and 96% query cover. In the multi-gene phylogeny of LSU, ITS, *tef*1 and *rpb*2 sequence data (Fig. 29), *N. terrestris* formed a well-supported basal clade with *N. hyalosporum*, *N. morganii*, and *N. ovoideum* with ML = 100%, BI = 1.00 statistical support. Our new strains have 1.38% (LSU = 8/578) and 5.8% (ITS = 24/412) base pair differences compared to *N. morganii* (CBS 281.54). *Neohelicosporium terrestris* differs from *N. hyalosporum* (GZCC 16-0063) by 0.49% (LSU = 4/814), 7.69% (ITS = 50/650), 3.5% (*rpb*2 = 26/742), and 2.5% (*tef*1 = 21/813) base pairs. In addition, MFLUCC 23-0234 differs from *N. ovoideum* (GZCC 16-0064) by 0.24% (LSU = 2/814), 5.72% (ITS = 22/384), 2.02% (*rpb*2 = 15/742), and 2.4% (*tef*1 = 20/813) base pairs. The sexual morphs of the sister clade have not been discovered and therefore we were unable to compare the morphology of our new taxon with the existing ones. However, the morphology of *N. terrestris* is similar to the other sexual genera in *Tubeufiaceae* (*i.e.*, *Berkleasmium*, *Dictyospora* and *Helicoma*) (Lu et al. 2018a). Moreover, Jayasiri et al. (2017) reported the first sexual morph of the genus for *N. fusisporum*, which has a similar morphology to our new species. Interestingly, our new collection has 2–4–8-spored asci, with square apices. Based on morphology and phylogeny, we introduce *N. terrestris* as a new saprobic taxon on *Musa* sp. from Thailand. Also, this is the first report of *Neohelicosporium* on *Musa*.

Class: *Eurotiomycetes* O.E. Erikss. & Winka

Chaetothyriales M.E. Barr

Chaetothyriales comprises fungi also known as 'black yeasts' (Quan et al. 2020). The members of the order are opportunistic human and cold-blooded vertebrate pathogens, with melanized fungal structures (Quan et al. 2020). The order consists of 56 genera established in 11 families, representing diverse ecological niches (Wijayawardene et al. 2022). Some genera of *Chaetothyriales* are discovered in aquatic habitats, rocks, associated with ants, and as mycoparasites (Teixeira et al. 2017). Many taxa are also capable of tolerating extreme environmental conditions such as toxins, temperature, dryness, and nutrient limitations (Teixeira et al. 2017, Gostinčar et al. 2019).

Herpotrichiellaceae

The family consists of 19 recognized genera with a diverse ecological range and a high degree of extremotolerance (Teixeira et al. 2017, Wijayawardene et al. 2022). The sexual morph comprises ascomata with multi-locules, and the asexual morph is mostly black and yeast-like (Gostinčar et al. 2019). *Herpotrichiellaceae* hosts saprobes, endophytes and pathogens, that often found in humans, plant hosts, soil and aquatic habitats (Narisawa et al. 2007, Crous et al. 2009, Tian et al. 2016, Wang et al. 2019a, Chandrasiri et al. 2021).

Metulocladosporiella Crous, Schroers, Groenewald, U. Braun & K. Schubert

Crous et al. (2006) introduced *Metulocladosporiella* to accommodate (*M. Musae* = *Cladosporium musae*) that causes leaf spots on *Musa* spp. *Cladosporium musae* has contrasting morphology to *Cladosporium sensu stricto* (asexual morph of *Davidiella*) (Crous et al. 2006). In the phylogenetic analyses of ITS and LSU sequence data conducted by Crous et al. (2006), *C. musae* formed a distinct monophyletic clade in *Herpotrichiellaceae* (*Chaetothyriales*). The asexual morph of *Metulocladosporiella* produces pigmented blastoconidia in acropetal chains (Crous et al. 2006). Five species epithets of *Metulocladosporiella* are listed in Index Fungorum (2024) and all have been found on *Musa* spp., from Africa, America, Asia and Oceania (Marin-Felix et al. 2019). *Metulocladosporiella chiangmaiensis*, *M. musigena* and *M. samutensis* were described from Thailand on *Musa* associated with leaf spots (Marin-Felix et al. 2019).

Metulocladosporiella musae (E.W. Mason) Crous, Schroers, J. Z. Groenew., U. Braun & K. Schub., Mycol. Res. 110: 269 (2006) Fig. 30

Index Fungorum number: IF500185; FacesofFungi number: FoF10438

Associated with the necrotic area of the leaf spot surrounded with the yellow halo on *Musa* sp., The spots elongate to streaks which increase in size. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Mycelium* 6–10 µm ($\bar{x}$ = 8.5 µm, n = 20) in width, internal, external, superficial, hyphae pale olivaceous or sub-hyaline to hyaline, branched, septate, thin-walled, smooth. *Conidiophores* 200–800 × 3–5 µm ($\bar{x}$ = 550 × 3.8 µm, n = 40), macronematous or micronematous, densely or loosely aggregated, stipe straight to slightly flexuous, unbranched at the base and persistently branched at the apex, septate, sub-cylindrical, lobed at the base, 10–13 µm ($\bar{x}$ = 11.5 µm, n = 20), with short rhizoid hyphae, brown or sub-hyaline, paler towards the apex from the dark brown base, tips pale olivaceous or sub-hyaline, thick-walled at the base and thin-walled near the apex, smooth, subcylindrical. The primary and secondary branches are visible at the apex, producing terminal conidial chains, branchlets are compactly arranged, comparatively smooth, thin-walled, septate or aseptate. *Conidiogenous cells* 8–12 × 3–5 µm ($\bar{x}$ = 9.4 × 4.2 µm, n = 40) visible at the terminal ends of the secondary branches, subcylindrical, sympodial, polyblastic, conidiogenous loci subconspicuous to conspicuous, subdenticulate, somewhat protuberant, truncate. *Conidia* 8–10 × 3–5 µm ($\bar{x}$ = 9.5 × 4.2 µm, n = 40) in acropetal chains, smooth-walled, ellipsoid, obovoid, fusiform, hyaline, rough surfaced, pointed at the apex.

Cultural characteristics – Colonies on PDA 12 mm diameter after 14 days at 25 °C, irregular margin, sparse mycelium; olive gray, mouse-gray or blackish gray, sporulation occurs after 21 days at 25 °C from the submerged mycelium, areal mycelium is invisible; reverse greenish black.

Figure 29 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *tef*1 and *rpb*2 sequence data of some selected genera of *Tubeufiales*, showing the phylogenetic position of *Neohelicosporium terrestris* (MFLUCC 23-0234 and MFLUCC 23-0246). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Botryosphaeria agaves* (MFLUCC 10-0051) and *B. dothidea* (CBS 115476) (*Botryosphaeriaceae*, *Botryosphaeriales*). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML

tree shown herein agrees with the previous taxonomic findings of Tian et al. (2022b), with a final ML optimization likelihood value of -33454.715. Estimated base frequencies were: A = 0.244451, C = 0.252414, G = 0.262915, T = 0.240220; substitution rates AC = 1.126510, AG = 5.287730, AT = 2.126919, CG = 0.775255, CT = 11.377790, GT = 1.0000; proportion of invariable sites I = 0.509879; gamma distribution shape parameter (α) = 0.608457.

Material examined – Thailand, Chiang Rai Province, Doi Thun, on a fresh leaf spot on *Musa* sp. (*Musaceae*), 20 June 2021, B.C. Samarakoon, 446 (MFLU 23-0303), culture MFLUCC 23-0235.

GenBank numbers – LSU = PP800441, ITS = PP809108.

Notes – *Metulocladosporiella musae* was previously known as *Cladosporium musae* which causes speckle diseases in *Musa* spp. The fungus has been discovered in all the banana growing countries across the world, including Thailand (Jones 2018). The species has been restricted to *Musa* spp. and its saprobic or endophytic lifestyles are still unknown. We found the species associated with the necrotic area of the leaf spots on *Musa* sp. However, the pathogenicity of our new collection is yet to be proven in future studies. When comparing the DNA sequences in BLAST search, our isolate showed a high percentage similarity to *M. musae* (CBS 161.74; LSU = 100%) and (CPC 33937; ITS = 100%) with the query covers of 100% and 92%, respectively. In the multi-gene analyses of combined LSU and ITS sequence data (Fig. 31), our isolate was grouped with the ex-type strain of *M. musae* with ML = 100%, BI = 1.00 bootstrap support. We report the occurrence of *M. musae* as a fungus that is associated with the leaf spots of *Musa* sp. from Thailand as a new collection.

Class: *Sordariomycetes* O.E. Erikss. & Winka

Amphisphaeriales D. Hawksw. & O.E. Erikss.

Amphisphaeriales has been accepted in *Xylariomycetidae* (Senanayake et al. 2015, Samarakoon et al. 2022a). Hyde et al. (2020) and Wijayawardene et al. (2022) accepted 17 families and 88 genera in the order.

Apiosporaceae K.D. Hyde, J. Fröhl., Joanne E. Taylor & M.E. Barr

Apiosporaceae was established by Hyde et al. (1998) to accommodate *Appendicospora*, *Arthrinium* (= *Apiospora*), *Dictyoarthrinium*, *Endocalyx* and *Spegazzinia*. Tanaka et al. (2015) later included *Spegazzinia* in *Didymosphaeriaceae* (*Pleosporales*). Based on morpho-molecular data, Wang et al. (2017) included *Nigrospora* in *Apiosporaceae*. In addition, Samarakoon et al. (2020b) transferred *Dictyoarthrinium* to *Didymosphaeriaceae* (*Pleosporales*) sister to *Spegazzinia*. Konta et al. (2021) provided molecular data for *Endocalyx* and accommodated it in *Cainiaceae* (*Xylariales*) based on morphology and multi-gene phylogeny. Pintos & Alvarado (2021) suggested considering *Arthrinium sensu stricto* and *Apiospora* as two independent lineages in *Apiosporaceae*. Samarakoon et al. (2022a) established *Appendicosporaceae* as a new family and accommodated *Appendicospora*. At present, the family hosts three genera, *viz*. *Apiospora*, *Arthrinium* and *Nigrospora*. The species of the family can be saprobes, pathogens or endophytes associated with plant tissues, soil, lichens, and marine algae (Hyde et al. 2020a).

Apiospora Sacc., Atti Soc. Veneto-Trent. Sci. Nat., Padova, Sér. 4 4: 85 (1875)

The genus was introduced by Saccardo (1875), with *A. montagnei* as the type. The asexual morph of *Apiospora* has basauxic conidiogenesis, with globose to subglobose, pale brown to brown conidia (Crous & Groenewald 2013, Hyde et al. 2020a). In addition, the conidia are generally lenticular from a side view (Tian et al. 2021). *Apiospora* considered the sexual morph of *Arthrinium* and was synonymized by Crous & Groenewald (2013). Pintos & Alvarado (2021) separated several taxa of *Arthrinium* and proved *Apiospora* to be a phylogenetically distinct lineage. *Apiospora* is cosmopolitan and can be found as endophytes, pathogens and saprobes (Crous et al. 2013a, Tian et al. 2021). One hundred and thirty-seven *Apiospora* species epithets can be found in Index Fungorum (2024). *Apiospora sacchari* has been reported on *Musa* sp. (Ellis 1971a).

Figure 30 – *Metulocladosporiella musae* (MFLU 23-0303). a–b Leaf spots on *Musa* sp. c, d Conidiophores on the necrotic patch. e–g, j Conidiophores. h, i Base and the middle body of the conidiophore. k–q Conidiogenesis at the terminal branchlets of the conidiophore. r, s Conidia. Scale bars: a, b = 30 cm, c = 1 mm, d = 200 µm, e, f, h–s = 50 µm, g = 100 µm, r, s = 10 µm.

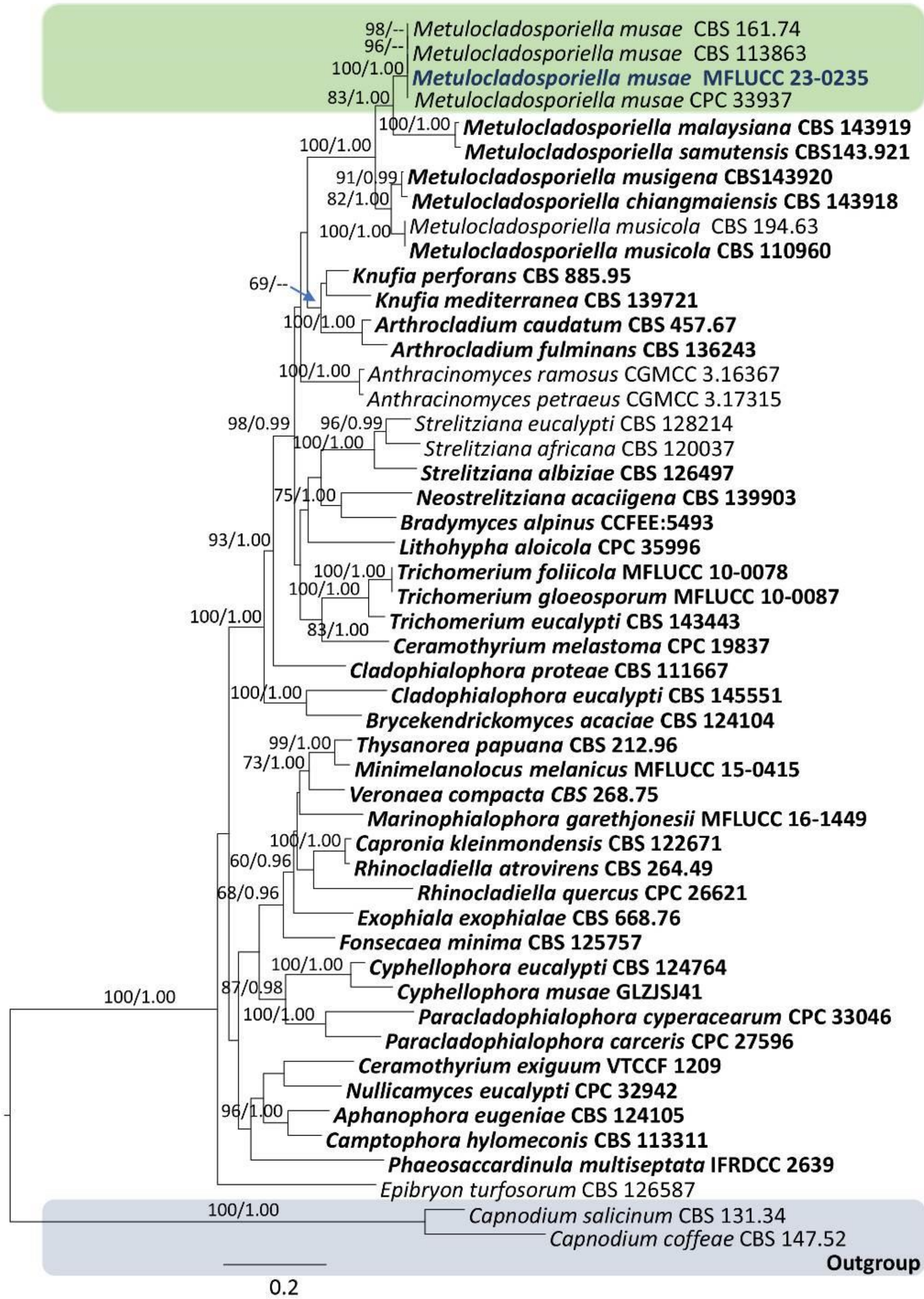

Figure 31 – Maximum likelihood tree revealed by RAxML analyses of LSU and ITS sequence data of *Herpotrichiellaceae*, shows the phylogenetic position of *Metulocladosporiella musae* (MFLUCC 23-0235). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Capnodium coffeae* (CBS 147.52) and *C. Salicinum* (CBS 131.34) (*Capnodiaceae*). The strain generated in this study is shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology of Gostinčar et al. (2019) and Quan et al. (2020), with a final ML optimization likelihood value of -18842.89. The matrix had 930 distinct alignment patterns with of

27.04% undetermined characters or gaps. Estimated base frequencies were: A = 0.241399, C = 0.241485, G = 0.279191, T = 0.237925; substitution rates AC = 1.602104, AG = 2.014866, AT = 1.841912, CG = 1.039358, CT = 5.018392, GT = 1.0000; proportion of invariable sites I = 0.373251; gamma distribution shape parameter (α) = 0.599264.

Apiospora locuta-pollinis (F. Liu & L. Cai) Pintos & P. Alvarado, Fungal Syst. Evol. 7: 206 (2021)

Fig. 32

Index Fungorum number: IF837763; Facesoffungi number: FoF15204

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* on natural substrate dry, widely effused, dark brown to black, fructifications occasionally erumpent, glistening, conidia are liberated on the substrate when disturbed. *Mycelium* partly superficial, partly immersed, often with connecting hyphae which become very narrow where they pass through the host cuticle, hyaline, septate, smooth-walled. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* 5–6 × 0.8–1.2 μm ($\overline{x}$ = 5.8 × 0.9 μm, n = 20), basauxic, macronematous, mononematous, arising singly from subspherical, ampulliform, conidiophore mother cells, simple, often narrow, more or less cylindrical, thread-like, hyaline. *Conidiogenous cells* terminal, cylindrical. *Conidia* 7.5–9 × 6–8.5 μm ($\overline{x}$ = 8.6 × 8 μm, n = 40), solitary or catenate, terminal, brown, smooth, aseptate, in face view globose to subglobose, in side view lenticular with a longitudinal hyaline germ slit, germ tube visible. *Sterile cells* 7–8 × 3–4 μm ($\overline{x}$ = 7.5 × 3.5 μm, n = 20), terminal or subterminal in place of conidia, smaller, paler and differ in shape to the conidia, one side flattened, polygonal, hat-shaped or irregularly-shaped, often with a highly refractive cubical body.

Cultural characteristics – Colonies on PDA, reaching 55 mm in 7 days at 25 °C, colonies white and fluffy, aerial mycelium is visible, reverse smoke grey. Sporulation was observed after 28 days at 25 °C.

Material examined – Thailand, Chiang Rai Province, Mae Sai, on a dead leaf of *Musa* sp., 19 April 2019, B.C. Samarakoon, BNS112 (MFLU 23-0304), culture MFLUCC 23-0229.

GenBank numbers – LSU = PP800442, ITS = PP809109, *tef*1 = PP866296, *tub2* = PP840929

Notes – In the multi-gene phylogenetic analyses of LSU, ITS, *tub*2 and *tef*1 sequence data, MFLUCC 23-0229 grouped with *Apiospora locuta-pollinis* (LC11686) (Zhao et al. 2018) with ML = 99%, BI = 0.98 statistical support (Fig. 33). Based on BLAST search results of LSU, ITS, *tub*2, and *tef1* sequence data, our strain exhibits high similarity to *A. locuta-pollinis* (LC11688) with the following percentages: LSU = 99.76%, ITS = 99.83%, *tub*2 = 99.32%, and *tef*1 = 100%, all with 100%, 99.53%, 100%, and 100% query covers, respectively. We have noticed a slightly different morphology in the sterile cells of our collection when compared to that of the holotype. The sterile cells in our collection are hat-shaped to irregular in shape, while the holotype has elongated cells. However, MFLUCC 23-0229 is genetically identical to the ex-type. *Apiospora locuta-pollinis* (= *Arthrinium locuta-pollinis*) has been described from hive-stored pollen of Italian honey bee colonies from Hubei Province, China, by Zhao et al. (2018). This is the first saprobic report of the species in terrestrial habitats. In addition, this is the first occurrence of *Apiospora locuta-pollinis* in *Musaceae* and in Thailand.

Nigrospora Zimm., Centbl. Bakt. ParasitKde, Abt. II 8: 220 (1902)

Nigrospora exhibits endophytic, pathogenic and saprobic lifestyles on various plant hosts worldwide (Mason 1925, Uzor et al. 2015, Wang et al. 2017). The genus principally causes leaf spots, leaf blight and squirter diseases in crops, fruits and ornamental plants (Wang et al. 2017). The asexual morph of the genus is characterized by branched conidiophores, monoblastic conidiogenous cells and black, shiny, aseptate conidia (Wang et al. 2017, Raza et al. 2019). There are 39 *Nigrospora* epithets reported in Index Fungorum (2024). Many taxa of the genus (*i.e.*, *N. aurantiaca*, *N. camelliae-sinensis*, *N. chinensis*, *N. hainanensis*, *N. lacticolonia*, *N. musae*, *N. oryzae*, *N. pyriformis*, *N. sphaerica* and

N. *vesicularis*) were previously reported on *Musa* from Australia, Brunei Darussalam, China, Fiji, Japan and Venezuela (Kobayashi 2007, Wang et al. 2017, Photita et al. 2002, Farr & Rossman 2024).

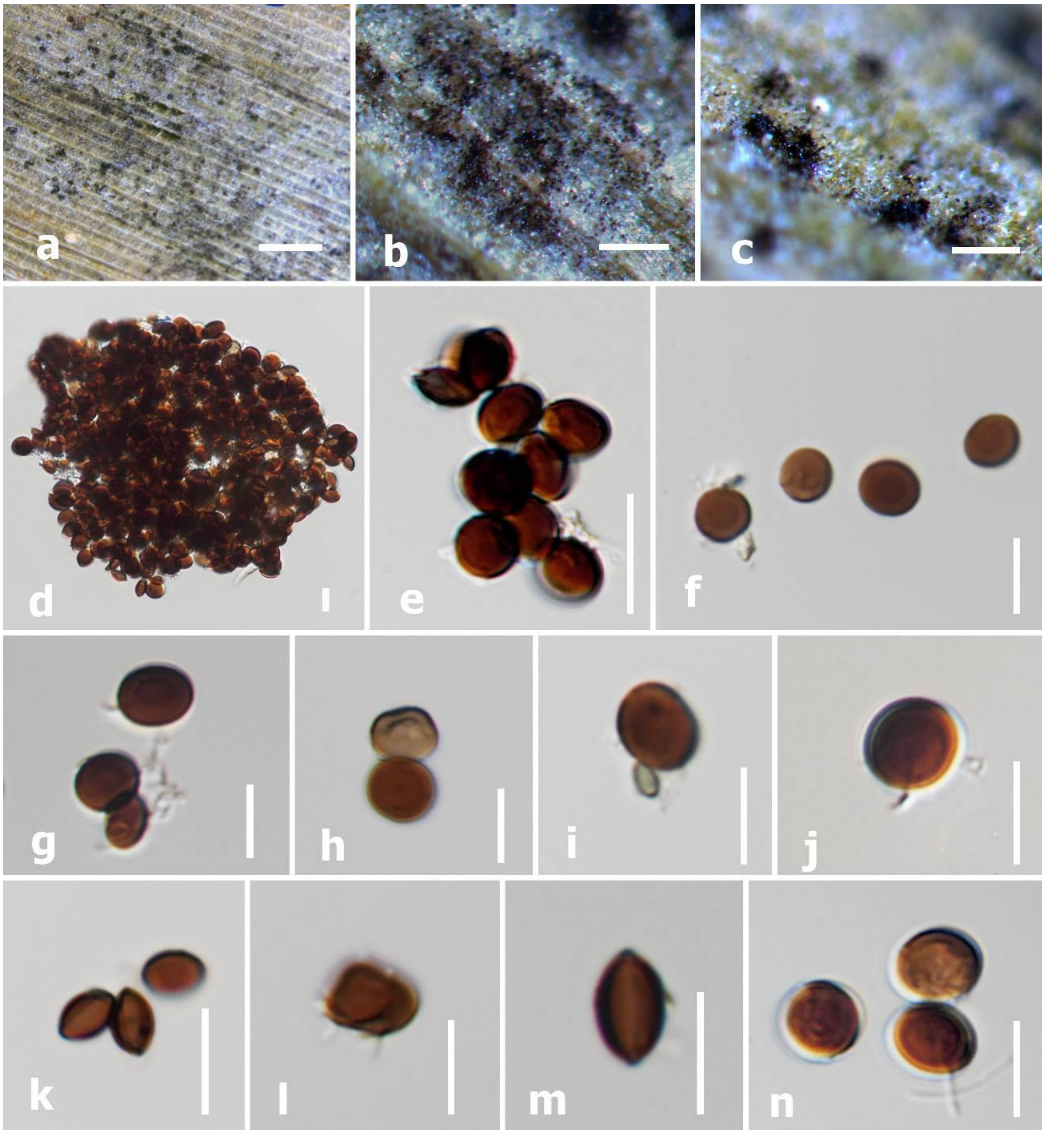

Figure 32 – *Apiospora locuta-pollinis* (MFLU 23-0304). a–c Colony on host. d Mass of conidia. e, f, g, n Conidiogenesis and conidiophores with conidia. h Conidia with the terminal sterile cell. i, j Conidia with conidiophores. k Lenticular conidia from the side view. l Hat-shaped sterile cell. m Hyaline germ slit of the conidium. Scale bars: a, b, c = 200 µm, d–j, l–n =10 µm, k = 15 µm.

Nigrospora sphaerica (Sacc.) E. W. Mason, Trans. Br. mycol. Soc. 12: 158 (1927) Fig. 34

Index Fungorum number: IF254776; Facesoffungi number: FoF06599

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Colonies* at first white, with small, shining black conidia, later becoming brown or black when sporulated. *Mycelium* mostly immersed or partly superficial, hyaline or pale brown, septate. *Stroma* none. *Setae* and *hyphopodia* absent. *Conidiophores* 25–30 × 8–14 µm ($\overline{x}$ = 27.5 × 12.5 µm, n = 20) micronematous or semi-macronematous, branched, slightly flexuous and tapering towards the base, sub-hyaline to brown, septate, rough, thick-walled and constricted at septa, forming 3 or 4 flask-shaped cells. *Conidiogenus cells* 3–4.5 × 2.5–3.5 µm ($\overline{x}$ = 3.5 × 3.2 µm, n = 10) monoblastic, discrete, solitary, terminal or intercalary, subspherical or flask-shaped, hyaline, with a flattened base and an acute apex, hyaline to sub-hyaline vesicles present at the apex of the conidiophore and surrounding the upper most septum to delimit the conidia and their conidiogenous cells. *Conidia* 19–24 × 18–21 µm ($\bar{x}$ = 21.5 × 20.2 µm, n = 40) solitary, violently discharging, simple, spherical or broadly ellipsoidal, black, shining, smooth, aseptate, germ tube visible.

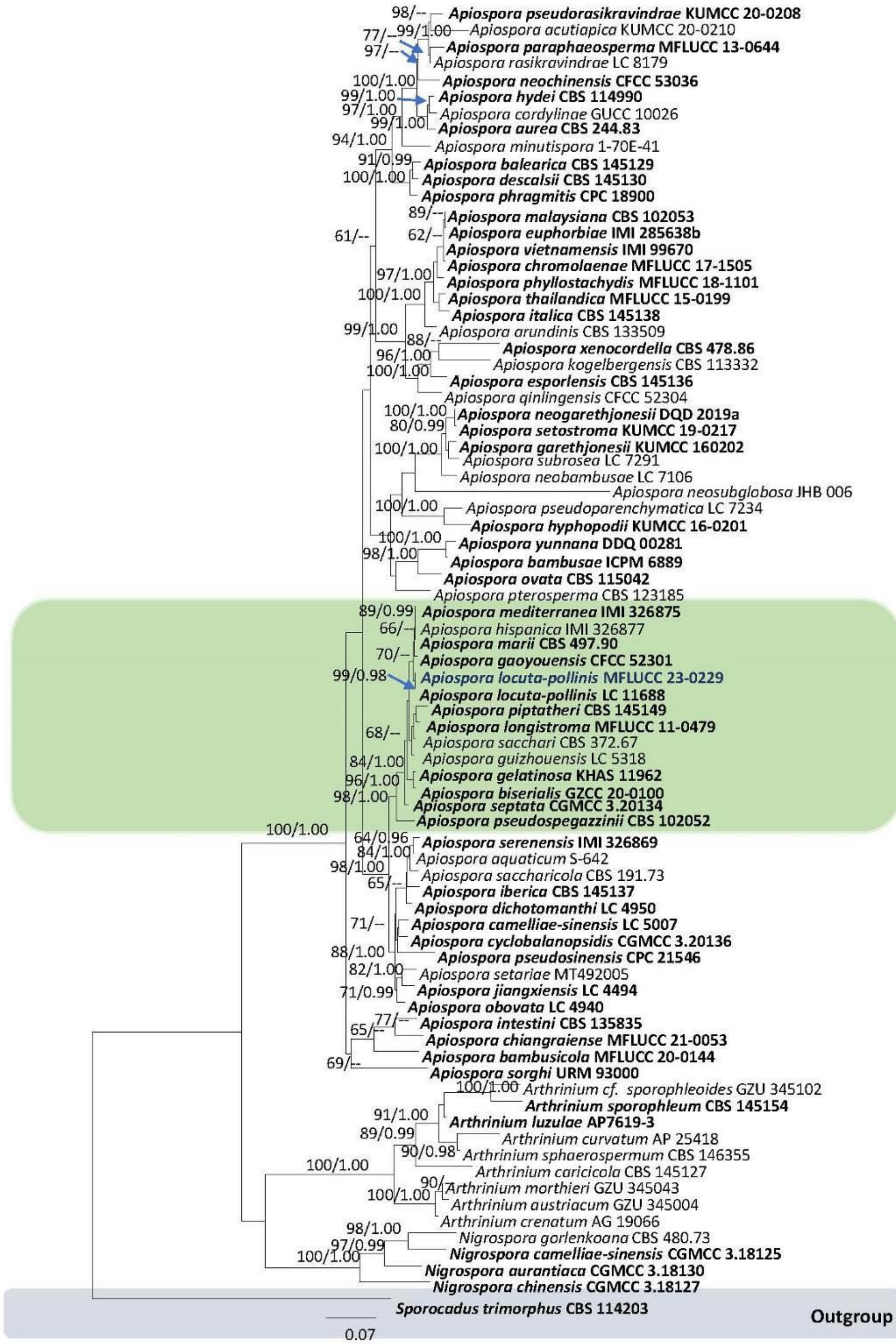

Figure 33 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *tub*2 and *tef*1 sequence data of some selected genera of *Apiosporaceae* illustrating the phylogenetic position of

Apiospora locuta-pollinis (MFLUCC 23-0229). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are indicated. The tree is rooted with *Sporocadus trimorphus* (CBS 114203) (*Sporocadaceae*, *Amphisphaeriales*). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in the phylogenetic analyses of Pintos & Alvarado (2021), with a final ML optimization likelihood value of -26722.35. The matrix had 1602 distinct alignment patterns with 36.27% of undetermined characters or gaps. Estimated base frequencies were: A = 0.234981, C = 0.252041, G = 0.257215, T = 0.255762; substitution rates AC = 1.246098, AG = 3.056561, AT = 1.161503, CG = 1.085051, CT = 4.729995, GT = 1.0000; proportion of invariable sites I = 0.396750; gamma distribution shape parameter (α) = 0.853456.

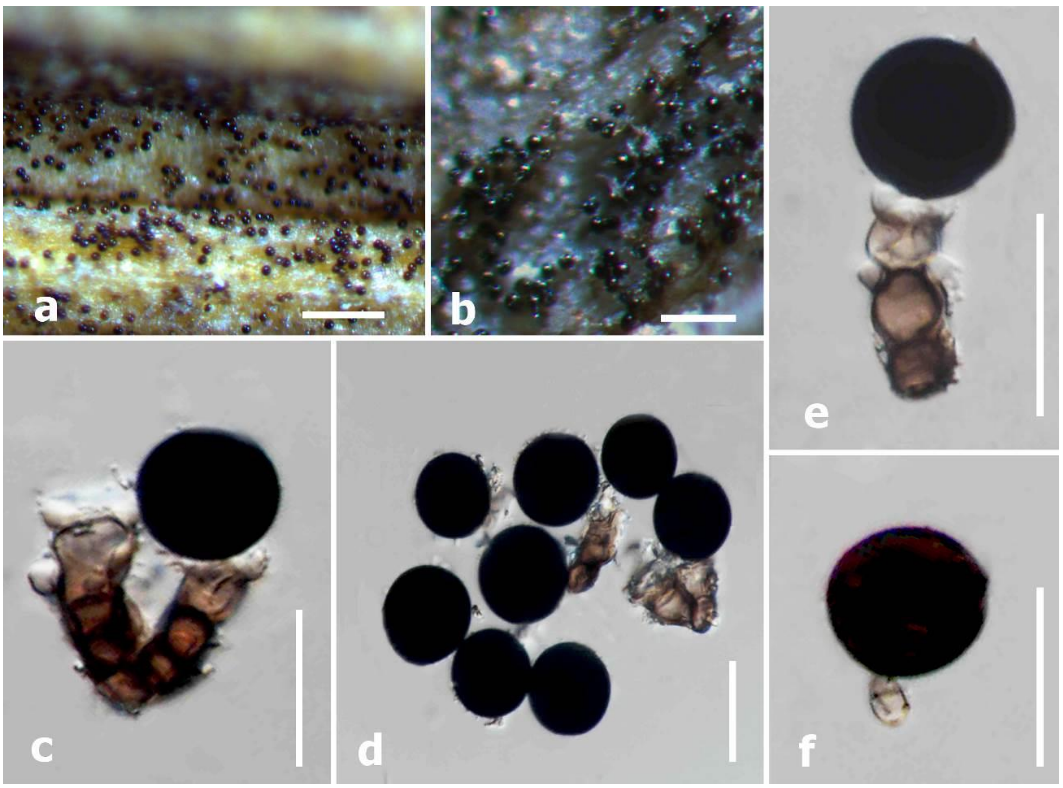

Figure 34 – *Nigrospora sphaerica* (MFLU 23-0305). a–b Colony on host. c–e Conidiogenesis and conidiophores with conidia. f Conidia with the germ tube. Scale bars: a, b = 200 µm, c–f = 30 µm.

Cultural characteristics – Colonies on PDA reaching 55 mm diameter after 14 days at 25 °C, colonies, white, fluffy and woolly appearance, entire margin, at maturity light brown at the center, reverse: light brown and getting darker at maturity, sporulation was very rare and was observed after 8 weeks of incubation at 25 °C.

Material examined – Thailand, Chiang Rai Province, Ban Du, on a mid-rib of a dead leaf of *Musa* sp., 10 August 2019, B.C. Samarakoon, BNS228 (MFLU 23-0305), culture MFLUCC 23-0230.

GenBank numbers – ITS = PP809110, *tef*1 = PP866297.

Notes – In the phylogenetic analyses of combined LSU, ITS, *tub*2 and *tef*1 sequence data, MFLUCC 23-0230 grouped with *Nigrospora sphaerica* (LC7298, LC7312 and CBS984.69) strains (ML = 99%, BI = 0.98) (Fig. 35). *Nigrospora sphaerica* was previously discovered in Thailand as a saprobe on decaying pine litter by Tokumasu et al. (1990). The species is a cosmopolitan plant pathogen causing leaf blights, leaf spots, twigs and shoot blights in many commercial crops (Wright et al. 2008). *Nigrospora sphaerica* exhibits three lifestyles on *Musa* hosts. The fungus has been reported as an endophyte associated with *Musa* from Malaysia (Zakaria & Aziz 2018). In addition, *N. sphaerica* has been documented as a pathogen causing crown rot and leaf spots on *Musa* from Australia, Brunei Darussalam, Fiji and Malaysia (Simmonds 1966, Firman 1972, Wallbridge & Pinegar 1975, Dingley et al. 1981, Peregrine & Ahmad 1982). The fungus has also been found on dead plant materials of *Musa* from China, Guinea, Japan, Somalia, Taiwan, and the West Indies (Castellani & Ciferri 1937, Kranz 1965b, Matsushima 1980, Kobayashi 2007) but has not verified by molecular data. We report the occurrence of the species as a saprobe on dead materials of *Musa* from Thailand for the first time with morphological support and molecular phylogeny.

Sporocadaceae Corda

The family was introduced by Corda (1842) and is typified by *Sporocadus*. The taxa of *Sporocadaceae* are coelomycetes with appendages. The family includes endophytes, pathogens and saprobes associated with a broad spectrum of host plants (Liu et al. 2019). Most of the *Sporocadaceae* taxa are asexual morphs forming acervuli (Jaklitsch et al. 2016, Liu et al. 2019). Liu et al. (2019) revised the family with the support of morphology and concatenated phylogenetic analyses of LSU, ITS, *rpb*2, *tef*1 and *tub*2 sequence data. The latter study accepted 23 genera and Hyde et al. (2020) accepted 32 genera in the family.

Neopestalotiopsis Maharachch., K.D. Hyde & Crous

Neopestalotiopsis was described by Maharachchikumbura et al. (2014). The genus exhibits pathogenic, saprobic and endophytic lifestyles and has mostly been discoverd from tropics and subtropics (Maharachchikumbura et al. 2014, Jayawardena et al. 2019). The genus is a plant pathogen, causing leaf spots, post-harvest fruit rots and root rots (Jayawardena et al. 2016c, 2019). Based on morphology, *Neopestalotiopsis* can be distinguished from *Pestalotiopsis* and *Pseudopestalotiopsis* by having versicolorous median cells (Maharachchikumbura et al. 2014). *Pestalotiopsis* and *Pseudopestalotiopsis* taxa have concolorous median cells (Maharachchikumbura et al. 2014). Due to the advances in molecular phylogeny, many new taxa have recently been introduced from different geographical regions. There are 73 species epithets listed in the Index Fungorum (2024).

Neopestalotiopsis clavispora (G.F. Atk.) Maharachch., K. D. Hyde & Crous, Stud. Mycol. 79: 138 (2014) Fig. 36

Index Fungorum number: IF809764; Facesoffungi number: FoF03819

Associated with the leaf blotch on *Musa* sp. Sexual morph: Not observed. Asexual morph: Hypomycetous. *Conidiomata* 200–250 µm diam. ($\bar{x}$ = 230.5 µm, n = 40), acervulus, black, scattered, rupturing the epidermis and dehiscing irregularly, numerous. *Conidiophores* 9.5–12 × 4.5–6 µm ($\bar{x}$ = 11 × 5 µm, n = 20) hyaline, simple, short to relatively long, wide from the center, acute from base and apex. *Conidia* 18–27 × 5–7 µm ($\bar{x}$ = 22.5 × 6 µm, n = 40), fusiform, straight or clavate, 2-septate or aseptate at immature stage, 4-septate at maturity. *Basal cell* 4–5.5 × 2–2.8 µm ($\bar{x}$ = 5 × 2.5 µm, n = 40), hyaline, elongated, cone-shaped, thin-walled and minutely verruculose. *Three median cells* 4–5 × 2.5–3 µm ($\bar{x}$ = 4 × 2.6 µm, n = 40), pale brown or brown, versicolored at maturity, septa and periclinal walls darker than the rest of the cells, verruculose. *Apical cell* 3–3.5 × 1–2 µm ($\bar{x}$ = 3 × 2 µm, n = 10), short, also corn-shaped but broader than the basal cell, hyaline, sub-cylindrical. *Apical appendages* 20–26 × 0.5–1 µm ($\bar{x}$ = 24 × 0.8 µm, n = 50), tubular, often 1–3, arising from the apex of the uppermost cell. *Basal appendages* 3–4.5 × 0.5–0.9 µm ($\bar{x}$ = 3.5 × 0.8 µm, n = 40), comparatively short, straight, hyaline, cylindrical, arising from the base of the basal cell, sometimes absent.

Cultural characteristics – Colonies on PDA, white, fluffy and cottony, reaching 55 mm in 5 days at 25 °C, with a visible, aerial mycelium, lower surface is mostly smoke grey. Sporulation was very common at 25 °C as black glittering heads after 21 days.

Material examined – Thailand, Chiang Rai Province, Nang Lae, on a fresh leaf spot on *Musa* sp. (*Musaceae*), 14 May 2021, B.C. Samarakoon, 433C (MFLU 23-0306), living culture MFLUCC 23-0247.

GenBank numbers – ITS = PP809111, *tub*2 = PP840930, *tef*1 = PP866298.

Notes – In the multi-gene phylogeny of combined ITS, *tub*2 and *tef*1 sequence data, MFLUCC 23-0247 grouped with *Neopestalotiopsis clavispora* (ex-type: MFLUCC 12-0281) with a strong statistical support (ML = 100%, BI = 1.00) sister to *N. elipsospora* (Fig. 38). *Neopestalotiops clavispora* was recently reported as a pathogen causing leaf spots on *Musa* sp. at the pre-harvest stage in China (Qi et al. 2023). Our strain (MFLUCC 23-0247) was also isolated from leaf spots on *Musa* and the pathogenicity of the strains will be proven in future studies with accurate field trials. In addition, the pathogen was reported worldwide as causing leaf spots, blights, fruit rots, rot rots, crown rot and die back diseases in several agricultural crops (Biju et al. 2018, Prasannath et al. 2020, Jevremović et al. 2022, Shahriar et al. 2022). The species also exhibits endophytic and saprobic lifestyles in different hosts (*i.e.*, *Camellia*, *Elettaria*, *Magnolia*, *Vitis*) (Deng 2011, Luo et al. 2011, Feng et al. 2014, Maharachchikumbura, et al. 2014, Hemphill et al. 2016, Jayawardena et al. 2018). *Neopestalotiopsis clavispora* was previously reported from Thailand, causing flower blight on *Anthurium andraeanum* (Daengsuwan et al. 2021). This is the first report of the fungus associated with *Musa* leaf spots in Thailand.

Neopestalotiopsis musae Norph. & K. D. Hyde, Fungal Diversity 80: 209 (2016) Fig. 37

Index Fungorum number: IF552233; Facesoffungi number: FoF02363

Associated with the leaf spot with yellow halo on *Musa* sp. Symptoms on the leaves were initially small, irregular, brown spots that gradually expanded to fusiform-shaped lesions with a yellow halo and eventually became necrotic. Sexual morph: Not observed. Asexual morph: *Conidiomata* 150–220 × 70–90 µm ($\bar{x}$ = 160 × 84 µm), acervulus, with basal stroma, rupturing the epidermis, sub-hyaline wall 1–3 cells thick, *textura angularis*. *Conidiophores* 7–9 × 2–3 µm ($\bar{x}$ = 7.5 × 2.6 µm, n = 20), reduced to conidiogenous cells, enteroblastic, hyaline, ovate to filiform, simple, distinctly thick-walled. *Conidia* 30–38 × 8–10 µm ($\bar{x}$ = 34.5 × 9.5 µm), fusiform at maturity, ellipsoid or sub ellipsoid at immature stage, straight or curved, at maturity 4-septate, basal cell cone-shaped, hyaline, smooth-walled. *Basal cell* 8–9.5 × 3–4 µm ($\bar{x}$ = 8.5 × 3.6 µm, n = 40), hyaline, elongated, cone-shaped, thin-walled and minutely verruculose, sometimes with a flat apex and acute base. *Three median cells* 23–25 × 9–12 µm ($\bar{x}$ = 23.8 × 10.2 µm, n = 40), olivaceous-brown, versicolored at maturity, septa and periclinal walls darker than the rest of the cells, often verruculose, sometimes smooth. *Apical cell* 7–8 × 3–4 µm ($\bar{x}$ = 7.5 × 3.5 µm, n = 40), short, also cone-shaped or flat, hyaline. *Apical appendages* 20–30 × 1–3 µm ($\bar{x}$ = 24 × 1.5 µm, n = 50), tubular, often 1–3, arising from the apex of the uppermost cell, notably curved. *Basal appendages* 4–5 × 1–1.5 µm ($\bar{x}$ = 4.5 × 1.5 µm, n = 40), comparatively short, straight, hyaline and cylindrical, arising from the base of the lower cell, sometimes absent.

Culture characteristics – Colonies on PDA, at 25 ºC reaching 55 mm diam. after 12 days, dense mycelium, circular, rough margin white, fluffy, concentric ring patterns sometimes present at immature stage, after 2 weeks the growth reduced, flat on the surface, pale brown discoloration occurs.

Material examined – Thailand, Chiang Mai, Chiang Dao, on a dead leaf of *Musa* sp. (*Musaceae*), 20 June 2021, B.C. Samarakoon, 447 (MFLU 23-0307), culture, MFLUCC 23-0282.

GenBank numbers – ITS = PP809112, *tub*2 = PP840931, *tef*1 = PP866299.

Notes – *Neopestalotiopsis musae* was described by Hyde et al. (2016) as a pathogen causing leaf spots on *Musa* sp. from Thailand. In the multi-gene phylogeny, our strain (MFLUCC 23-0282.) and the ex-type strain of *N. musae* formed a distinct clade with ML = 99% and BI = 1.00 support values (Fig. 38). Morphologically, our new collection is similar to the holotype, except for the dimension of conidia, which may change with the environment. We report *N. musae* associated with the leaf spots on *Musa* sp. in Thailand.

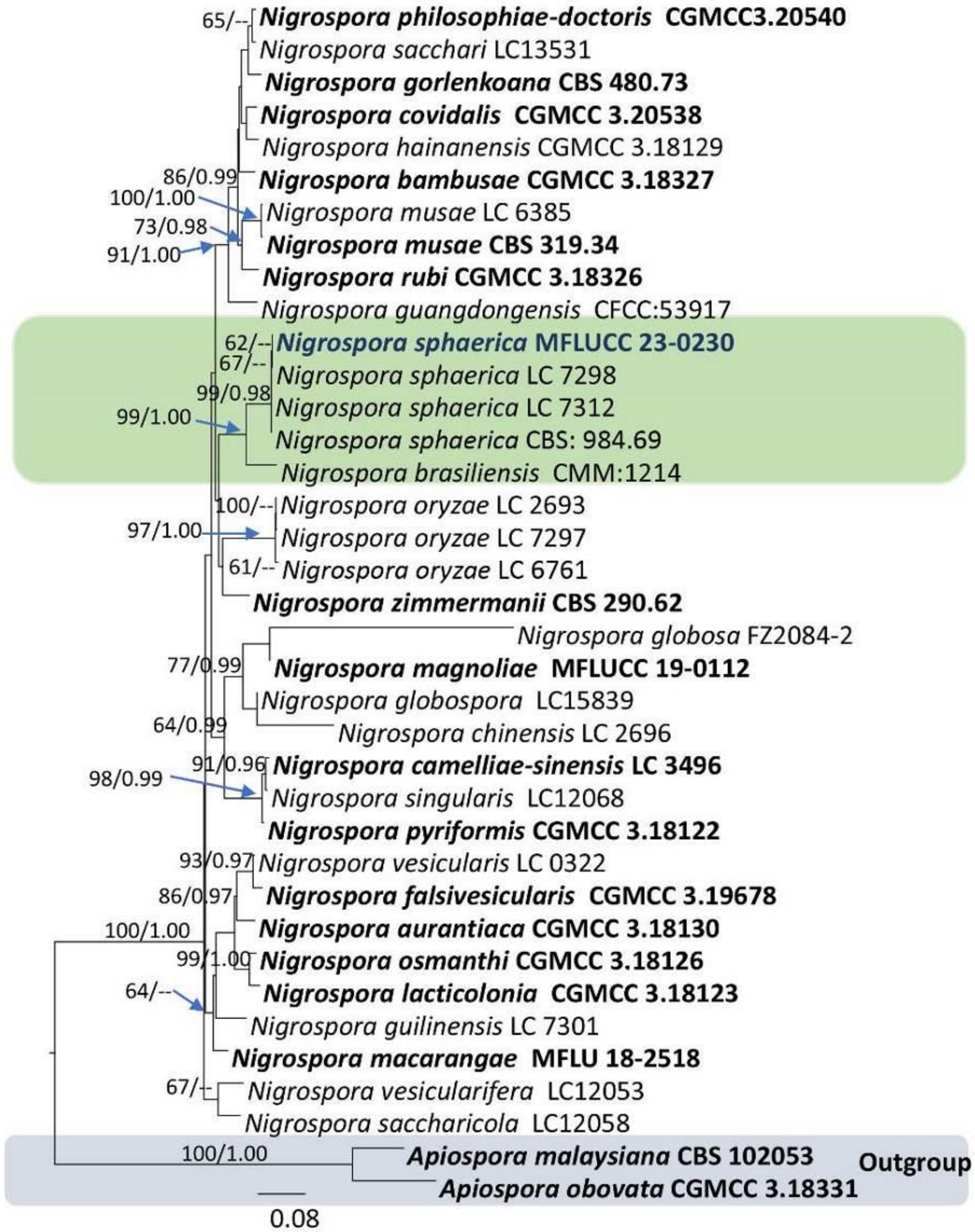

Figure 35 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS, *tub2* and *tef*1 sequence Maximum likelihood tree revealed by RAxML analyses of ITS, *tub*2 and *tef*1 sequence data of the taxa of *Apiosporaceae*, showing the phylogenetic position of *Nigrospora sphaerica* (MFLUCC 23-0230). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Apiospora malaysiana* (CBS 102053) and *A. obovata* (LC4940). The strain generated in this study is shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology to the multi-gene analyses of Raza et al. (2019). The final ML optimization likelihood value is -9787.39. The matrix had 684 distinct alignment patterns with of 23.09% undetermined characters or gaps. Estimated base frequencies were: A = 0.217344, C = 0.299580, G = 0.244101, T = 0.238975; substitution rates AC = 0.975724, AG = 3.068235, AT = 0.927174, CG = 0.978328, CT = 4.424157, GT = 1.0000; proportion of invariable sites I = 0.113514; gamma distribution shape parameter (α) = 0.359961.

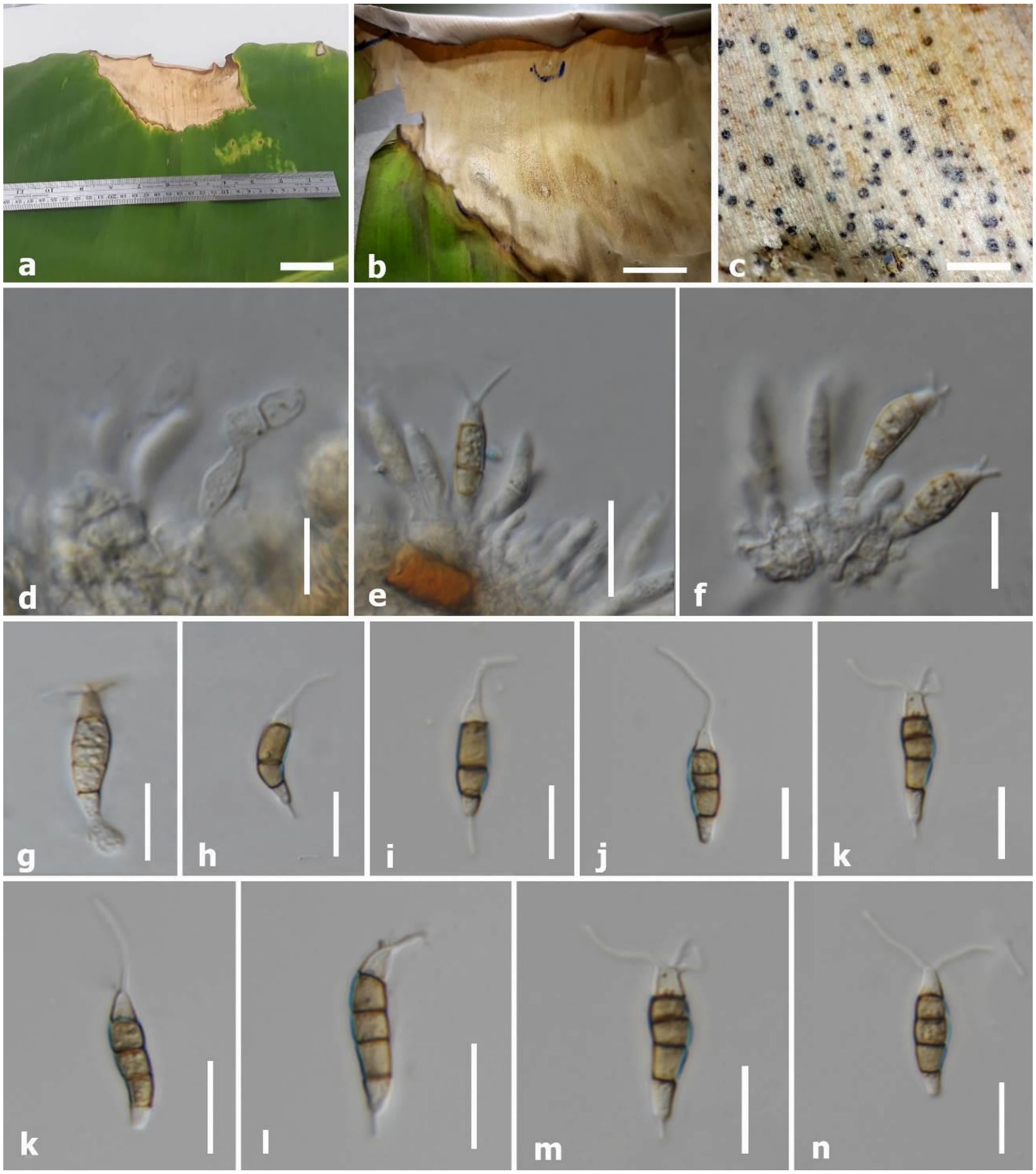

Figure 36 – *Neopestalotiopsis clavispora* (MFLU 23-0306). a–b Leaf blotch on *Musa* sp. c Conidiomata on necrotic patches. d–f Conidial attachments and conidiogenesis. g–n Conidia. Scale bars: a, b = 1000 µm, c = 200 µm, d = 10 µm, e–n = 15 µm.

Diaporthales Nannf.

Diaporthales accommodates pathogens, endophytes and saprobes in terrestrial and aquatic habitats (Senanayake et al. 2017, 2018). The sexual morph is characterized by papillate, solitary or aggregated perithecia, 2–32-spored, single-walled asci with conspicuous refractive rings (Senanayake et al. 2017). The asexual morph is mainly coelomycetous and sometimes hyphomycetous (Senanayake et al. 2018). Hyde et al. (2020) accepted 30 families and 181 genera in *Diaporthales*. Recently, several genera, such as *Pseudocryphonectria* (*Cryphonectriaceae*), *Phaeotubakia* (*Tubakiaceae*), *Pseudomastigosporella* (*Foliocryphiaceae*) and *Pseudophaeocytostroma* (*Diaporthaceae*) were included in the order (Huang et al. 2022, Monkai et al. 2022, Wang et al. 2022b).

Diaporthaceae Höhn. ex Wehm.

Most of the genera in *Diaporthaceae* are pathogens associated with commercial crops, causing cankers, fruit, root and seed decay, diebacks, leaf spots and blights (Lamprecht et al. 2011, Gomes et al. 2013b). In addition, the genera exhibit endophytic and saprobic lifestyles (Senanayake et al. 2017, de Silva et al. 2021, Abeywickrama et al. 2022). Hyde et al. (2020) accepted 15 genera in the family and *Pseudophaeocytostroma* was recently included by Monkai et al. (2022). In this study, we introduce *Pseudophaeocytostroma sacchari* as an endophytic fungal taxon isolated from the fresh leaves of *Musa* sp. from Thailand.

Figure 37 – *Neopestalotiopsis musae* (MFLU 23-0307). a–d Leaf spots lesions with yellow halo on *Musa*. e, f Colony on host. g Transverse section of the conidiomata. h–j Conidiogenesis and conidiophores with conidia. k–t Conidia. Scale bars: c, d, e = 1000 µm, f = 500 µm, g = 50 µm, h–t = 20 µm.

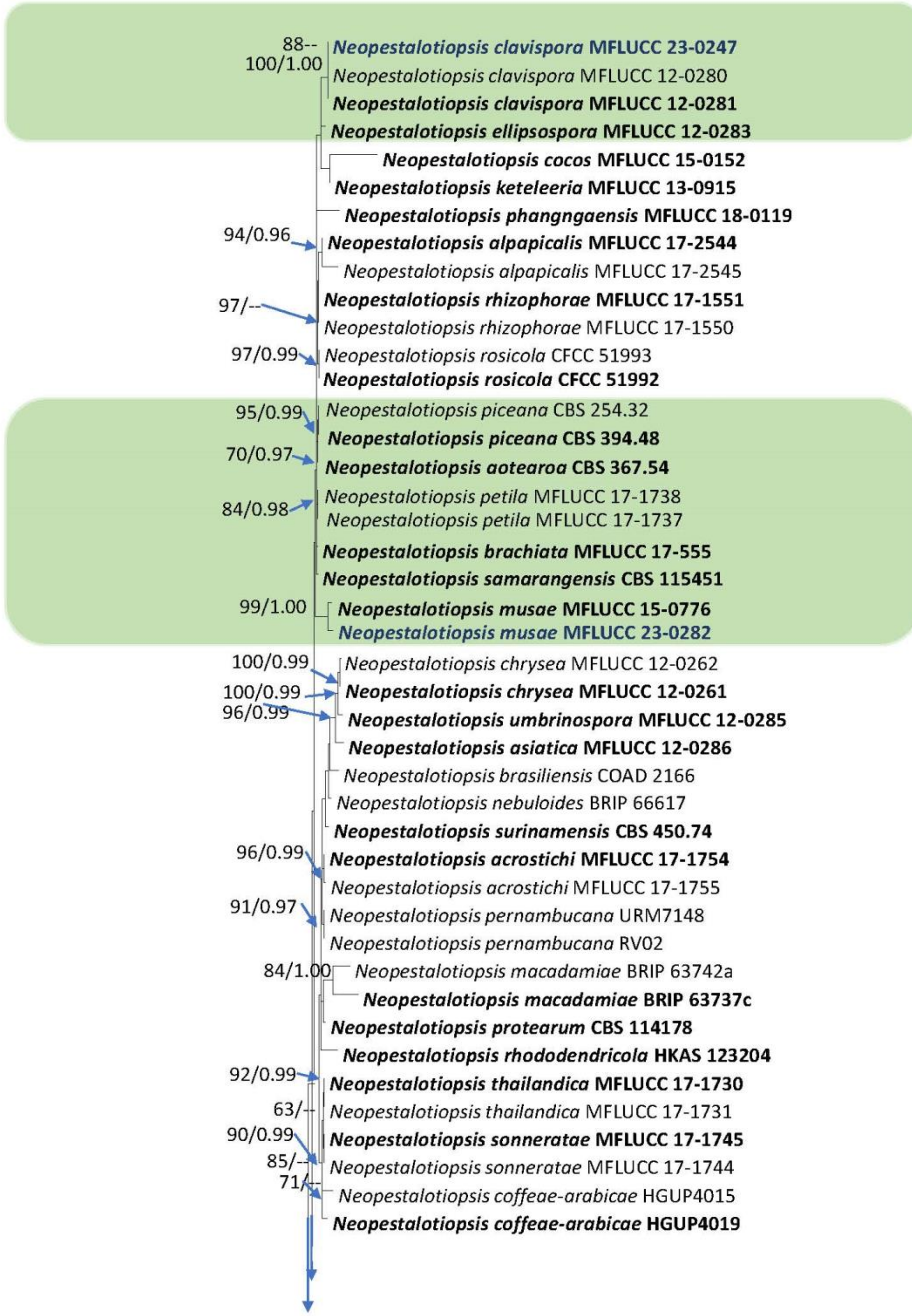

Figure 38 – Maximum likelihood tree revealed by RAxML analyses of ITS, *tub*2 and *tef*1 sequence data of the taxa of *Sporocadaceae*, showing the phylogenetic positions of *Neopestalotiopsis clavispora* (MFLUCC 23-0282) and *N. musae* (MFLUCC 23-0247). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Monochaetia ilexae* (CBS 101009) and *M. monochaeta* (CBS 115004). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Chaiwan et al. (2022), with a final

ML optimization likelihood value of -10631.94. The matrix had 816 distinct alignment patterns with 13.87% of undetermined characters or gaps. Estimated base frequencies were: A = 0.232096, C = 0.272418, G = 0.211453, T = 0.284033; substitution rates AC = 1.380919, AG = 3.610570, AT = 1.604745, CG = 1.060346, CT = 4.304047, GT = 1.0000; proportion of invariable sites I = 0.344924; gamma distribution shape parameter (α) = 0.984063.

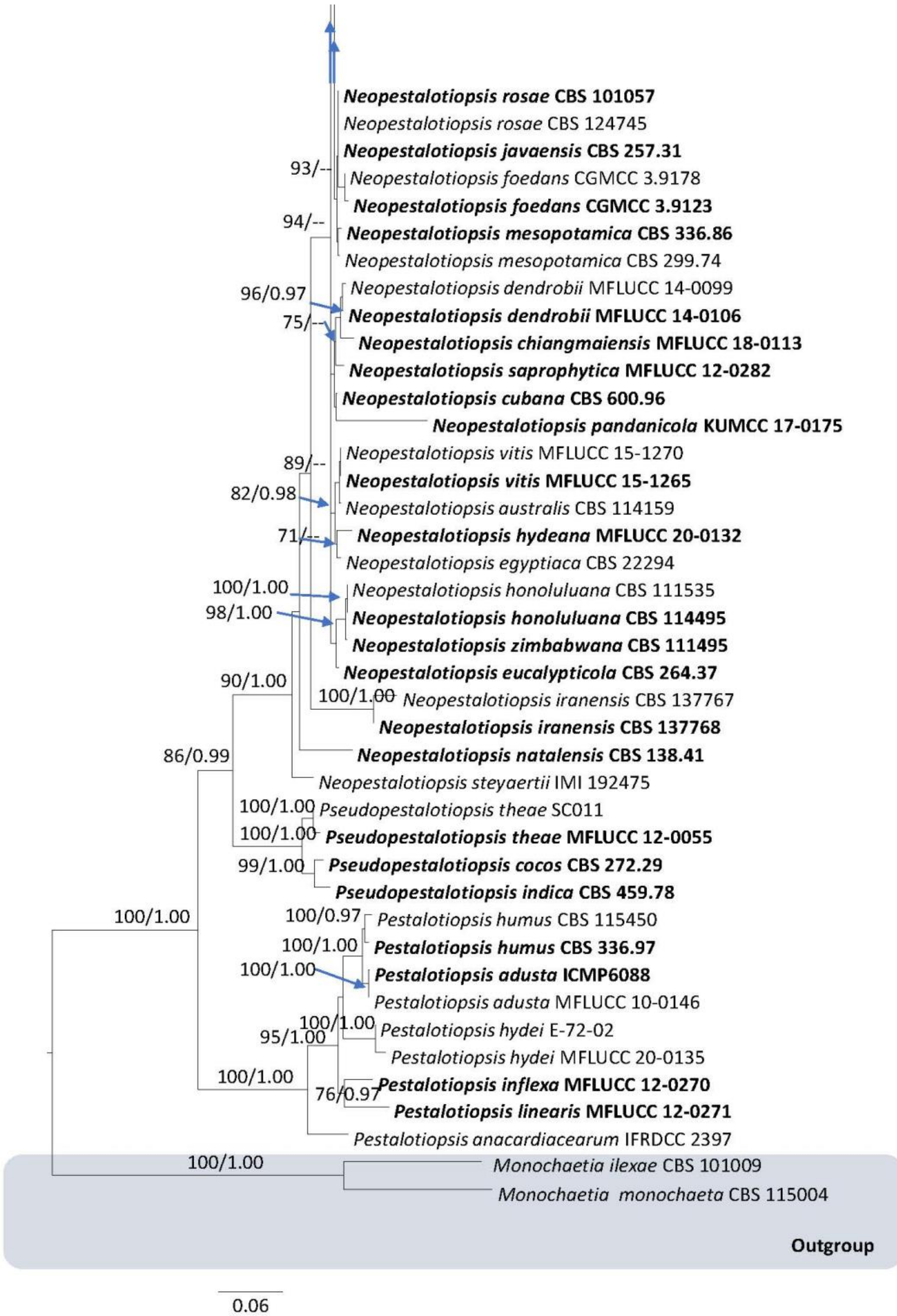

Figure 38 – Continuted.

Pseudophaeocytostroma Monkai & Phookamsak, Phytotaxa 571: 45 (2022)

Pseudophaeocytostroma was introduced by Monkai et al. (2022) in *Diaporthaceae* based on the phylogenetic positions of *P. bambusicola* and *P. sacchari*. *Pseudophaeocytostroma* has a similar morphology to *Phaeocytostroma*, which is characterized by the coelomycetous asexual morph, with uni- to multilocular conidiomata and dimorphic conidia. The alpha conidia are aseptate, sub-hyaline to brown and ellipsoid to fusiform. The beta conidia are fusiform and short or elongate (Lamprecht et al. 2011). This study reports the endophytic lifestyle of *Pseudophaeocytostroma sacchari* associated with *Musa* leaves in Thailand.

Pseudophaeocytostroma sacchari (Ellis & Everh.) B. Sutton, Mycol. Pap. 97: 26 (1964) Fig. 39

Index Fungorum number: IF336098; Facesoffungi number: FoF03819

Endophytic on the fresh leaves of *Musa* sp. *Colonies* on PDA at 25 °C in light conditions, reaching 55 mm in 10 days, initially brownish gray with a filamentous to wavy margin, become blackish golden brown at maturity with a dull black center. *Pycnidia formation* initiates as white cottony raised hemi-spherical to spherical spots after one month of incubation at 25 °C in 12 hours of light and 12 hours of dark conditions. *Mycelium* 2–3.5 µm ($\bar{x}$ = 2.4 µm) wide, sparse, superficial, composed of septate, thick-walled, branched, rough, melanized hyphae with brownish exudates in old cultures. Sexual morph: Not observed. Asexual morph: Coelomycetous. *Conidiomata* 60–65 × 65–70 µm ($\bar{x}$ = 63 × 68 µm, n = 10) pycnidial, sporulating profusely, globose, unilocular or multilocular, brown, erumpent, blackish brown, shiny, conidial droplets exuding from central ostioles, walls consisting of 3–6 layers of medium brown *textura angularis* cells, hemispherical, surrounded by pale brown cottony web of mycelial outgrowths like a cushion, producing dimorphic conidia referred to here as α and β. *Paraphyses* (34–) 40–55 × 1–1.5 µm ($\bar{x}$ = 49.5 × 1.2 µm, n = 40), arranged in between conidiophores, broadly filiform, septate, hyaline, branched or unbranched, swollen at the base, obtuse at the apex. *Conidiophores of α conidia* 10–12 (−15) × 2–3.5 µm ($\bar{x}$ = 11 × 2.6 µm, n = 20), short, hyaline to sub-hyaline, tightly aggregated, erect, clavate or straight, cylindrical, subcylindrical to ampulliform, aseptate, often unbranched. *Conidiogenous cells of α conidia* enteroblastic, phialidic, determinate, integrated, hyaline, rough-walled. *α conidia* 7–9 (–12) × 3–4 µm ($\bar{x}$ = 8.5 × 3.5 µm, n = 40), brown to sub-hyaline, thick-walled, of various shapes, ovate, obovate, kidney-shaped, oblong to ellipsoid, obtuse at both ends, or sometimes with truncate base, septate, two distinct guttules observed in mature cultures. *Conidiophores of β conidia* 25–30 × 1.5–2 µm ($\bar{x}$ = 26.8 × 1.5 µm, n = 30), comparatively narrow and elongated, sub-hyaline or often hyaline, arising singly and producing 3–4 branches from the middle, each sub-branch tapering towards the apex, clavate, cylindrical, smooth, thin to slightly thick-walled, producing two terminal conidiogenous cells on the apex of each branch, scars visible after conidiophore secession. *β conidia* (26–) 30–35 (–38) × 0.7–1 µm ($\bar{x}$ = 34 × 0.85 µm, n = 40), spindle-shaped, aseptate, smooth, hyaline, apex subacutely rounded, base truncate or rounded, tapering from towards apex, straight or flexuous, thin-walled, guttules absent. *Chlamydospores* formed in mature cultures. Sexual morph: Not observed.

Material examined – Thailand, Chiang Rai Province, Tap Tao, associated with a fresh leaf of *Musa* sp., 18 October 2021, B.C. Samarakoon, FC01 (MFLU 23-0308), culture MFLUCC 23-0231.

GenBank numbers – LSU = PP800443, ITS = PP809113

Notes – In the combined DNA sequence analyses of LSU, ITS and *tef*1, MFLUCC 23-0231 grouped with *Pseudophaeocytostroma sacchari* (CBS:275.34) with ML = 99%, BI = 1.00 statistical support (Fig. 40). *Pseudophaeocytostroma sacchari* is mainly associated with *Saccharum officinarum* as pathogen and saprobe (Lamprecht et al. 2011). Based on morphology and phylogenetic support, *Pseudophaeocytostroma sacchari* is presented herein as an endophytic species associated with fresh *Musa* sp. leaves from Thailand. This is the first report of the genus associated with *Musa* hosts and the first geographical occurrence in Thailand.

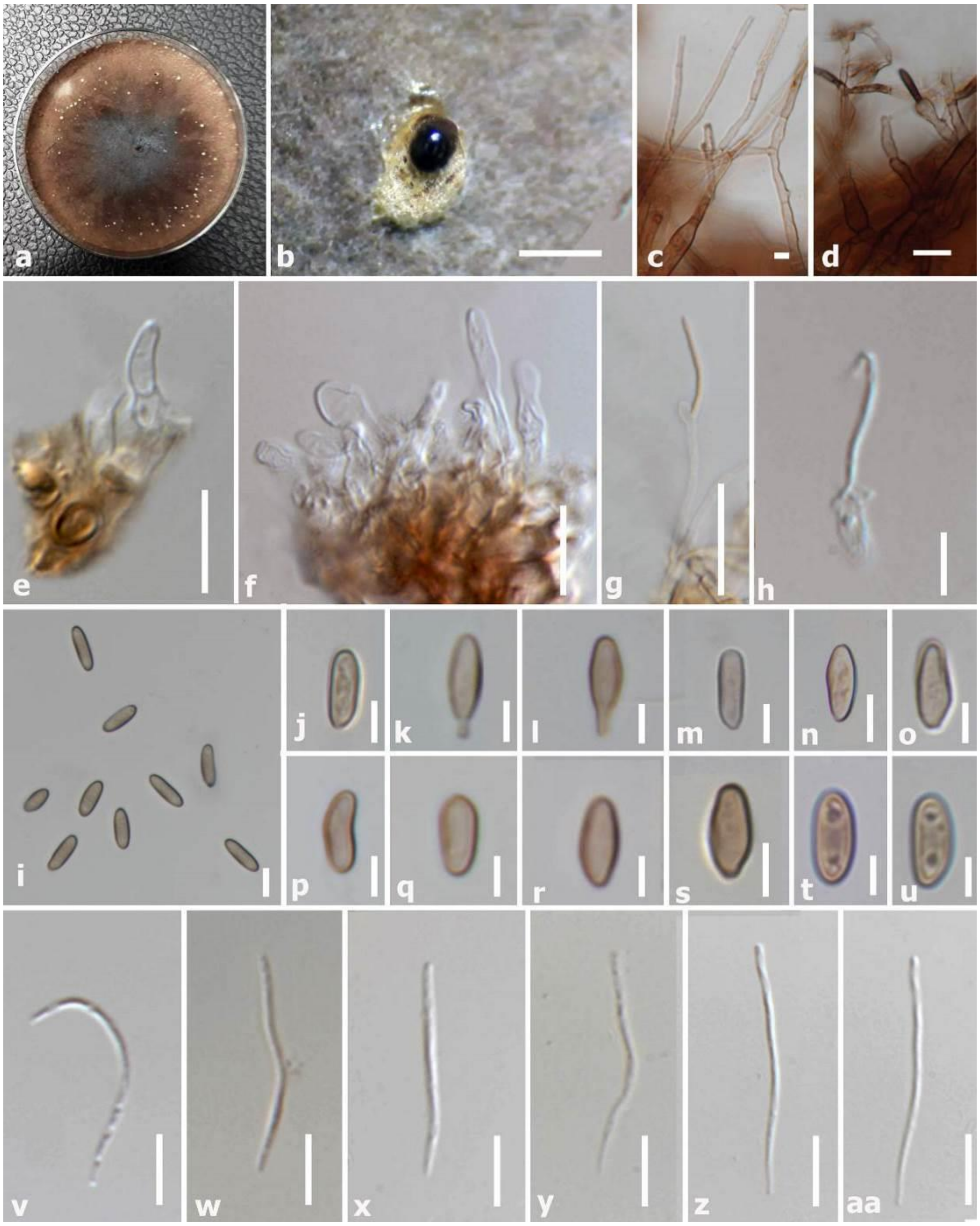

Figure 39 – *Pseudophaeocytostroma sacchari* (MFLU 23-0308). a Colony on PDA at 25 °C after 10 days. b Conidiomata on PDA. c, d Thick-walled mature mycelium. e–h Conidial attachments and conidiophores. i–u α conidia. v–aa β conidia. Scale bars: b = 100 µm, c, d = 3 µm, h–u = 5 µm, e–g, v–aa =10 µm.

Glomerellales Chadef. ex Réblová, W. Gams & Seifert

Réblová et al. (2011) validly proposed *Glomerellales* to accommodate *Australiascaceae*, *Glomerellaceae* and *Reticulascaceae* based on morpho-molecular data. The order accommodates five families and 32 genera (Hyde et al. 2020a).

Glomerellaceae Locq.

Glomerellaceae only accommodates *Colletotrichum*, and represents endophytic, saprobic, and parasitic lifestyles (Jayawardena et al. 2021a, Hyde et al. 2020a). The sexual morphs of the family comprise solitary to aggregated ascomata; hyaline, septate, and basally branched paraphyses; 8-spored, unitunicate asci with a J-refractive ring; and uni- to biseriate, hyaline, with a variety of shapes of ascospores (Hyde et al. 2020a). The common asexual morph is coelomycetous, with acervular conidiomata that open by rupturing the host tissue. Setae may or may not be present, and the conidiogenous cells are enteroblastic. Conidia are hyaline, aseptate, with varying shapes (Cannon et al. 2012, Hyde et al. 2020a). As a specific feature, taxa of *Glomerellaceae* sometimes produce pale to dark brown appressoria as single or small groups (Cannon et al. 2012).

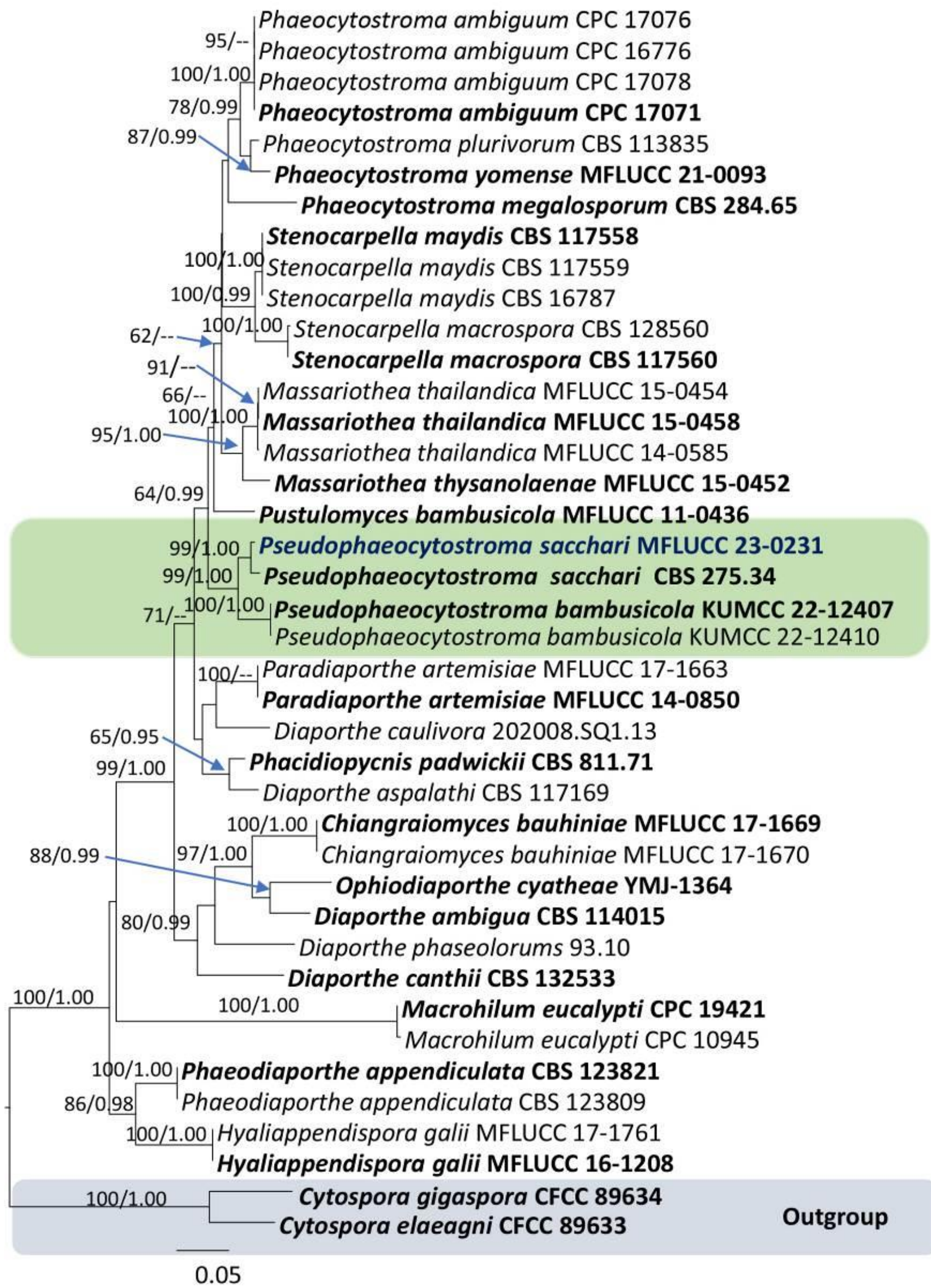

Figure 40 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS and *tef*1 sequence data for the taxa of *Diaporthaceae*, showing the phylogenetic position of *Pseudophaeocytostroma*

sacchari (MFLUCC 23-0231). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Cytospora elaeagni* (CFCC 89633) and *C. gigaspora* (CFCC 89634). The strain generated in this study is shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in the phylogenetic analyses of Monkai et al. (2022), with a final ML optimization likelihood value of -8587.92. The matrix had 662 distinct alignment patterns with 17.33% of undetermined characters or gaps. Estimated base frequencies were: A = 0.236689, C = 0.270061, G = 0.281769, T = 0.211480; substitution rates AC = 1.620917, AG = 2.671834, AT = 1.596111, CG = 1.346567, CT = 6.547375, GT = 1.0000; proportion of invariable sites I = 0.449831; gamma distribution shape parameter (α) = 0.509013.

Colletotrichum Corda**,** Sturm, Deutschl. Fl., 3 Abt. (Pilze Deutschl.) 3: 41 (1831)

Colletotrichum was introduced by Corda (1831) (Maharachchikumbura et al. 2016, Hyde et al. 2020a). Most of the species in the genus are cosmopolitan pathogens causing pre- and post-harvest diseases in economic crops and forest plants (Cai et al. 2009, Than et al. 2009, Huang et al. 2013, Jayawardena et al. 2016a, b, 2021). In addition, the genus accommodates endophytic and saprobic fungi associated with different plant hosts (Vieira et al. 2014, Jayawardena et al. 2016b, Ma et al. 2018, Samarakoon et al. 2018). Liu et al. (2022) accepted 280 *Colletotrichum* species in 16 species complexes and 13 species were further added by Alizadeh et al. (2022), Hassan et al. (2022) and Zheng et al. (2022).

Colletotrichum siamense Prihastuti, L. Cai & K. D. Hyde, Fungal Diversity 39: 98 (2009) Fig. 41

Index Fungorum number: IF 515410; Facesoffungi Number: FoF 03599

Associated with leaf spots on *Musa* sp. Symptoms on the leaves were initially small, irregular, black spots, the spot enlarges, the central lesions become necrotic surrouned with brown-black streak lesions. Sexual morph: Not observed. Asexual morph: Coelomycetous. *Colonies* on PDA at 25 °C, light, reaching 5 cm diameter in 4 days, initially white, mouse gray or grayish white or pinkish white or brownish, irregular or lobate margin. *Mycelium* initially cottony and flat, sparse at maturity, sometimes aerial, 3–6 µm ($\bar{x}$ = 3.5 µm) wide, septate, branched, rough-walled, often hyaline in the young colony, brown at maturity. *Sporulation* occurs from the inoculated point after 14 to 28 days, slimy and sticky, conidial masses were visible in salmon pink or orange, 25 °C, at light conditions forming acervulus, not abundant, reverse mouse gray or grayish white, *Sclerotia* present in some isolates. *Conidiophores* 20–28 µm × 2–7 µm ($\bar{x}$ = 24 × 4.7 µm, n = 30), micronematous, hyaline, cylindrical, tapering toward the apex, erect and straight, sometimes slightly flexuous, unbranched, smooth, aseptate, arising from the mycelium, swollen at the base, pointed at the apex. *Conidiogenous cells* 1.5–2 × 1–2 µm ($\bar{x}$ = 1.7 × 1.5 µm, n = 30), hyaline, monoblastic, terminal, cylindrical, having rounded apices, without collarette. *Conidia* 10–15 × 3–5 µm ($\bar{x}$ = 13 × 3.8 µm, n = 40), abundant, smooth, hyaline, aseptate, oval, elliptical or cylindrical, sometimes elongated and flexuous, varying in shape, often with flat base, rounded apex. *Chlamydospores* 8–10 × 3–5 µm ($\bar{x}$ = 8.7 × 3.8 µm, n = 40) visible in mature colonies.

Material examined – Thailand, Chiang Rai, Doi Mae Sa Long, associated with a leaf spot on fresh leaves of *Musa* sp., 17 June 2021, B. C. Samarakoon, 440A-42 (MFLU 23-0309), culture MFLUCC 23-0221.

GenBank numbers – ITS = PP809114, *gapdh* = PP866304, *chs*-1 = PP866305, *act* = PP866302.

Notes – *Colletotrichum siamense* was introduced by Prihastuti et al. (2009) from Thailand on a berry of *Coffea arabica* and accommodated in the *C. gloeosporioides* species complex. The fungus has been frequently discovered in Asia, causing anthracnose in commercial fruit crops (*i.e.*, avocado, citrus, dragon fruit, papaya, peach, lychee, mango, and walnuts) (Dissanayake et al. 2021). Previously, *C. siamense* was reported in Thailand on *Azdirachta indica* (Udayanga et al. 2013), *Capsicum* (de Silva et al. 2019), *Coffeea arabica*, *Ficus* sp., *Mangifera indica* (Udayanga et al. 2013), and

Selenicereus undatus (Meetum et al. 2015). The fungus was previously identified from anthracnose lesions in banana fruits and was proven to be pathogenic in Brazil (Vieira et al. 2017) and Turkey (Uysal & Kurt 2020). The pathogen has also been detected from the leaf spots of bananas in China (Huang et al. 2021) and India (Kumar et al. 2017). In the multi-gene phylogeny, our strain (MFLUCC 23-0221) grouped with *C. siamense* (CBS: 125379 and ICMP 18578) with ML = 97%, BI = 0.99 statistical support. Hence, based on morphology and phylogenetic support, we document the presence of *C. siamense* associated with the leaf spots on *Musa* in Thailand. However, the pathogenicity of our strain is yet to be confirmed in future studies.

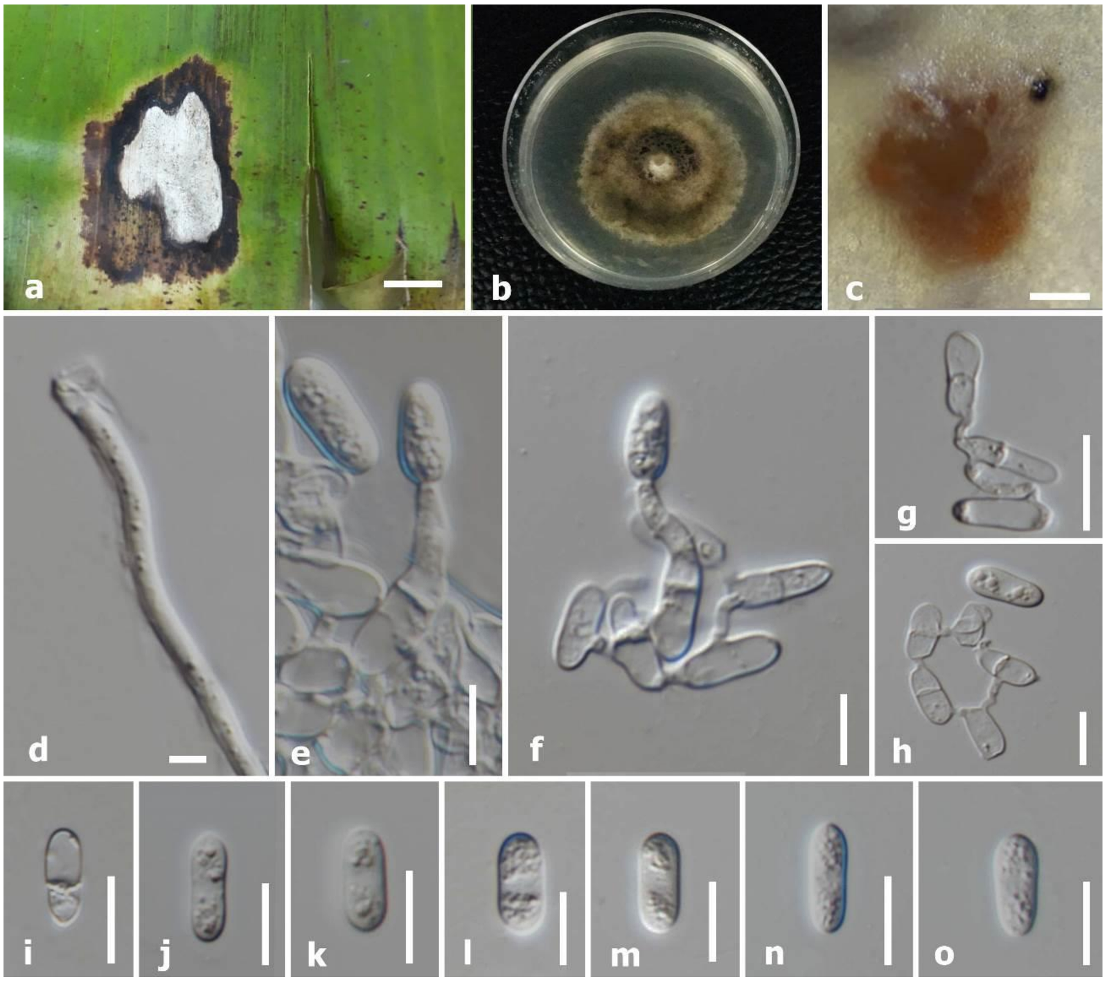

Figure 41 – *Colletotrichum siamense* (MFLU 23-0309). a Leaf spots lesion on the leaf of *Musa acuminata*. b Colony on PDA after 4 weeks. c Salmon orange conidial masses. d Hyphae. e, f Conidiophores and the conidial attachments. g, h. Conidia fused by conidial anastomosis tubes. i-o Conidia. Scale bars: a = 1 cm, c = 100 µm, d = 5 µm, e–o = 10 µm.

Plectosphaerellaceae W. Gams, Summerb. & Zare

Zare et al. (2007) established *Plectosphaerellaceae* with *Plectosphaerella* as the type genus, and Maharachchikumbura et al. (2016) accepted the family in *Glomerellales*. At present, *Plectosphaerellaceae* consists with 24 genera exhibiting saprobic and pathogenic lifestyles in plant hosts (Hyde et al. 2020a). Several taxa in the family have bioactive properties (*i.e.*, alkaliphilic or alkalitolerant) (Grum-Grzhimaylo et al. 2016, 2018, Kozlova et al. 2019), and they are often discovered from soil and sometimes as human pathogens (Giraldo & Crous 2019). The sexual morphs of the family produce flask-shaped perithecia, which are brown at the base with a paler, elongated neck. The asci are clavate and lateral apical thickening can be seen at the immature stage. When the asci become mature, a white mass of ascospores is released from the ostiole. In addition, the ascospores are often 2-celled, hyaline, and have a rough surface comprising several warts (Zare et al. 2007). The asexual morphs of *Plectosphaerellaceae* are phialidic hyphomycetes having verticillate or simple conidiogenous cells with 1–2-celled, ellipsoidal, smooth and hyaline conidia (Giraldo & Crous 2019). *Acrostalagmus*, *Musicillium* and *Musidium* are reported on *Musa* spp., from different geographical localities around the world. In addition, most of *Musicillium* and *Musidium* have been discovered only from different plant parts of *Musa* spp. (Giraldo & Crous 2019).

Gibellulopsis Bat. & H. Maia, Anais Soc. Biol. Pernambuco 16: 153 (1959)

Gibellulopsis was introduced by Batista & da Silva Maia (1959) and accommodated in *Plectosphaerellaceae* by Zare et al. (2007) with *G. piscis* as its type species. Eight species are accepted in the genus (Index Fungorum 2023) from aquatic and terrestrial habitats (Giraldo & Crous 2019). Majority of the taxa were found in soil and plant debris, but some were found in human body parts, moisture-damaged buildings, and insulator wool. Some taxa in the genus (*i.e.*, *G. nigrescens*) have been reported as pathogens causing wilts in commercial crops (Zare et al. 2007). *Gibellulopsis* has only been reported in Japan and India from the entire Asian region (with limited occurrence) and with no records in Thailand. However, the genus has been found in several geographical locations (*i.e.*, Argentina, Brazil, Canada, Cuba, Denmark, Finland, France, Germany, Netherlands, New Zealand, Russia, Sweden, and UK) (Giraldo & Crous 2019, Farr & Rossman 2024). This study presents the first occurrence of *Gibellulopsis* in Thailand as a new geographical record.

Gibellulopsis serrae (Maffei) Giraldo López & Crous, Stud. Mycol. 92: 250 (2018) Fig. 43

Index Fungorum number: IF828040; Facesoffungi number: FoF15206

Saprobic on dead leaves of *Musa* sp. Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Mycelium* immersed, branched, septate, hyaline, thick-walled 1–2 µm wide. *Conidiophores* 350–450 × (4–) 10–16 µm ($\bar{x}$ = 410 × 12.5 µm, n = 30), erect from hyphae with transparent slimy glistering heads of conidia, unbranched from the middle and base, sometimes branched at the apex, cylindrical and tapering towards the apex, septate, dark brown from the base and getting pale brown and sub-hyaline towards the apex, terminal hyaline, smooth. *Phialides* 30–65 × 3–7 µm ($\bar{x}$ = 45 × 5.5 µm, n = 30), arising from the conidiophore, 3–4 present, hyaline, terminal, rough-walled, pointed, wider at the base and tapering towards the apex. *Conidia* 9–16 × 4–5 µm ($\bar{x}$ = 14.5 × 4.5 µm, n = 40), ellipsoidal with rounded or acute ends, simple, hyaline, rough-walled, sometimes guttules present, conidial chains present.

Cultural characteristics – Colonies on PDA, reaching 55 mm in 10 days at 25 °C, flat, white or mouse gray, concentric ring patterns that are slightly visible, irregular margined, reverse smoke grey. Sporulation was observed after 21 days at 25 °C.

Material examined – Thailand, Chiang Rai Province, Tap Tao, on the mid rib of a dead leaf of *Musa* sp., 14 August 2019, B. C. Samarakoon, BNS279 (MFLU 23-0310), culture MFLUCC 23-0308.

GenBank numbers – LSU = PP800445, ITS = PP809116, *tef*1 = PP866301.

Notes – *Gibellulopsis serrae* was previously reported on *Musa* sp. in India (Giraldo & Crous 2019). There is no previous literature on the occurrence of the species from Thailand associated with any plant host. The species has been reported from *Abelmoschus esculentus* (Cuba), *Amaranthus tricolor* (Italy), *Beta vulgaris* (Canada) and *Solanum tuberosum* (Germany, Israel, and, Japan) (Giraldo & Crous 2019). In addition, *G. serrae* was found in soil (Israel and Japan), human blood (Greece), the eye (Italy) and the granuloma in goldfish (Brazil). Interestingly the fungus has also been documented as a fungicolus on *Cercospora beticola*, *Erysiphe* sp. and *Oidium* sp. in Russia (Giraldo & Crous 2019). In the phylogenetic analyses of LSU, ITS, *rpb*2 and *tef*1 sequence data (Fig. 46), our strain

MFLUCC 23-0308 grouped with *G. serrae* (CBS 175.75) with strong statistical support (ML = 100%, BI = 1.00). We present the first report of *Gibellulopsis* from Thailand with *G. serrae*, a new geographical record.

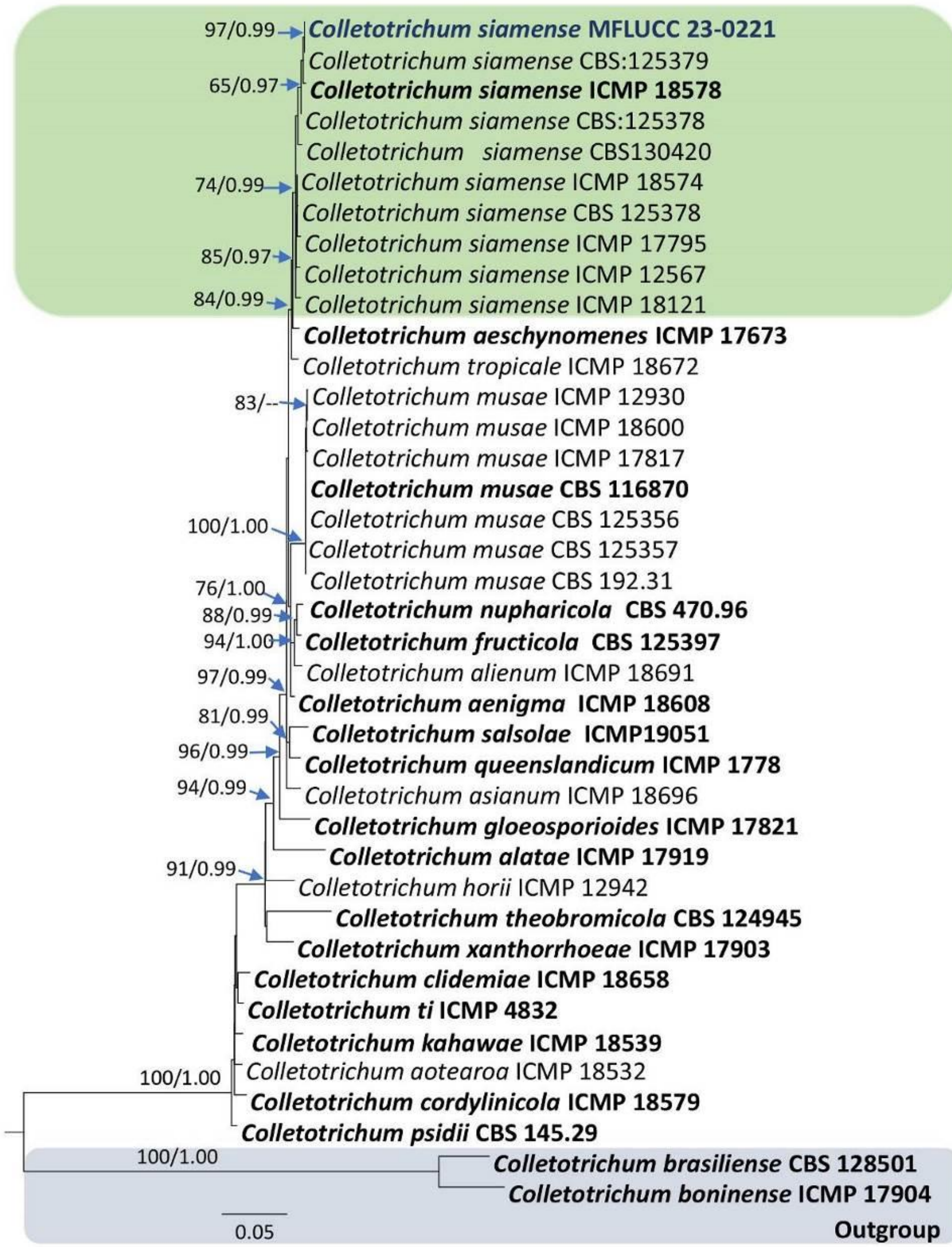

Figure 42 – Maximum likelihood tree revealed by RAxML analyses of ITS, *gapdh*, *cmdA*, *act*, and *chs*-1 sequence data for selected taxa of the *Colletotrichum gloeosporioides* complex showing the phylogenetic position of *C. siamense* (MFLUCC 23-0221). ML bootstrap supports (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are given near the nodes, respectively. The tree is rooted with *C. boninense* (ICMP 17904) and *C. brasiliense* (CBS 128501). The strain generated in this study is indicated in bold blue. Ex-type strains are indicated in bold black. The scale bar represents the expected number of nucleotide substitutions per site. The best scoring RAxML tree is presented with a final ML optimization likelihood value of -21969.93. The matrix had 1136 distinct alignment patterns

with 35.79% of undetermined characters or gaps. Estimated base frequencies: A = 0.239280, C = 0.284737, G = 0.251988, T = 0.223995; substitution rates AC = 1.282296, AG = 4.565113, AT = 1.367959, CG = 1.092959, CT = 7.305206, GT = 1.0000; proportion of invariable sites I = 0.459148; gamma distribution shape parameter α = 0.920614.

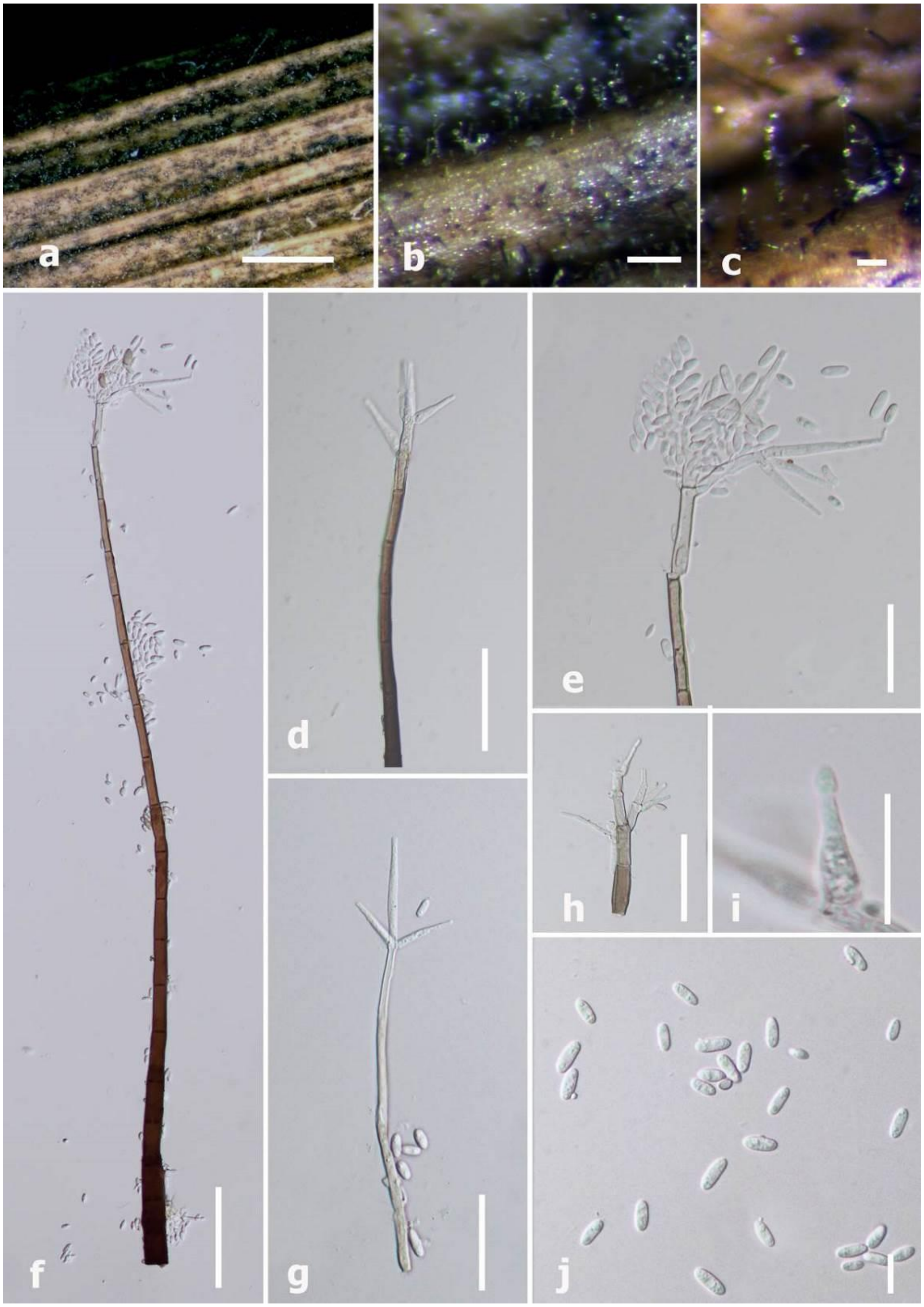

Figure 43 – *Gibellulopsis serrae* (MFLU 23-0310). a–c Conidiophores on the host. c Slimy conidial mass with glistering transparent heads. d, e, f Conidiophores, phialides and conidia. g–i Conidiogenesis

in phialides. j Conidia. Scale bars: a = 200 μm, b, d, f = 50 μm, c = 10 μm, e, g, h = 20 μm, i, j = 15 μm.

Musicillium Zare & W. Gams**,** Nova Hedwigia 85: 482 (2007)

Musicillium was introduced by Zare et al. (2007) to accommodate *Verticillium theobromae* (= *Stachylidium theobromae*), the causative agent of the cigar-end rot in bananas. Currently, three accepted species represent the genus with saprobic and pathogenic lifestyles (Giraldo & Crous 2019, Index Fungorum 2023). *Musicillium elettariae* and *M. tropicale* have been predominantly discovered in *Musa* species and a few other hosts (*Elettaria*, *Lactarius* and leaf litter). The asexual morph is a hyphomycetes with brown pigmented conidiophores, that verticillate in the upper nodes repeatedly. The conidia arise from the phialides as slimy heads. We report the sexual morph of *Musicillium elettariae* which exhibits the saprobic lifestyle, on *Musa* hosts in Thailand.

Musicillium elettariae Giraldo López & Crous, Stud. Mycol. 92: 267 (2018 Fig. 44

Index Fungorum number: IF828065; Facesoffungi number: FoF15207

Saprobic on dead leaves of *Musa* sp. Sexual morph: *Ascomata* 70–100 μm ($\bar{x}$ = 80.5 μm, n = 20) in diameter, solitary, mostly superficial, perithecial, black, papillate. *Papilla* central, black, conical, white masses of ascospores released from the ostiole. *Setae* 100–200 × 3–5 μm ($\bar{x}$ = 120 × 3.5 μm, n = 20), elongated, tapering towards the apex, brown, septate, thick-walled. *Peridium* 4–7 μm ($\bar{x}$ = 5.8 μm, n = 30) thick, made up of cells of *textura angularis*. *Paraphyses* 20–50 μm long ($\bar{x}$ = 36 μm, n = 30), widest at base, tapering towards the apex, septate, notably constricted at septa, unbranched, first three cells from the base are elliptic, one cell 8–12 × 5–8 μm ($\bar{x}$ = 10 × 7 μm, n = 20), apical cell 15–25 × 2–3.5 μm ($\bar{x}$ = 20 × 2.5 μm, n = 20), tread-like. *Asci* 50–75 × 8–16 μm ($\bar{x}$ = 60 × 13.5 μm, n = 30), 2–8 spored, unitunicate, cylindrical, straight or clavate, thin-walled, swollen in the center in squash mount, with a short pedicel, no positive reaction in the apical ring observed in Melzer's reagent. *Ascospores* 10–20 × 3–5 μm ($\bar{x}$ =15 × 3.7 μm, n = 30), uniseriate, overlapping or often biseriate, cylindrical with acute ends or elliptic, hyaline, sometimes swollen at the septum, one septum presents in mature spores, slightly constricted at septum, immature ascospores have several guttules, rough, mature ascospores slightly rough or smooth, gelatinous sheath visible. Asexual morph: Not observed.

Cultural characteristics – Colonies on PDA, reaching 55 mm in 10 days at 25 °C, flat, white, or mouse gray, concentric ring patterns are visible, irregular margined, reverse smoke grey. Sporulation was observed after 14 days at 25 °C.

Material examined – Thailand, Chiang Rai Province, Doi Chang, on a dead leaf of *Musa* sp., 23 June 2021, B. C. Samarakoon, MN27 (MFLU 23-0311), culture MFLUCC 23-0309.

GenBank numbers – LSU= PP800446, ITS= PP809117

Notes – The asexual morph of *Musicillium elettariae* has been previously found on *Carex pendula* (Iran), *Elettaria cardamomum* (Rwanda) and *Musa acuminata* (Thailand) (Giraldo & Crous 2019). Very few genera of *Plectosphaerellaceae* were discovered with the sexual morph (*i.e.*, *Furcasterigmium* and *Plectosphaerella*) (Giraldo & Crous 2019, Monkai et al. 2020). We could not locate any *Musicillium* collection with its' sexual structures to compare with our specimen. However, our new collection is morphologically similar to the sexual morph of *Furcasterigmium furcatum* (host: *Magnolia liliifera*, Thailand) in Monkai et al. (2020) by having papillate ascomata and hyaline smooth-walled ascospores with a gelatinous sheath. In the multi-gene phylogeny of LSU, ITS, *rpb*2 and *tef*1 sequence data (Fig. 46), MFLUCC 23-0309 grouped with *M. elettariae* with ML=99%, BI=1.00 statistical support. We report the sexual morph of *M. elettariae* for the first time as a saprobe on *Musa* sp. in Thailand. In addition, this is the first discovery of the sexual morph of *Musicillium*.

Musicillium tropicale Giraldo López & Crous, Stud. Mycol. 92: 268 (2018) Fig. 45

Index Fungorum number: IF828066; Facesoffungi number: FoF15208

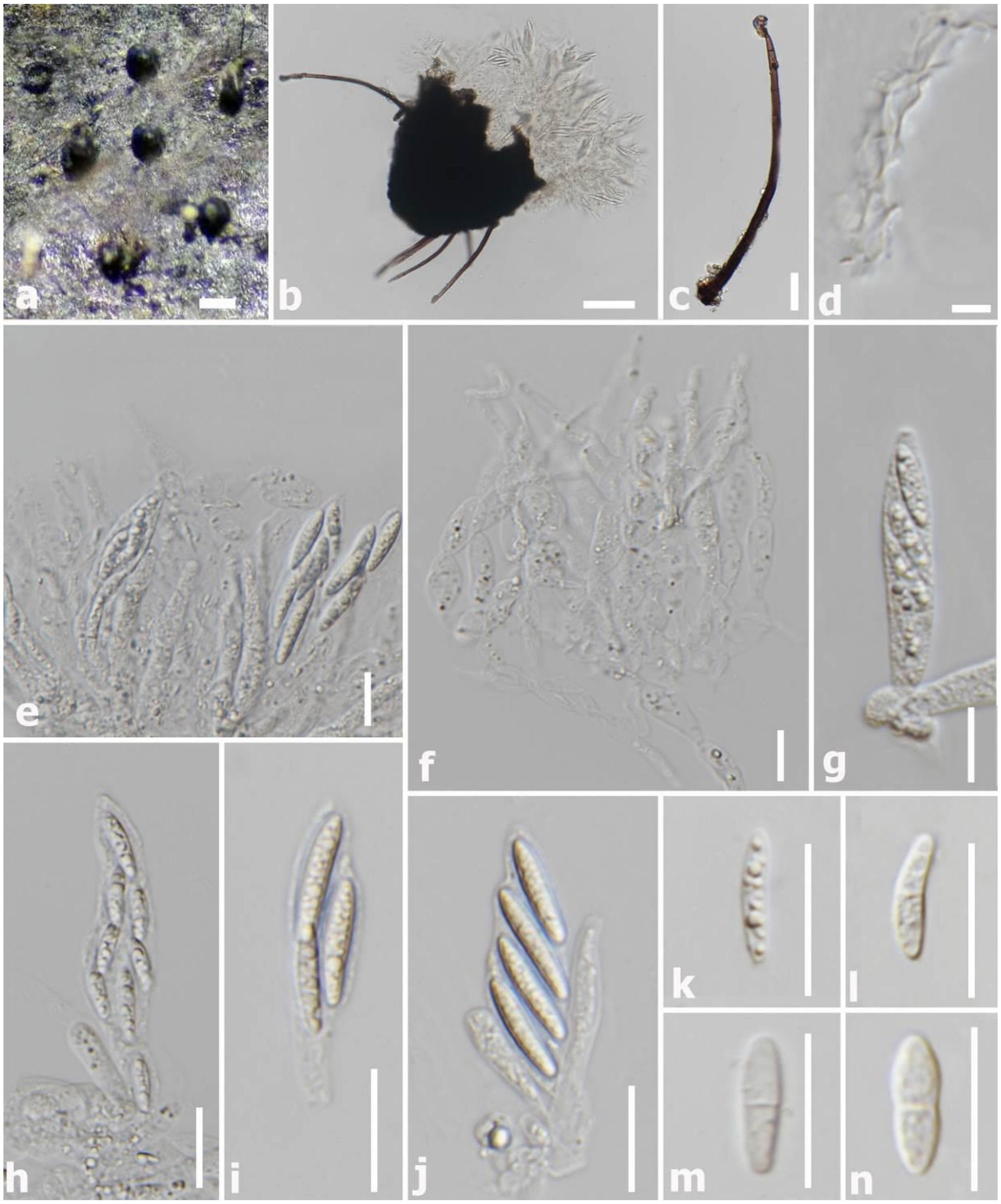

Figure 44 – *Musicillium elettariae* (MFLU 23-0311). a Ascomata on the host surface. b Ascomata in a wet mount slide by squashing. c Setae. d Peridium. e Paraphyses and asci. f Paraphyses. g–j Asci. k–n Ascospores. Scale bars: a = 75 µm, b = 50 µm, c = 25 µm, e–n = 10 µm, d = 5 µm.

Endophytic on a fresh leaf of *Musa* sp. Colonies on PDA at 25 °C, pinkish white after five days with entire margin, reaching 50 mm after 14 days, gradually becoming brownish black or mouse gray when conidiophores arise from the mycelium, flat, dusty, reverse grey, Sexual morph: Not observed. Asexual morph: Hyphomycetous. *Mycelium* branched, septate, smooth, hyaline at immaturity, gradually turning pale brown and then to dark brown at maturity, hyphae thin-walled at immature stage, notably thick-walled at maturity, 2–4 µm ($\bar{x}$ = 3.5 µm, n = 20) wide. *Conidiophores* 200–700 × 3–5 µm ($\bar{x}$ = 400 × 3.5 µm, n = 30), arising from the hyphae, erect, simple or branched or verticillate towards at the apex, bearing up to 5–8 whorls of 3–6 phialides, brown at the base and gradually becoming paler towards the apex and hyaline at terminal whorls, smooth or rough-walled, with thicker cell walls than the hyaline hyphae. *Phialides* 15–25 × 1–3 µm ($\bar{x}$ = 1.6 µm, n = 30), solitary, tapering towards the end, pointed towards multiple directions, in whorls of 3–6, terminal, lateral, hyaline, thick- or smooth-walled. *Conidia* 2–5 × 1–2 µm ($\bar{x}$ = 4 µm, n = 30), ellipsoidal, 1-celled, hyaline, thick-walled, arranged in slimy glistering heads at the apex of the conidiophore.

Material examined – Thailand, Chiang Rai Province, Doi Thung, associated with a fresh leaf of *Musa* sp., 20 September 2021, B. C. Samarakoon, BNE17 (MFLU 23-0312), culture MFLUCC 23-0232.

GenBank numbers – LSU= PP800444, ITS = PP809115, *rpb*2 = PP840928, *tef*1 = PP866300.

Notes – *Musicillium tropicale* was described from a leaf of *Musa* sp. from Bangladesh by Giraldo & Crous (2019). Additional collections have been discovered from Brazil (on rotten banana), Cuba (from leaf litter), Czech Republic (on *Lactarius* sp. mushrooms) and Zambia (from *Musa* sp.) with a notable tropical distribution (Giraldo & Crous 2019). Phylogenetic analysis analyses of combined LSU, ITS, *rpb*2 and *tef*1 gene regions further validate the taxonomic position of our collection (MFLUCC 23-0232) along with *M. tropicale* with ML = 99%, BI = 1.00 statistical support. We report the first occurrence of *M. tropicale* from Southeast Asia and Thailand as an endophyte from the leaves of *Musa* spp.

Hypocreales Lindau

Hyde et al. (2020) accepted 303 genera and 14 families in *Hypocreales* based on morphology and molecular data. The order represents virulent plant and human pathogens (e.g., *Fusarium*), biocontrol agents (e.g., entomopathogenic fungi - *Trichoderma*), and producers of bio-active compounds (e.g., antibiotics – *Tolypocladium*), and potent mycotoxins (e.g., *Gibberella*) (Rossman 1996).

Stachybotryaceae L. Lombard & Crous

Crous et al. (2014) erected *Stachybotryaceae* (*Hypocreales*) to accommodate *Myrothecium*, *Peethambara* and *Stachybotrys*. Lombard et al. (2016) provided a well-resolved phylogenetic backbone to *Stachybotryaceae* using LSU, ITS, *rpb*2, *cmdA*, *tef*1 and *tub*2 sequence data, and accepted 33 genera in *Stachybotryaceae*. Furthermore, *Melanopsamma*, *Memnoniella* and *Virgatospora* were resurrected in *Stachybotryaceae* (Lombard et al. 2016).

Albifimbria L. Lombard & Crous, Persoonia 36: 177 (2016)

Lombard et al. (2016) introduced *Albifimbria* to accommodate the ex-neotype strain of *A. verrucaria* (= *Myrothecium verrucaria*). In addition, *A. lateralis*, *A. terrestris* and *A. viridis* were introduced as novel taxa in the same study. *Albifimbria* is characterized by the production of verrucose setae around the sporodochia (Lombard et al. 2016). In addition, some *Albifimbria* species bear funnel-shaped mucoid appendages in conidia (Lombard et al. 2016). Currently, four species of *Albifimbria* are documented in Index Fungorum (2024). *Albifimbria* was then discovered to exhibit all three lifestyles, occurring as an endophyte (Li et al. 2020c, Wei et al. 2022), a plant pathogen (Rehman et al. 2021, Sharma et al. 2021) and a saprobe (Tulloch 1972), with a cosmopolitan distribution. The genus has mostly been discovered with plant hosts in terrestrial habitats (Tulloch 1972). However, it has also been reported from human blood (Masetti et al. 2020) and soil (Gurung et al. 2019). In this study, we present the endophytic occurrence of *A. verrucaria* associated with *Musa* leaves in Thailand. Samarakoon et al. (2022b) has reported the saprobic lifestyles of *A. verrucaria* on *Musa* sp. in Thailand.

Albifimbria verrucaria (Alb. & Schwein.) L. Lombard & Crous, Persoonia 36: 177 (2016) Fig. 47

Index Fungorum Number: IF815927; Facesoffungi number: FoF04192

Endophytic on symptomless leaves of *Musa* sp. *Colonies* on PDA at 25 °C in light, reaching 55 cm in 10 days, initially white filamentous margin, becoming dense and white, raised with a cottony appearance, and sometimes radially striated at maturity. *Mycelium* 1–3.5 µm ($\bar{x}$ = 2.75 µm) wide, hyaline, superficial, composed of septate, branched, smooth or rough, thin-walled hyphae. Sexual morph: Not observed. Asexual morph: *Sporodochia* 15–20 × 1–3 µm ($\bar{x}$ = 17 × 2.4 µm, n = 20), visible after 2 weeks of incubation at 25 °C in light conditions, black, cup-shaped or disc-shaped, scattered or gregarious, irregular outline, conidial mass flattened. *Stroma* rarely developed, usually comprising a thin layer of isodiametric hyaline cells. *Setae* not observed. *Marginal hyphae* 3–4 µm ($\bar{x}$ = 3.3 µm, n = 20) diam., hyaline, verrucose, septate, flexous, un-branched or frequently branched, septa unclear. *Conidiophores* 50–60 × 2–3 µm ($\bar{x}$ = 42.2 × 2.6 µm, n = 30), erect from the stromatic layer, hyaline, smooth, dichotomously or unevenly branched, often 2–4 branches at each level, ultimate branches becoming *phialides*, producing numerous conidia. *Phialides* 10–15 × 1–2 µm ($\bar{x}$ = 13 × 1.7 µm, n = 30) hyaline, rough-surfaced, tightly packed as a dense parallel layer, cylindrical, truncate base, rounded or acute apex, *Conidia* 6–8 × 3–4 µm ($\bar{x}$ = 7 × 3.5 µm, n = 30), smooth, hyaline, broadly fusiform, acute apex, truncate or acute base.

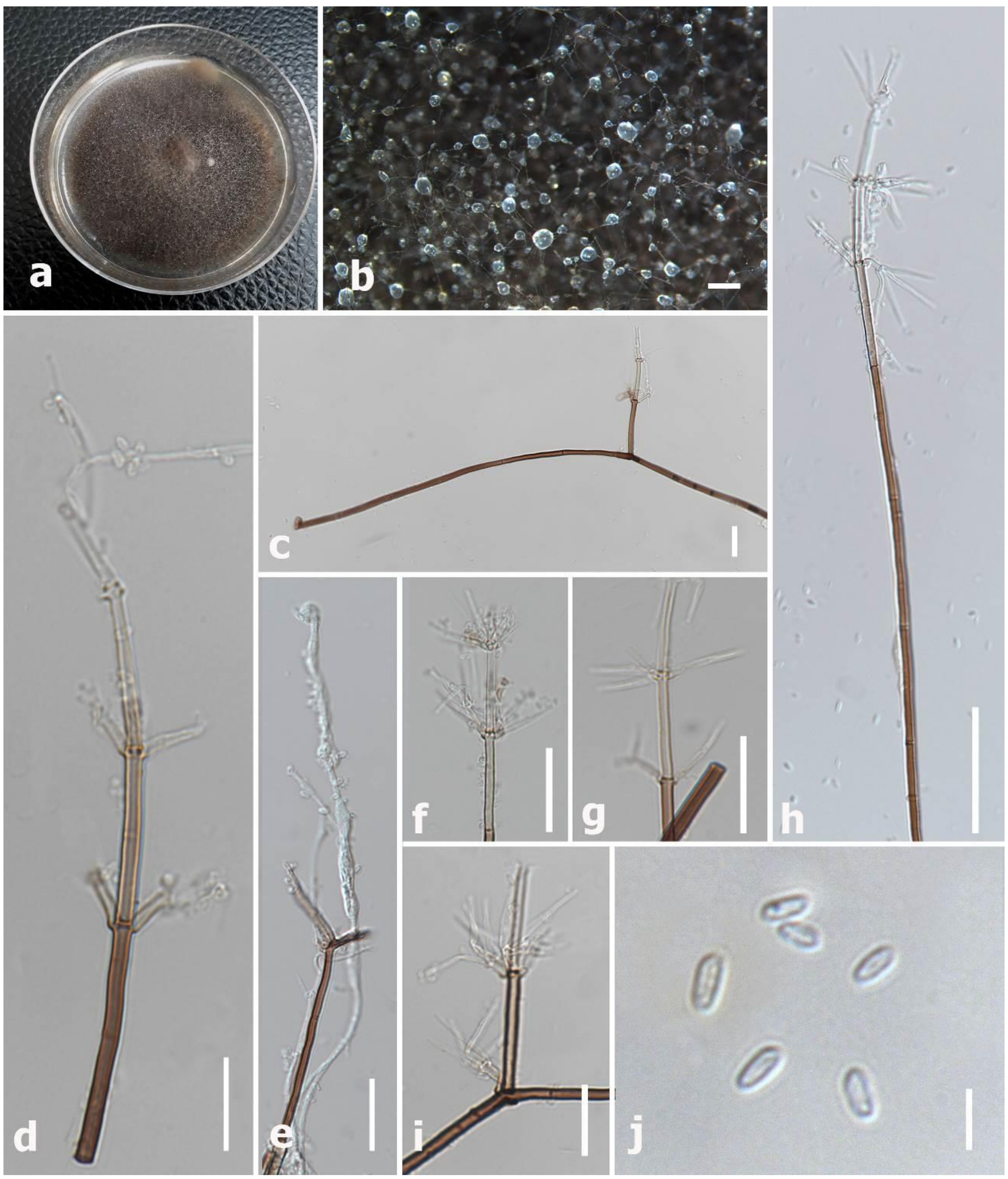

Figure 45 – *Musicillium tropicale* (MFLU 23-0312). a Sporulation of colonies on PDA after 28 days. b Conidiophores bear slimy conidial masses with glistering transparent heads. c, d, f–i Conidiophores,

phialides and conidia. e Mycelium at an immature stage with conidiophores. j Conidia. Scale bars: b = 150 µm, d, f = 50 µm, d, g, h = 15 µm, c, e, f, i = 10 µm, j = 2 µm.

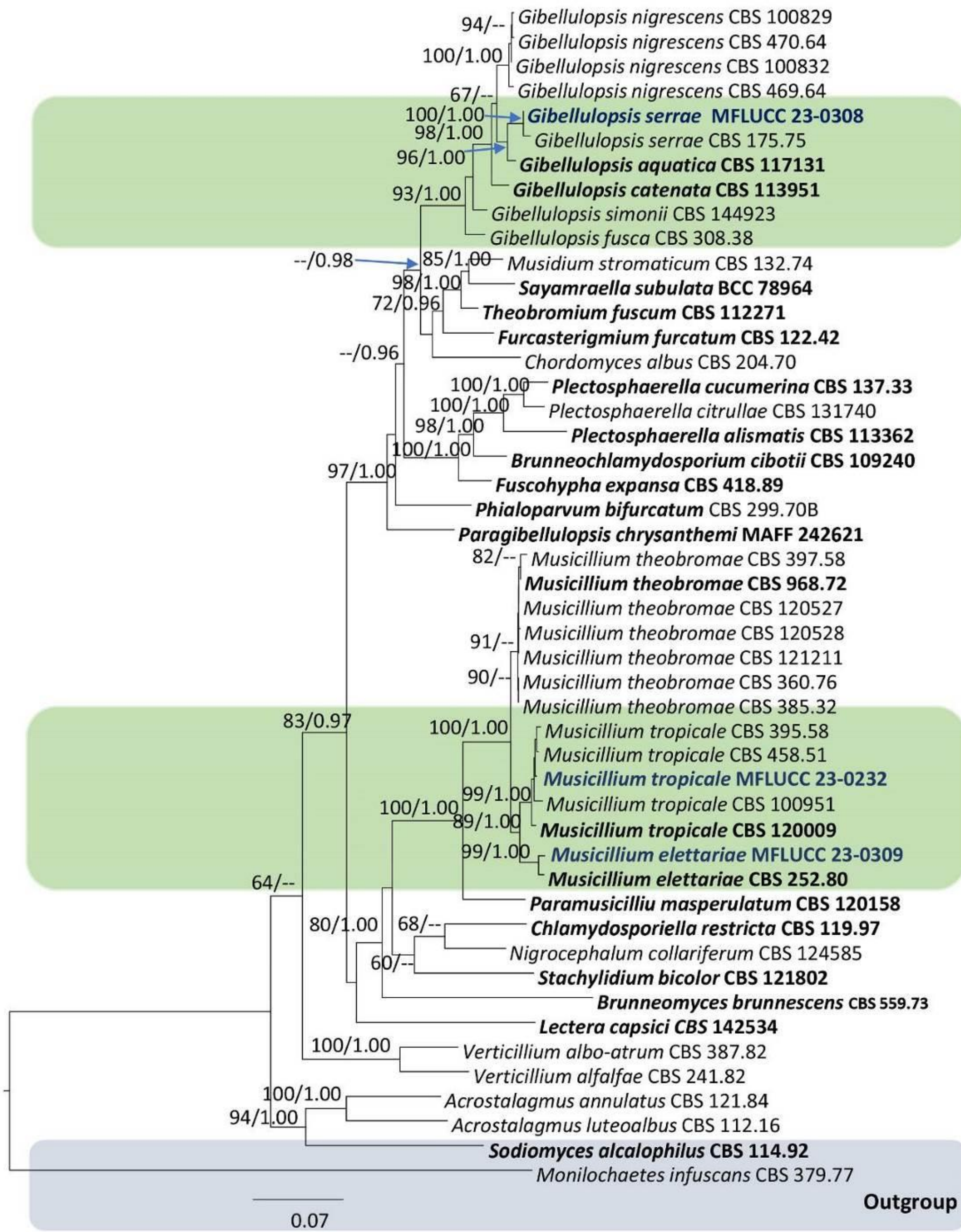

Figure 46 – Maximum likelihood tree revealed by RAxML analyses of ITS, LSU, *rpb*2 and *tef*1 sequence data of the taxa of *Plectosphaerellaceae*, showing the phylogenetic positions of *Gibellulopsis serrae* (MFLUCC 23-0308), *Musicillium elettariae* (MFLUCC 23-0309) and *M. tropicale* (MFLUCC 23-0232). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Monilochaetes infuscans* (CBS 379.77) and *Sodiomyces alcalophilus* (CBS 114.92). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best scoring RAxML tree is similar to the topology in the multi-gene analyses of Giraldo & Crous (2019) with a final ML optimization likelihood value of -21444.55. The matrix had 1043 distinct alignment patterns with

8.72% of undetermined characters or gaps. Estimated base frequencies: A = 0.221439, C = 0.300766, G = 0.280953, T = 0.196843; substitution rates AC = 0.672105, AG = 1.790444, AT = 1.142433, CG = 0.616659, CT = 5.116980, GT = 1.0000; proportion of invariable sites I = 0.483521; gamma distribution shape parameter (α) = 0.529479.

Material examined – Thailand, Phayao, Chun, associated with fresh leaves of *Musa* sp., 12 November 2018, Binu Samarakoon, 29-2 (MFLU 23-0313), culture MFLUCC 23-0252. Doi Thung, on decaying leaves of *Musa* sp., 17 July 2021, Binu Samarakoon, MN25 (MFLU 23-0314), culture, MFLUCC 23-0251.

GenBank numbers – MFLUCC 23-0251: ITS = PP809119, *tub*2 = PP840933, MFLUCC 23-0252: ITS = PP809120, *tub*2 = PP840934.

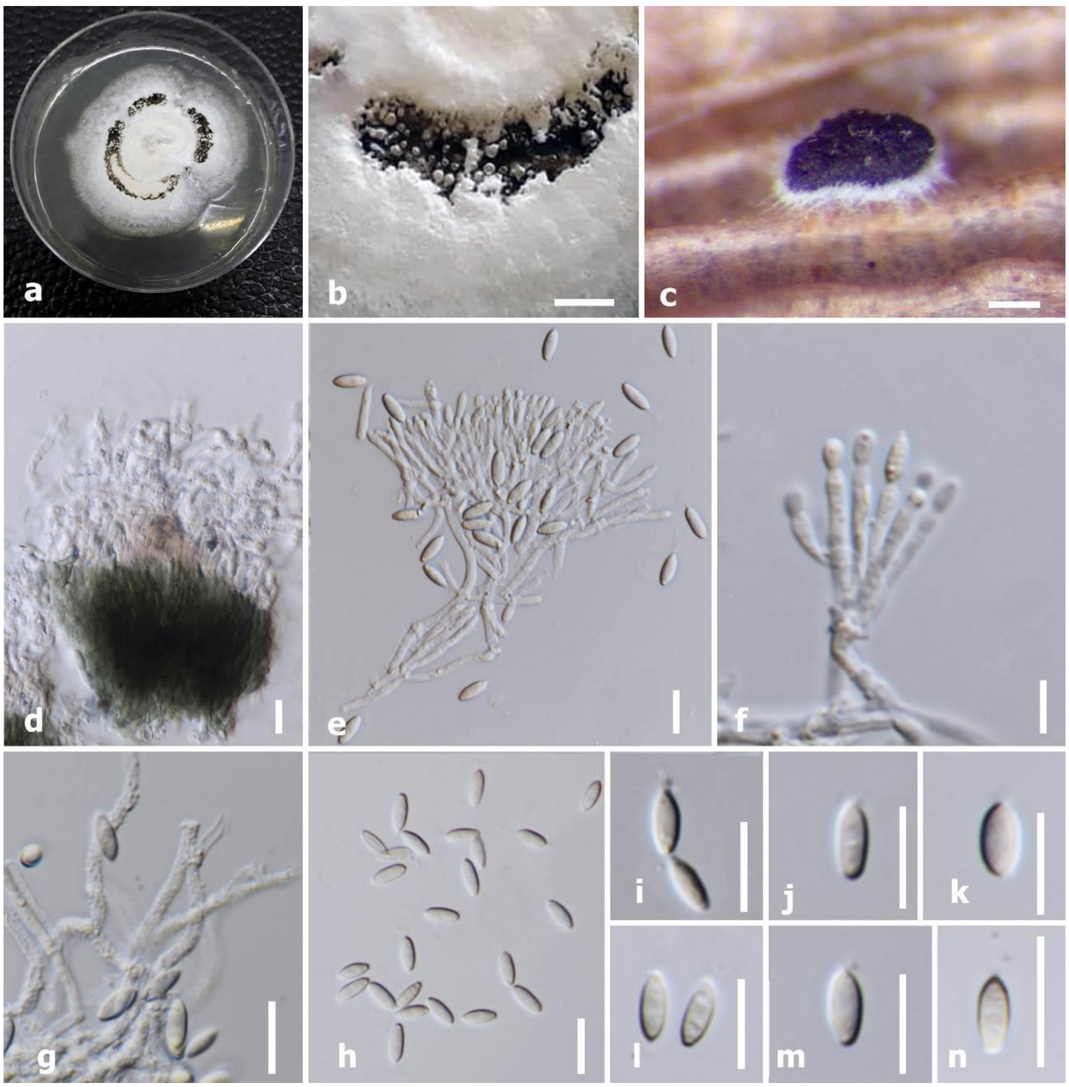

Figure 47 – *Albifimbria verrucaria* (MFLU 23-0313 and MFLU 23-0314). a Colony on PDA after 3 weeks (endophytic isolate), b sporodochia on PDA. c Sporodochia on the natural host as a saprobic lifestyle (MFLU 23-0314). d Squash mount of sporodochia of the saprobic collection. e Conidiophores and phialides in the endophytic isolate. f Phialides of the endophytic isolate. g Marginal hyphae of the endophytic isolate. h–n Conidia of the endophytic isolate. Scale bars b = 500 μm, c = 100 μm, d–n = 10 μm.

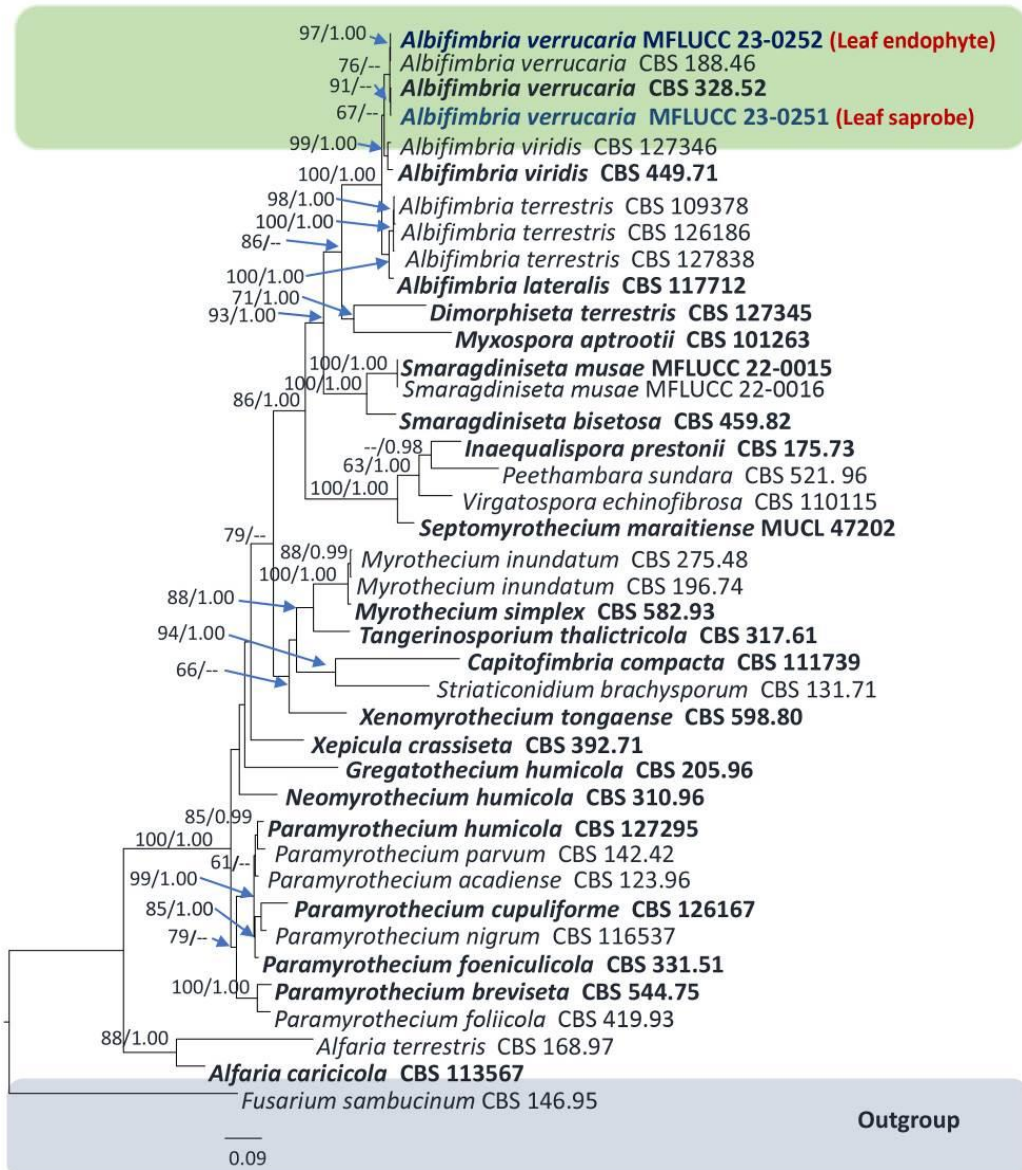

Figure 48 – Maximum likelihood tree revealed by RAxML analyses of ITS, *rpb*2 and *tub*2 sequence data of some selected taxa of *Stachybotryaceae*, showing the phylogenetic position of *Albifimbria verrucaria* (MFLUCC 23-0251 and MFLUCC 23-0252). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Fusarium sambucinum* (CBS 146.95). The strains generated in this study is shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Samarakoon et al. (2022), with a final ML optimization likelihood value of -21198.25. The matrix had 1136 distinct alignment patterns with 22.43% of undetermined characters or gaps. Estimated base frequencies were: A = 0.238643, C = 0.285036, G = 0.252324, T = 0.223997; substitution rates AC = 1.303599, AG = 4.629277, AT = 1.307380, CG = 1.154940, CT = 7.516785, GT = 1.0000; proportion of invariable sites I = 0.469052; gamma distribution shape parameter (α) = 0.949178.

Notes – In the multi-gene phylogeny of ITS, *tub*2 and *rpb*2 sequence data, the endophytic strain (MFLUCC 23-0252) and the saprobic strain (MFLUCC 23-0251) grouped with *Albifimbria verrucaria*

(CBS 188.46) with strong statistical support (Fig. 48). This finding potentially supports the hypothesis of lifestyle transition of fungi in the same host or different hosts. However, we could not accurately identify the species epithet of the host *Musa* plants of both the endophytic and saprobic isolates to further validate our finding. Herein, we present the endophytic occurrence of *Albifimbria verrucaria* associated with *Musa* leaves in Thailand, providing evidence for the different lifestyles of this species.

Stachybotrys Corda, Icon. fung. (Prague) 1: 21 (1837)

Stachybotrys was erected by Corda (1837) based on *S. atra* in *Hypocreales incertae sedis*. Lombard et al. (2016) transferred many previously accepted *Stachybotrys* to *Brevistachys*, *Globobotrys*, *Sirastachys* and *Striatibotrys*. There are 89 morphological species based on the Index Fungorum (2024), and 31 species have been reported with confirmed molecular data. The asexual morph of *Stachybotrys* has branched or unbranched conidiophores, bearing terminal, phialidic conidiogenous cells with unicellular conidia, in chains or slimy masses (Wang et al. 2015, Lombard et al. 2016). *Stachybotrys* is common in soil, marine habitats, air and plant materials rich with cellulose (*i.e.*, hay, straw, cereal grains, and decaying plant debris) (Wang et al. 2015, Lombard et al. 2016). In addition, *Stachybotrys* species have been detected on damp paper, cotton, linen and cellulose-based building materials (*i.e.*, drywalls, wall papers in indoor environments), water-damaged indoor buildings and air ducts (Wang et al. 2015). Most taxa of *Stachybotrys* are cellulytic saprobes (Samarakoon et al. 2021a) and have also been discovered as plant pathogens (Wang et al. 2015, Lombard et al. 2016) and endophytes (Zhang et al. 2019).

Stachybotrys subcylindrosporus C. Y. Jie, Y.L. Jiang, D. W. Li, McKenzie & Yong Wang bis, Mycol. Progr. 12: 695 (2013) Fig. 49

Index Fungorum number: IF821464; Facesoffungi number: FoF15209

Saprobic on a dead leaf of *Musa* sp. Sexual morph: Not observed. Asexual morph*:* Hyphomycetous. Minute colonies observed as black shiny glistering heads on the top of the hyaline stipe. *Mycelium* often indiscernible, sometimes superficial, hyaline and septate. *Conidiophores* 45–58 × 3.5–4.5 µm ($\bar{x}$ = 55 × 3.7 µm, n = 40), macronematous, mononematous, erect, simple, straight, slightly curved, unbranched, smooth or rough, thick-walled, septate, hyaline, cylindrical, with a notable, thick-walled globular base 2.5–4 × 3–3.5 µm ($\bar{x}$ = 2.8 × 3.2 µm, n = 40) and a rounded apex, bearing a crown of phialides at the terminal end. *Conidiogenous cells* 5–6 × 2–3 µm ($\bar{x}$ = 5.4 × 2.6 µm, n = 40), phialidic, discrete, determinate, obovoid, the outer ones somewhat curved, smooth or slightly rough, hyaline. *Conidia* 10–12.5 × 4–5.5 µm ($\bar{x}$ = 11 × 4.8 µm, n = 40), unicellular, simple, truncated or rounded at base, curved, hyaline at immature stage, greenish brown or olivaceous brown at maturity, verruculose, often present 1 to 3 distinct oil drops at imature stage, some conidia are collarette and notably thick-walled at maturity.

Culture characteristics – Conidia germinating on PDA after 48 hours. Slow germination of conidia observed and colonies reaching 10–15 mm diameter after 7 days in the light conditions at 25 °C, flat, sparse, brownish or dirty pink, immersed lobate margin; reverse, blackish pink.

Material examined – Thailand, Chiang Rai, Nang Lae, Rattana Dormitory area, on dead petiole of *Musa* sp., 12 January 2019, Binu Samarakoon, BNS 202 (MFLU 23-0315), culture MFLUCC 23-0250.

GenBank numbers – ITS = PP809118, *tub*2 = PP840932.

Notes – Photita et al. (2003a, b) and Farr & Rossman (2024) documented *Stachybotrys dichroa*, *S. nephrospora*, *S. ruwenzoriensis* and *S. theobromae* on *Musa* sp. as saprobes from Thailand. Photita et al. (2003a) introduced *S. suthepensis* as a saprobe on dead petioles of wild *Musa* sp. from Doi Suthep Pui National Park in Thailand. In addition, *S. chartarum* (Somalia) (Castellani & Ciferri 1937), *S. globosa* (India) (Misra & Srivastava 1982), *S. kampalensis* (Japan) (Kobayashi 2007) were found on *Musa* spp. Samarakoon et al. (2021a) introduced *S. musae* as a saprobe of *Musa* sp. from China. In the multi-gene phylogenetic analyses of *cmdA*, ITS and *tub*2 data (Fig. 50), our strain (MFLUCC 23-0250) clustered with the type strain of *S. subcylindrosporus* (HGUP 0201) with ML = 100%, BI = 1.00 statistical support. *Stachybotrys subcylindrosporus* was previously reported from the soil of Hainan Province in China (Jie et al. 2013) and Thailand (Yasanthika et al. 2020). This is the first report of the species from a terrestrial plant host and the first occurrence on *Musa* sp. with the saprobic lifestyle in Thailand.

Magnaporthales Thongk., Vijaykr. & K.D. Hyde

Magnaporthales represents necrotrophic or hemibiotrophic parasites infecting *Poaceae* and *Cyperaceae* (*e.g.*, *Pyricularia oryzae*, rice blast; *Gaeumannomyces graminis*, black spot on the sheath of rice) (Cannon 1994, Thongkantha et al. 2009, Zhang et al. 2016). The order accommodates more than 200 species, the majority of which are pathogens on domesticated and wild monocotyledons (such as rice, maize, wheat, bluegrass, and *Digitaria*). According to Hyde et al. (2020), *Magnaporthales* are divided into five families and 36 genera (*Ceratosphaeriaceae*, *Magnaporthaceae*, *Ophioceraceae*, *Pseudohalonectriaceae*, and *Pyriculariaceae*). In addition, the order comprises several saprobic (*Ophioceraceae*) and endophytic (*Pyriculariaceae* and *Magnaporthaceae*) lifestyles (Feng et al. 2021, Jiang et al. 2021a).

Figure 49 – *Stachybotrys subcylindrosporus* (MFLU 23-0315). a–c Conidiophores and conidia with glistering heads on *Musa* sp. d, e Conidiophores and phialides. g Phialides, f, h Conidia. Scale bars: a = 100 µm, b–h = 10 µm.

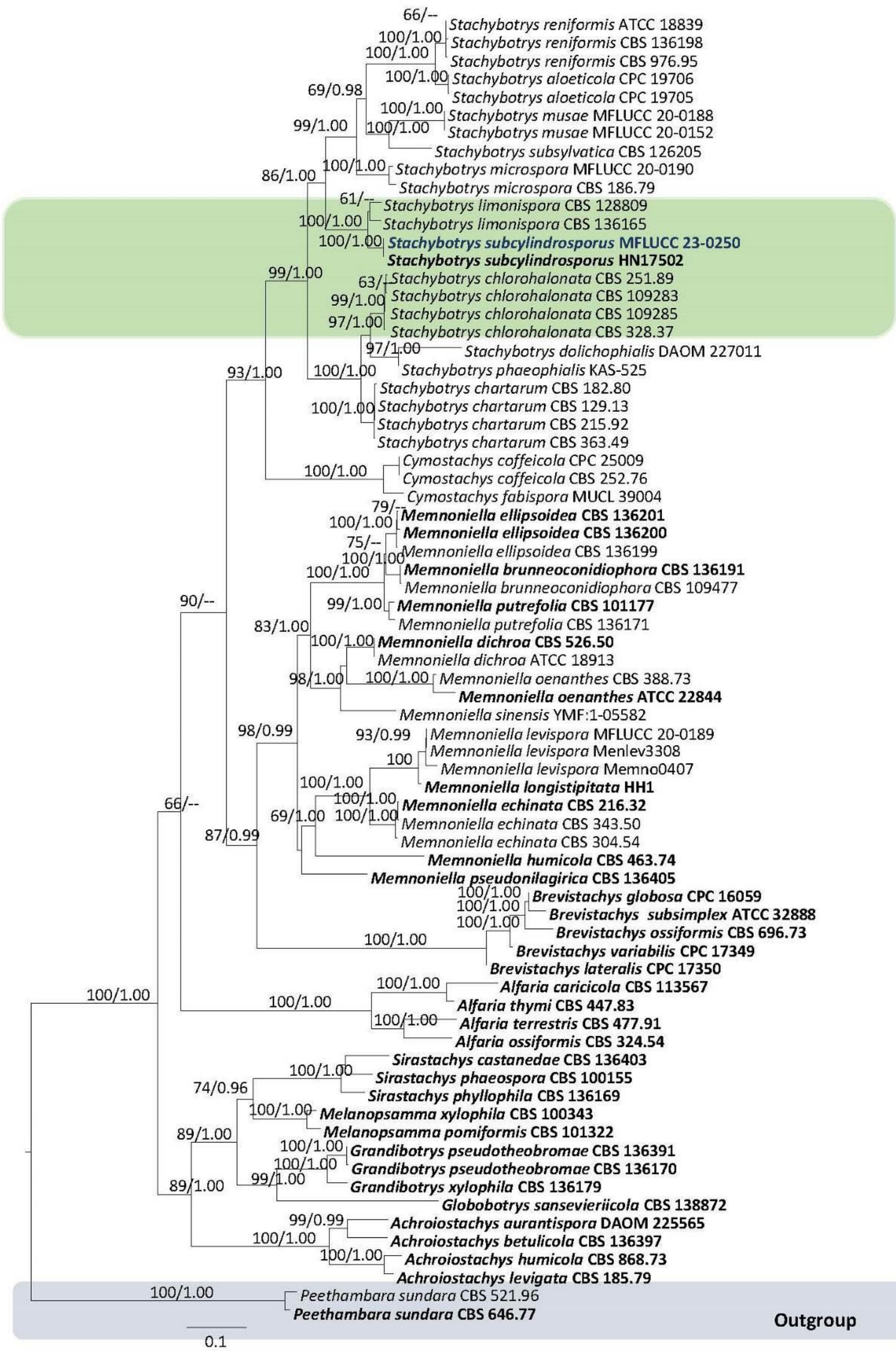

Figure 50 – Maximum likelihood tree revealed by RAxML analyses of *cmdA*, ITS, *rpb*2 and *tub*2 sequence data of the taxa of *Stachybotryaceae*, showing the phylogenetic position of *Stachybotrys subcylindrosporus* (MFLUCC 23-0250). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Peethambara sundara* (CBS 646.77 and CBS 521.96). Strains generated in this study are shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Samarakoon et al. (2021b), with a final ML

optimization likelihood value of -38148.82. The matrix had 1825 distinct alignment patterns with 36.33% of undetermined characters or gaps. Estimated base frequencies were: A = 0.229415, C = 0.291707, G = 0.254592, T = 0.224286; substitution rates AC = 1.242597, AG = 3.568858, AT = 1.347632, CG = 0.930914, CT = 5.410150, GT = 1.0000; proportion of invariable sites I = 0.405906; gamma distribution shape parameter (α) = 1.144059.

Pyriculariaceae Klaubauf, M.-H. Lebrun & Crous

Pyriculariaceae was introduced by Klaubauf et al. (2014) as a sister family to *Ophioceraceae*, which includes species with pathogenic, endophytic and saprobic lifemodes, frequently associated with monocotyledons (Hyde et al. 2020a). The sexual morph of the taxa is found as immersed, perithecial ascomata. The asexual form is hyphomycetous and produces hyaline or brown, pyriform to elliptical, transversely septate conidia (Klaubauf et al. 2014). Notably, the family hosts destructive plant pathogens that cause major diseases in agricultural crops such as rice, wheat and millet (Klaubauf et al. 2014).

Neocordana Hern. -Restr. & Crous, Phytotaxa 205: 233 (2015)

Neocordana is a plant pathogenic and saprobic genus that causes leaf spots on *Musa* spp. The genus has been discovered in all the banana growing countries worldwide (Hernández-Restrepo et al. 2015, Samarakoon et al. 2019a). In addition, *N. versicolor* was found in the leaf spots of *Canna denudata* (Soares et al. 2005). The damage caused by the genus is severe and results in huge defoliation of *Musa* sp. (Hernández-Restrepo et al. 2015). *Neocordana* species were taxonomically classified under *Cordana* and were synonymized by Hernández-Restrepo et al. (2015) with the aid of molecular phylogeny. There are seven species epithets of *Neocordana* recoded in Index Fungorum (2024). The leaf spots caused by *Neocordana* species on *Musa* display characteristic concentric ring patterns at the gray centers of the necrotic areas. The lesions are big, pale brown, and fusiform to oval in shape (Jones 2018). A brilliant yellow chlorotic lesion surrounds the diseased area, dividing it from the rest of the healthy leaf tissue (Jones 2018).

Neocordana musae (Zimm.) Hern. -Restr. & Crous, Phytotaxa 205: 234 (2015) Fig. 51

Index Fungorum Number: IF811106; Faces of Fungi Number: FoF15210

Associated with the necrotic area of the leaf spots on *Musa* sp. The necrotic patch is oval to diamond-shaped and pale brown with a yellow border, appear on the upper leaf side. Often spots merge, affecting large areas of the leaf, which turns brown and dries out. Sexual morph: Not observed. Asexual morph: *Mycelium* superficial or often immersed. *Hyphae* often smooth- walled, hyaline to pale brown. *Conidiophores* 70–180 × 3–7 µm ($\bar{x}$ = 119 × 5.8 µm, n = 40), often brown or sometimes sub-hyaline or pale brown, smooth to rough, thin- to thick-walled, straight, or often clavate, septate, notably constricted at septa, spherical, globose or lobed base and rounded or bilobed apex, simple or aggregated, arising from the center of the necrotic patch or from the superficial mycelium. *Conidiogenous cells* often terminal or intercalary, denticulate; denticles up to 1 µm long. *Conidia* 12–20 × 6–10 µm ($\bar{x}$ = 16.6 × 8.5 µm, n = 40) hyaline or sub- hyaline or pale brown, obclavate, pyriform, mostly obovoid, 1-septate, thick-walled, flat with rounded apex and pointed acute base.

Culture characteristics – Colonies on PDA reaching 45 mm diameter after 2 weeks at 25 °C, elevated, cottony, profuse, aerial, white with mouse grey zones or concentric rings, showing the sporulation, pale luteous exudates present, margin diffuse. Reverse black center, with concentric rings, luteous to ochreous.

Material examined – Thailand, Chiang Rai Province, Mae Fah Luang, on a fresh leaf spot on *Musa* sp. (*Musaceae*), 20 June 2021, B. C. Samarakoon, MN004 (MFLU23-0316), culture MFLUCC 23-0248.

GenBank numbers – LSU = PP800447, ITS = PP809121.

Notes – *Neocordana musae* (= *Cordana musae*) was discovered in several geographical localities in the tropics, causing leaf spots on *Musa* spp. (Hernández-Restrepo et al. 2015, Adikaram & Yakandawala 2020). In the multi-gene phylogeny of combined LSU and ITS sequence data (Fig. 52), our strain MFLUCC 23-0248 grouped with *N. musae* with strong statistical support (ML = 94%, PP = 0.99). Giatgong (1980) reported *N. musae* from Thailand as a pathogen on *Musa* leaves. Our isolate has been collected on a necrotic patch of a *Musa* leaf, and the pathogenicity of the strain should be confirmed on healthy *Musa* leaves in future studies. *Neocordana musae* has also been documented as an endophyte on *Musa* leaves in Thailand (Photita et al. 2001b). In addition, Photita et al. (2004) documented that *N. musae* had been latent in the host tissue for a long time before causing the leaf spots. We confirm the occurrence of *N. musae*, which has been associated with leaf spots of *Musa* from Thailand, using morphology and molecular data.

Savoryellomycetidae Hongsanan, K.D. Hyde & Maharachch.

Pleurotheciales Réblová & Seifert

Pleurotheciales was introduced by Réblová et al. (2016) to accommodate *Pleurotheciaceae*. The order was previously placed in *Hypocreomycetidae* by Réblová et al. (2016). Hongsanan et al. (2017) have revealed that *Pleurotheciales* group together with *Conioscyphales*, *Fuscosporellales* and *Savoryellales* as a monophyletic lineage in *Sordariomycetes*. Hence, *Savoryellomycetidae* was introduced, with *Pleurotheciales* transferred therein based on molecular data. Currently, the order only accommodates *Pleurotheciaceae* with 13 genera (Hyde et al. 2020a).

Pleurotheciaceae Réblová & Seifert

Pleurotheciaceae was introduced by Réblová et al. (2016) and is typified by *Pleurothecium*. There are 13 genera accepted in the family, *i.e.*, *Adelosphaeria*, *Anapleurothecium*, *Coleodictyospora*, *Dematipyriforma*, *Helicoascotaiwania*, *Melanotrigonum*, *Neomonodictys*, *Phaeoisaria*, *Phragmocephala*, *Pleurotheciella*, *Pleurothecium*, *Saprodesmium*, and *Sterigmatobotrys* (Hyde et al. 2020a, Bao et al. 2022, Wijayawardene et al. 2022). The sexual morph of the family is characterized by dark, papillate, perithecial ascomata, and unitunicate asci with a non-amyloid apical annulus. The ascospores are hyaline, septate, and fusiform to ellipsoidal (Réblová et al. 2016, Hyde et al. 2020a). The asexual morphs of the family have different morphologies including acrodictys-like, helicoön-like, monodictys-like and dactylaria-like structures (Hyde & Yanna 2002, Luo et al. 2018, Réblová et al. 2020). Taxa in the family are located with a global distribution from aquatic and terrestrial habitats (Sun et al. 2017, Luo et al. 2018, Réblová et al. 2020).

Dematipyriforma L. Yan Sun, Hai Y. Li, Xiang Sun & L. D. Guo, Cryptog. Mycol. 38: 345 (2017)

Dematipyriforma was described using *D. aquilaria*, which was found as a wood-inhabited endophyte of *Aquilaria crassna* (Sun et al. 2017). Previously, the genus was established in *Savoryellales* (Sun et al. 2017). Dong et al. (2020) transferred the genus to *Pleurotheciales* as a sister clade of *Rhexoacrodictys* and *Saprodesmium*. *Dematipyriforma* has similar phenotypic characters to *Neomonodictys* in *Pleurotheciales*. Bao et al. (2022) introduced *D. muriformis* from aquatic habitats in Thailand as the second species in the genus. In addition, Bao et al. (2022) have synonymized *Rhexoacrodictys nigrospora* as *D. nigrospora* based on morphology and phylogeny. The genus has a saprotrophic and endophytic lifestyle and there has been no report of the genus associated with *Musa* sp. In this study, we introduce *Dematipyriforma terrestris* as a novel saprobic species isolated from the dead leaves of *Musa* sp. from Thailand.

Dematipyriforma terrestris Samarakoon, K.D. Hyde & Chomnunti, sp. nov. Fig. 53

Index fungorum number: IF901531; Facesoffungi number: FoF 15211

Holotype – MFLU 23-0317
Etymology – “terrestris” is the Latin word for “terrestrial”.

Figure 51 – *Neocordana musae* (MFLU 23-0316). a, b Diseased banana plants in the field with diamond shapedleaf spots. c, e Lower and upper surface of the leaf showing the eye-shaped leaf spot with distinct chlorotic, necrotic area and the healthy green area. d Conidiophores on the necrotic patch. f–o Conidiophores. p–u Conidia. Scale bars: c = 10 cm, d = 0.2 mm, e = 10 µm, g = 100 µm, f–p = 20 µm, q–w = 5 µm.

Saprobic on dead leaf petiole of *Musa* sp. Sexual morph: Not observed. Asexual morph: *Colonies* on host scattered or clustered, black, shining, superficial. *Mycelium* superficial or immersed, composed of sub-hyaline, pale brown or brown, branched, septate, thick-walled, hyphae. *Conidiophores* (8–) 10–13 (–15) × 1–3 μm ($\bar{x}$ = 12.5 × 2 μm, n = 20), micronematous to semi-macronematous, mononematous, unbranched, hyaline, 2–3-septate, smooth, spherical, obovate or cylindrical, acute apex and truncate base, straight to flexuous, sometimes thread-like near the apex. *Conidiogenous cells* 5–6.5 × 2–3 μm ($\bar{x}$ = 5.5 × 2.5 μm, n = 20), phialidic, monoblastic, integrated,

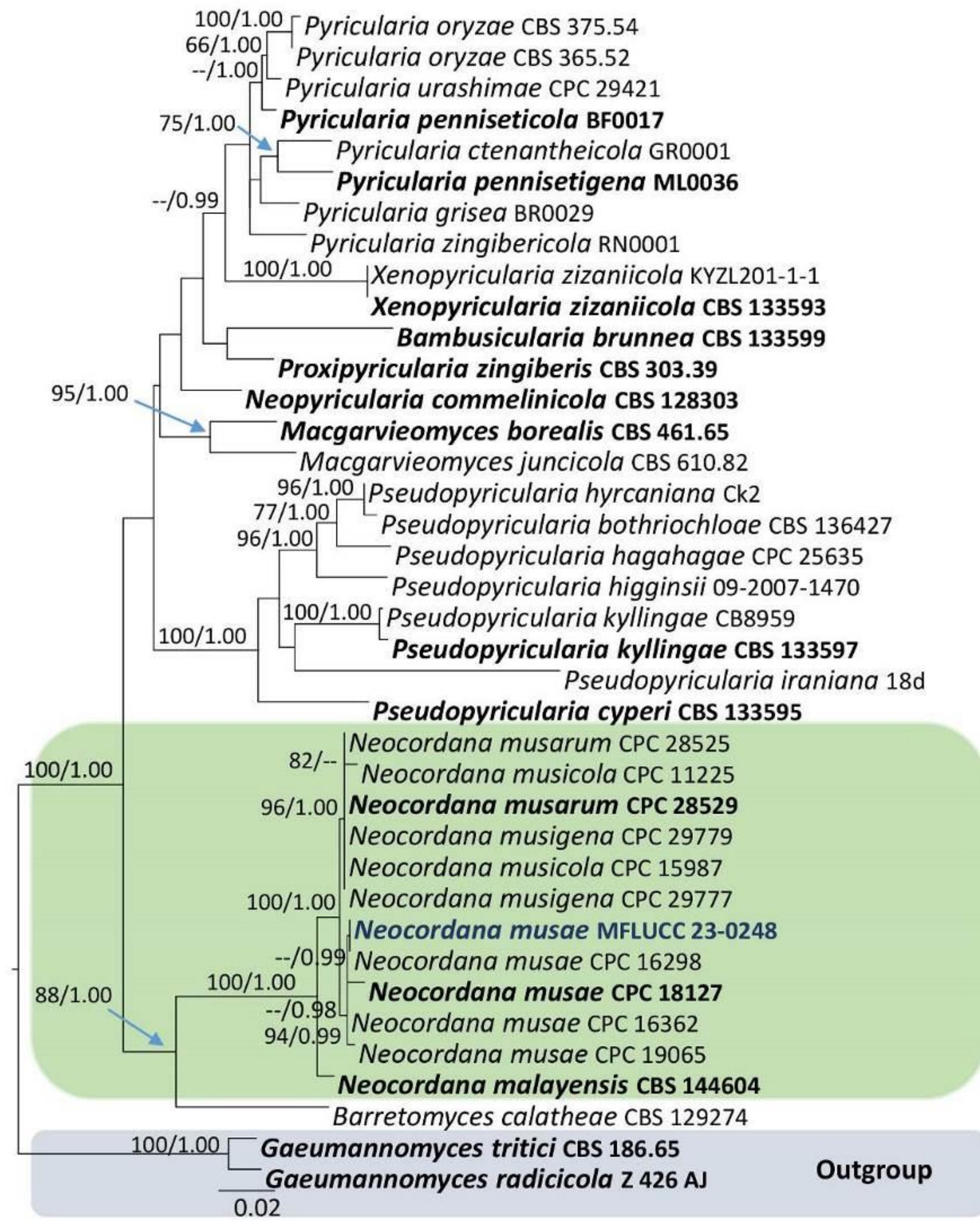

Figure 52 – Maximum likelihood tree revealed by RAxML analyses of LSU and ITS sequence data of the taxa of *Pyriculariaceae*, showing the phylogenetic position of *Neocordana musae* (MFLUCC 23-0248). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Gaeumannomyces radicicola* (Z426AJ) and *G. tritici* (CBS186.65) (*Magnaporthaceae*). The strain generated in this study is shown in blue, with ex-type strains in bold. The scale bar represents the expected number of nucleotide substitutions per site. The best-scoring

RAxML tree is similar to the topology in phylogenetic analyses of Samarakoon et al. (2019a) with a final ML optimization likelihood value of -5306.72. The matrix had 290 distinct alignment patterns with 12.19% of undetermined characters or gaps. Estimated base frequencies were: A = 0.246689, C = 0.254154, G = 0.290611, T = 0.208546; substitution rates AC = 2.493747, AG = 1.897709, AT = 2.441802, CG = 1.316588, CT = 5.826130, GT = 1.0000; proportion of invariable sites I = 0.590961; gamma distribution shape parameter (α) = 0.481082.

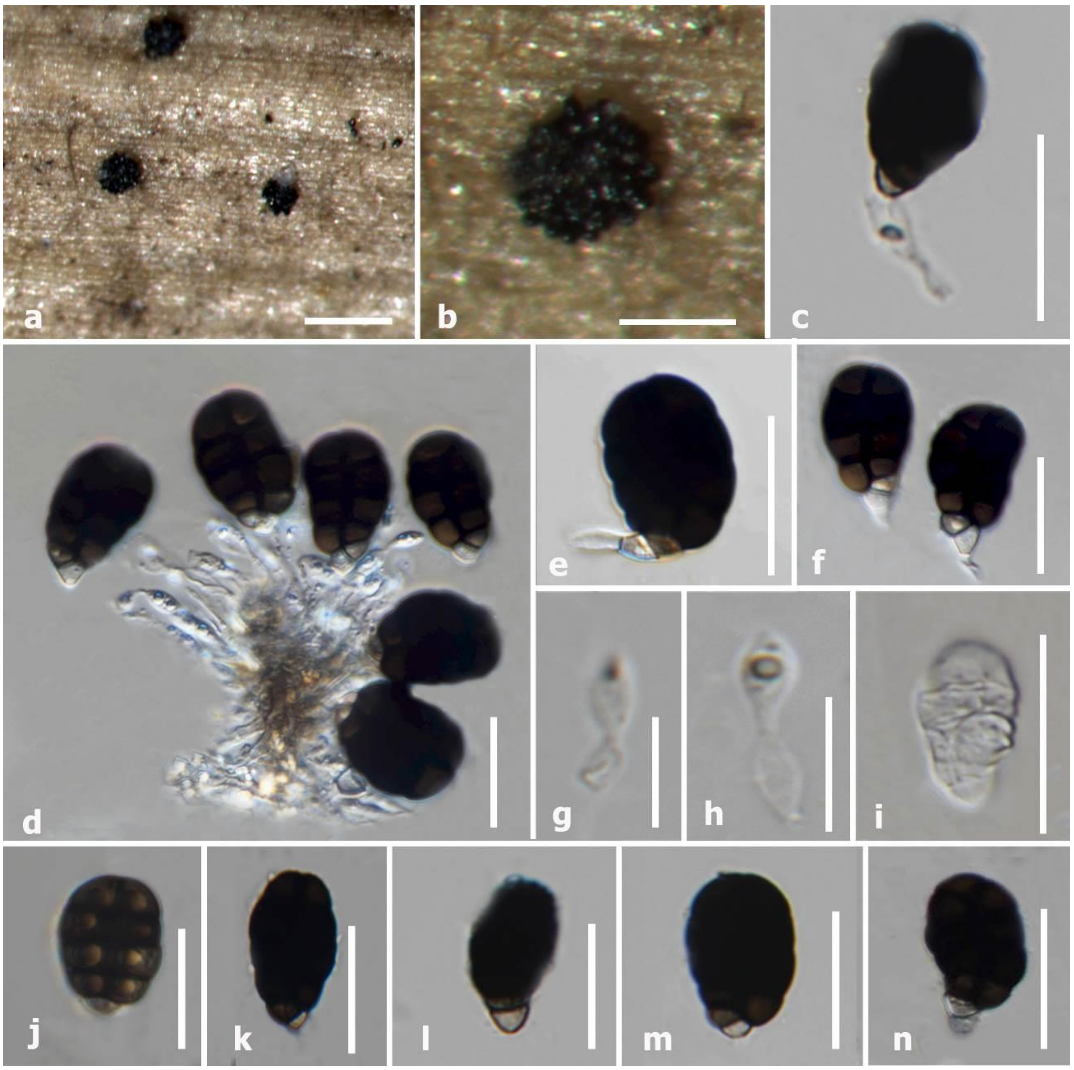

Figure 53 – *Dematipyriforma terrestris* (MFLU 23-0317, Holotype). a, b Colonies on *Musa* leaf petiole. c–f Conidial attachments. g–h Conidiogenesis. j–n Conidia. Scale bars: a = 500µm, b = 100µm, e, f, j–n = 25µm, c, i = 20µm, g, h = 10µm.

terminal, determinate, hyaline to sub-hyaline, smooth to slightly rough surfaced, thin- to slightly thick-walled. *Conidia* (24–) 26–29 × 14–19 µm ($\overline{x}$ = 27 × 16 µm, n = 40), acrogenous, solitary, smooth, thick-walled, golden brown to dark blackish brown, the single or two significant basal cells are notably hyaline or sub-hyaline and sometimes guttulate. Mature conidia are thick-walled and darker or black at the walls, obovate, muriform, rounded at apex, notabally pointed at the base, with 3–4 transverse septa, 1 longitudinal septum in all cells, vertical septum not reaching until the basal cells, notably constricted at septa, sometimes geniculate at the lowermost septum. Hyaline or subhyaline at immature stage. Conidial secession rhexolytic.

Culture characteristics – Colonies on PDA reaching 1 mm diam. after 3 weeks in the light condition at 25 °C, black, flat, sparse, mycelium completely immersed, radially striated, or wrinkled. Sporulation was observed after 2 months under light conditions.

Material examined – Thailand, Chiang Rai Province, Doi Chang, Doi Chang Temple Park, on dead leaf petiole of *Musa* sp., 24 June 2021, B. C. Samarakoon, MN28B (MFLU 23-0317, holotype), culture MFLUCC 23-0233.

GenBank numbers – LSU = OQ981958, ITS = OQ981957, *tef*1 = OR193000.

Notes – In the multi-gene phylogeny of LSU, ITS and *tef*1 sequence data (Fig. 54), *Dematipyriforma terrestris* claded sister to *D. muriformis* (MFLUCC 21-0097) with ML = 100%, BI = 1.00 statistical support. *Dematipyriforma terrestris* has 2.27% (LSU = 19/837), 2.63% (ITS = 14/531) and (*tef*1 = 47/791) base pair differences with *D. muriformis* (MFLUCC 21-0097) without gaps. Our new species differs from *D. muriformis* by having geniculate, obovate conidia with a rounded apex and a notable pointed base. The conidia of *D. muriformis* are ellipsoidal and often have a comparatively rounded base. The conidial cells of the new species are more constricted at the septa when compared with *D. muriformis.* The two basal cells of *D. terrestris* are pale brown, sub-hyaline, or hyaline as compared to the median and apical cells, and have guttules when compared to *D. muriformis* (Bao et al. 2022). The conidiophores of our new taxon are wider and shorter as compared to those of *D. muriformis* (8–15 × 1–3 μm *vs.* 10–26.5 × 2–3 μm), but this feature is highly variable with the environmental adaptations. The phialidic conidiogenesis was observed in *D. terrestris* as a specific feature that was not found in *D. muriformis*. *Dematipyriforma aquilaria* differs from *D. terrestris* in having pyriform or elongated pyriform conidia (Sun et al. 2017). *Dematipyriforma nigrospora* differs from our new species by having globose to subglobose conidia where the septa have faded upon maturity (Boonmee et al. 2021). Based on morphology and phylogeny, *Dematipyriforma terrestris* is herein introduced as a novel hyphomycetous taxon from *Musa* sp. in Thailand. This is the first report of the genus on *Musaceae*.

DISCUSSION

In the Asian region, various studies (Brown et al. 1998, Lumyong et al. 2003, Kobayashi 2007, Wikee et al. 2013a, b, Zakaria & Aziz 2018) have investigated the systematics of fungi associated with different parts of *Musa*. Our research explores endophytic, pathogenic, and saprophytic lifestyles of fungi in both wild and cultivated *Musa* in Thailand, utilizing morpho-molecular taxonomy (Samarakoon et al. 2019 a, b, 2020 a, b, 2021 a, b, 2022). This marks the sixth installment in our manuscript series, presenting 30 species from 23 fungal families in *Dothideomycetes*, *Eurotiomycetes*, and *Sordariomycetes* (Fig. 55). Illustrated species mainly associate with various leaf parts, exhibiting associated, endophytic, and saprobic lifestyles (Figs 56, 57).

Seven endophytic fungal species were identified based on morphology and DNA sequence data: *Albifimbria verrucaria*, *Corynespora torulosa*, *Lasiodiplodia theobromae*, *Musicillium tropicale*, *Pseudophaeocytostroma sacchari*, *Pseudopithomyces chartarum*, *Setoarthopyrenia chromolaenae*. This study reports the first endophytic occurrences of *Albifimbria*, *Musicillium*, *Pseudophaeocytostroma*, *Pseudopithomyces*, and *Setoarthopyrenia* associated with *Musa* hosts in Thailand. Some endophytic taxa found (*C. torulosa* and *L. theobromae*) are also known as pathogens on *Musa* leaves and fruits (Meredith 1961, Almenares & Pérez-Vicente 2019). There is a potential for these endophytic fungi to shift to a pathogenic lifestyle with environmental triggers and plant physiological changes (Photita et al. 2004, Promputtha et al. 2007, 2010, Bhunjun et al. 2024).

The study discovered taxonomically understudied genera of hyphomycetous saprobes, such as *Bahusandhika*, *Dictyoarthrinium*, and *Spegazzinia*. Additionally, it investigated the taxonomy and phylogeny of *Stachybotrys*, commonly known as "black mold" often found on dead *Musa* leaves. Bioactive secondary metabolites of many saprobic taxa were not investigated. However, the cultures of fungi capable of producing secondary metabolites are available at MFLUCC for future studies.

Notably, some saprobic species were discovered in *Musa* hosts that had previously been found in soil (*Albifimbria verrucaria*, *Gibellulopsis serrae*, and *Stachybotrys subcylindrosporus*) (Zare et al. (2007, Giraldo & Crous 2019, Gurung et al. 2019, Yasanthika et al. 2020). *Dematipyriforma* and *Neohelicosporium*, previously reported from aquatic habitats (Lu et al. 2018a, Dong et al. 2020), were also found in terrestrial habitats.

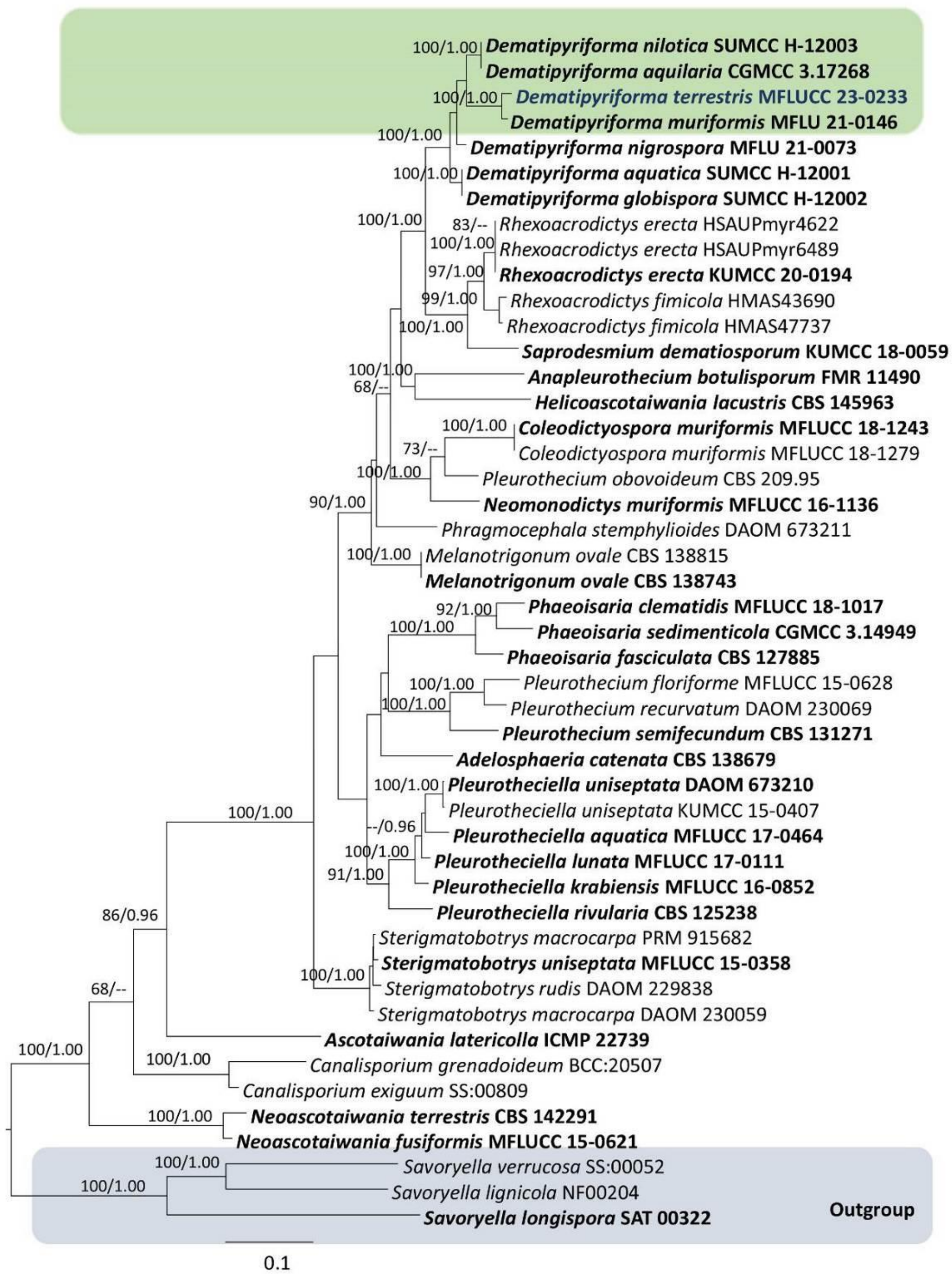

Figure 54 – Maximum likelihood tree revealed by RAxML analyses of LSU, ITS and *tef*1 sequence data of the taxa of *Pleurotheciaceae*, showing the phylogenetic position of (MFLUCC 23-0233). Supports for ML bootstrapping (≥60%) and Bayesian posterior probabilities (≥0.95 PP) are shown. The tree is rooted with *Savoryella lignicola* (NF00204), *S. longispora* (SAT 00322) and *S. verrucosa* (SS 00052). The strain generated in this study is shown in blue, with ex-type strains in bold. The scale bar

represents the expected number of nucleotide substitutions per site. The best-scoring RAxML tree is similar to the topology in Bao et al. (2022), with a final ML optimization likelihood value of -14878.14. The matrix had 902 distinct alignment patterns with 28.36% of undetermined characters or gaps. Estimated base frequencies were: A = 0.226651, C = 0.264299, G = 0.305009, T = 0.204041; substitution rates AC = 1.538253, AG = 2.680462, AT = 2.188316, CG = 1.023165, CT = 8.163266, GT = 1.0000; proportion of invariable sites I = 0.328717; gamma distribution shape parameter (α) = 0.526765.

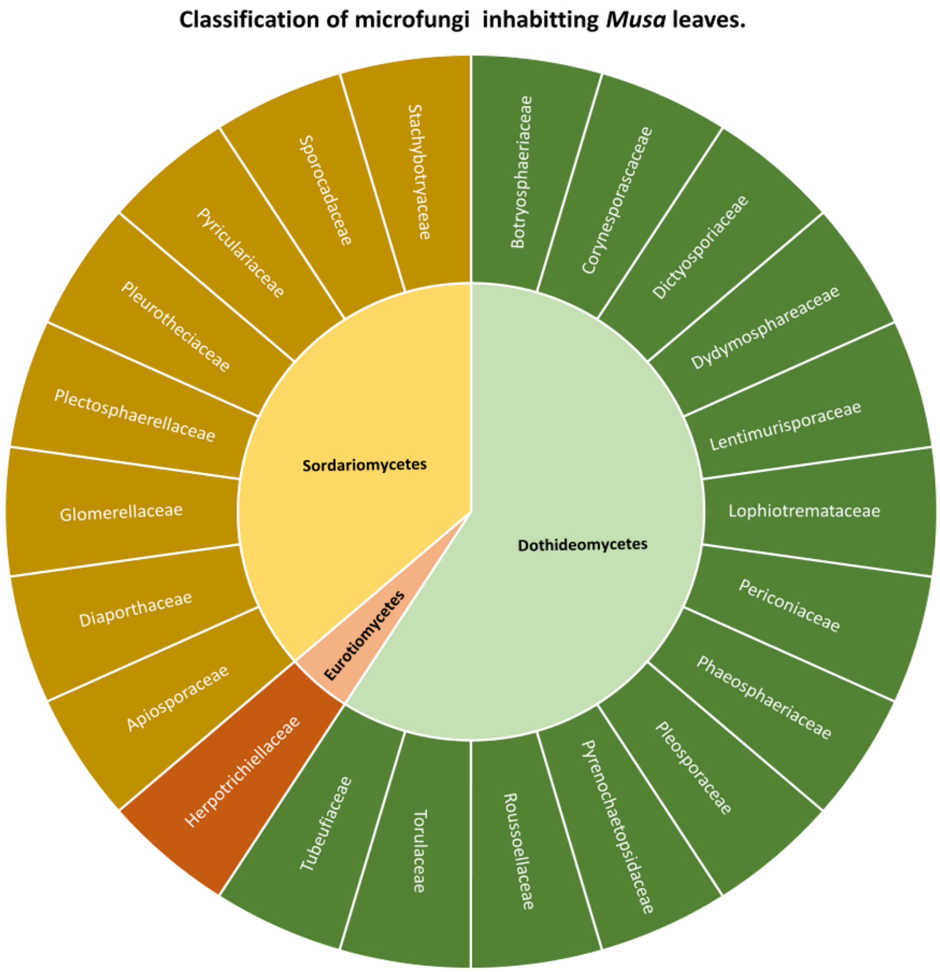

Figure 55 – The familial distribution of selected genera of microfungi presented in this study, which inhabit the leaves of *Musa* in three sub-classes (*Dothideomycetes*, *Eurotiomycetes*, and *Sordariomycetes*).

Many studies highlight fungi exhibiting multifunctional lifestyles associated with host plants (Delaye et al. 2013, Barelli et al. 2016, Rai & Agarkar 2016, Ribeiro et al. 2020). Fungal endophytes are predicted to shift to a saprobic lifestyle upon host tissue senescence (Promputtha et al. 2007, 2010). Four taxa (*Albifimbria verrucaria*, *Corynespora torulosa*, *Lasiodiplodia theobromae*, and *Pseudopithomyces chartarum*) exhibiting endophytic and saprobic lifemodes are reported in this study. The phenotypic characters and DNA sequence data of these saprobes and endophytes are similar and occur on the same *Musa* host. This suggests that the latter endophytic fungi can become saprobes in response to host senescence (Promputtha et al. 2007). Further studies should evaluate these assumptions, such as the production patterns of degrading enzymes upon leaf death (Promputtha et al.

2007, 2010, Delaye et al. 2013, Atsatt & Whiteside 2014, Barelli et al. 2016, Rai & Agarkar 2016, Bhunjun et al. 2024).

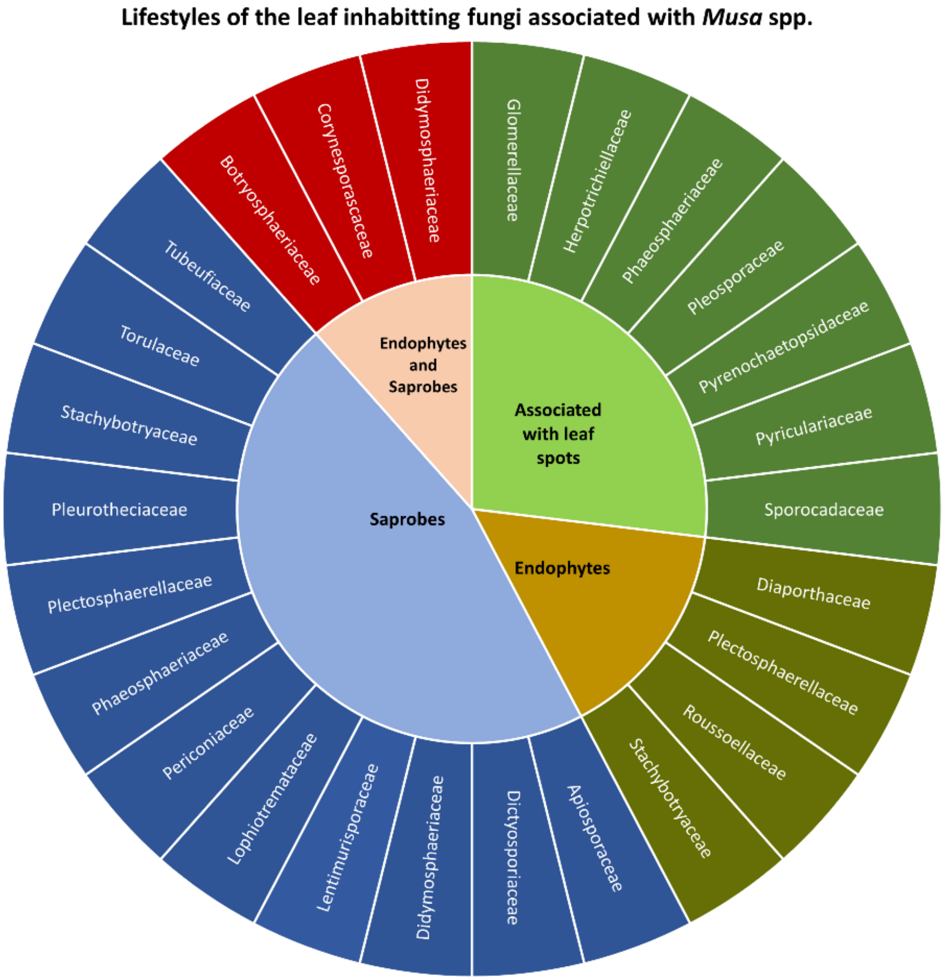

Figure 56 – The familial positions of micro-fungi exhibit different lifestyles associated with *Musa* leaves. The fungal families encountered, showing endophytic and saprobic lifestyles, are indicated in red columns.

Eight fungal taxa are reported on the leaf spots of fresh *Musa* spp. (*i.e.*, *Colletotrichum siamense*, *Curvularia umbiliciformis*, *Phaeosphaeria oryzae*, *Pyrenochaetopsis musae*, *Metulocladosporiella musae*, *Neocordana musae*, *Neopestalotiopsis clavispora*, *N. musae*). Among them, *Colletotrichum siamense*, *Metulocladosporiella musae*, *Neocordana musae*, and *Neopestalotiopsis clavispora* were reported as pathogens causing leaf spots on many agricultural crops, including *Musa* (Crous et al. 2006, Hernandez-Restrepo et al. 2015, Kumar et al. 2017, Qi et al. 2023). *Pyrenochaetopsis musae* (this study) and *N. musae* (Hyde et al. 2016) are originally described on *Musa* spp. The pathogenicity of *Curvularia umbiliciformis* and *Phaeosphaeria oryzae* has not been evaluated. This is the first occurrence where those species are associated with leaf spots in monocots. There is a high probability that the latter four taxa might have caused the leaf spots in *Musa* spp. However, the pathogenicity should be confirmed in future studies using *in vitro* and *in vivo* experiments.

The fungal taxa in *Botryosphaeriaceae* (*Lasiodiplodia theobromae*), *Didymosphaeraceae* (*Dictyoarthrinium musae, D. thailandica*, *Pseudopithomyces chartarum*, *Spegazzinia musae*), *Periconiaceae* (*Periconia echinochloae*), *Plectosphaerellaceae* (*Gibellulopsis serrae*, *Musicillium* *elettariae*, *M. tropicale*), *Stachybotryaceae* (*Albifimbria verrucaria*, *Stachybotrys subcylindrosporus*), and *Torulaceae* (*Torula mackenziei*) were often encountered on both the leaf blade and the midrib during the study (Fig. 56). Taxa of *Phaeosphaeriaceae* were found on leaf spots (*Phaeosphaeria oryzae*) and hard leaf petioles. We also noticed that the taxa of *Pyriculariaceae* (*Neocordana musae*) and *Herpotrichiellaceae* (*Metulocladosporiella musae*) are only restricted to leaf spots in all of our collections (data not shown). However, we could not conclude any noticeable distribution pattern of fungi associated with different tissue segments.

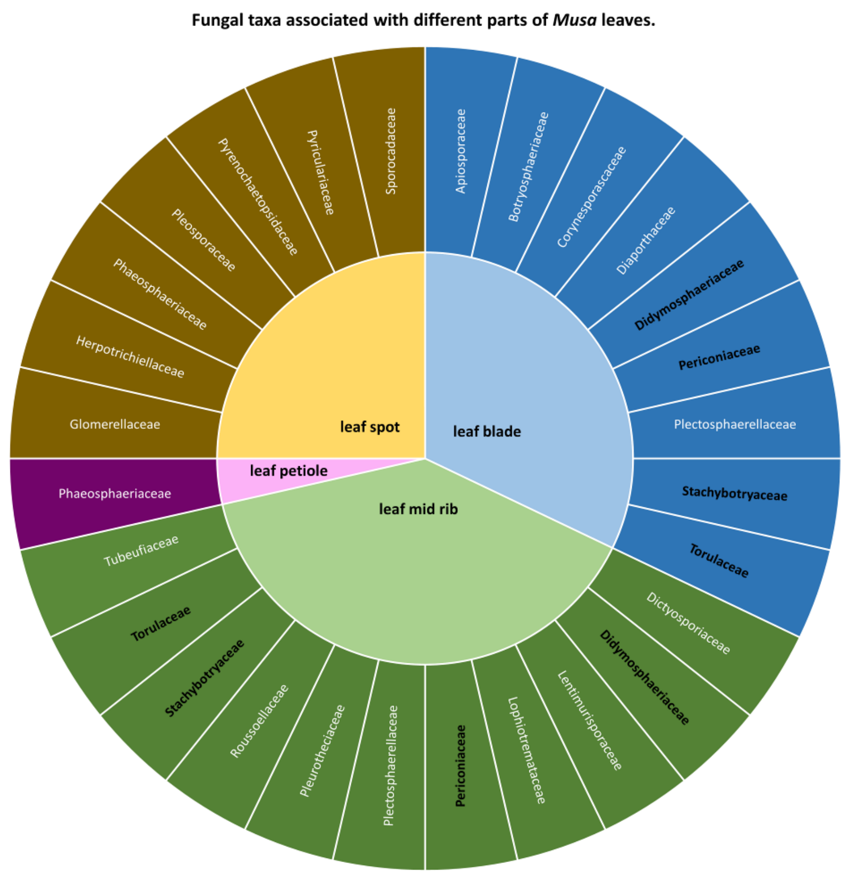

Figure 57 – The familial positions of micro-fungi inhabiting different tissue parts of *Musa* leaves. The common fungal families encountered in the midrib and the leaf blade are in bold black.

The microfungi that inhabit *Musa* leaves are a diverse group, and rarely exhibit host-specificity. We have noted that the morphology of fungal structures has a significant deviation when they grow in artificial cultures compared to the natural substrate. Care should be taken for the accurate identification of the latter taxa and when delineating species based on morphological dimensions and shapes. We recommend using PDA, MEA, and WA (at 16 °C to 25 °C) to prepare single spore isolations and generate pure cultures. However, the most efficient culture media to obtain fruiting structures on the colony are OMA and PDA for the fungi associated with *Musa* tissues.

As an important highlight, it is recommended to observe the fresh or dead leaf specimens as soon as possible (around 24 to 72 hours) after they have been collected. This condition mostly applies to the sexual morphs of fungi, as the fruiting structures are minute and fragile. Those can be easily dehydrated in the artificial laboratory conditions and dried off or burst. When observing old leaf specimens (after one to two weeks), we could only locate a restricted number of fungal genera (*i.e.*, *Apiospora*, *Cladosporium*, *Stachybotrys*, and *Torula*). After one month, due to the high moisture of the leaves, the secondary growth of *Penicillium* and *Aspergillus* colonies develops, and the specimens become contaminated. The viability of the sexual spores only lasted for one to two weeks. The germination methods failed afterwards, and it was not possible to obtain pure cultures.

During the isolation of endophytes, the fast-growing cultures (*i.e.*, *Colletotrichum* and *Neopestalotiopsis*) lost viability after two to three months. Then the secondary growth of *Fusarium* or *Penicillium* is visible in the colonies as a contamination. Therefore, quick laboratory procedures for morphological observation should be conducted before the invasion of secondary contaminants. We could recover the pure cultures of saprobic fungi even after one year of storage at 7 °C and also from the PDA cubes stored in sterilized distilled water (16°C to 25°C). In addition, DNA was recovered from the PDA cubes of fungal cultures immersed in glycerol. The dead leaf parts, fresh leaves and the leaf spots host a lot of fungal contaminants, such as *Fusarium* and *Cladosporium* spores. When isolating fungi from reproductive structures using the single-spore isolation method or tissue isolation (followed by surface sterilization), it is crucial to take additional precautions to prevent contamination. These measures are essential to maintaining the purity of isolated cultures throughout the isolation process.

Worldwide checklist of fungi associated with *Musa*

The present study fills an important gap in the knowledge of *Musa*-associated fungi by compiling an updated and comprehensive checklist. Through a comprehensive review of international literature and databases, we have developed a catalog that refines the taxonomic classification of known fungi. This catalog also outlines their geographical distribution concerning a diverse range of *Musa* species, as summarized in Table 2. Our investigation has revealed a diverse mycobiome, with 760 fungal species associated with *Musa* hosts. These species are categorized into four major phyla: *Ascomycota*, *Basidiomycota*, *Mortierellomycota* and *Mucoromycota*. *Ascomycota*, with 93% of the fungal taxa, emerges as the predominant phylum, suggesting its members have the most significant ecological and potentially pathogenic interactions with *Musa* hosts (Fig. 58). Within *Ascomycota*, *Sordariomycetes* (40.7%) and *Dothideomycetes* (34.6%) are the most represented classes, indicative of their extensive roles in *Musa* ecosystems (Fig. 58). *Eurotiomycetes* (7.6%) and minor fractions from other classes such as *Leotiomycetes* and *Pezizomycetes* also contribute to the ascomycetous diversity. *Basidiomycota*, which accounts for 6% of the fungal taxa, is led by the *Agaricomycetes* class, known for its wood-decaying members, hinting at a saprotrophic lifestyle on *Musa* debris. This is complemented by minor representations from other basidiomycetous classes, which may play roles yet to be fully elucidated in *Musa*-associated fungal ecology. *Mucoromycota*, while less prevalent, represents an important ecological component, with 1% of the fungi reported. The rare incidence of these taxa in *Musa*-related studies may point to a limited but specific ecological niche or a gap in current research efforts. *Mortierellomycota* is the least represented phylum, with only one species reported, opening avenues for further research into its role within the *Musa* biome. The significant majority of *Ascomycota* is a testament to the vast adaptability and ecological versatility of this phylum. The dominance of *Sordariomycetes* and *Dothideomycetes*, many of which are plant pathogens, underscores the importance of continued care in monitoring and managing *Musa* health.

The compilation of reported fungal species encompasses 340 genera across 132 families, highlighting the expansive variety of fungal interactions within *Musa* ecosystems. Remarkably, half of these genera are concentrated within just 11 families, with *Nectriaceae* (14%) and *Mycosphaerellaceae* (8%) at the forefront, followed by other significant contributors such as *Pleosporaceae* (5%), *Aspergillaceae* (4%), *Glomerellaceae* (4%), *Botryosphaeriaceae* (3%), *Phyllostictaceae* (3%), *Sporocadaceae* (3%), *Pyriculariaceae* (2%), *Plectosphaerellaceae* (2%) and *Stachybotryaceae* (2%). This distribution suggests a potential evolutionary or ecological preference that favors these families within *Musa* habitats. The genera *Aspergillus*, *Cladosporium* and *Colletotrichum*, among others, stand out as the most represented, which is a testament to their ecological success and adaptability. Specifically, *Fusarium*, with 8% of encounters, *Colletotrichum* and *Penicillium*, both at 3%, are noteworthy for their prominence and impact. At the species level, the prevalence of *Colletotrichum musae*, *Corynespora torulosa*, *Fusarium fujikuroi*, *Lasiodiplodia theobromae*, *Mycosphaerella musae*, *Neocordana musae*, *Pestalotiopsis leprogena*, *Phyllosticta musarum*, *Pseudocercospora musae* and *Sphaeropsis musarum* reflects their significant roles in *Musa* pathology and their adaptation to the *Musa* phytobiome. *Corynespora torulosa* emerges as the most frequently occurring species, followed closely by *Pestalotiopsis leprogena*, *Neocordana musae* and *Colletotrichum musae*, indicating a widespread presence and perhaps an ecological specialization that merits further investigation. These species, through their interactions with *Musa* plants, can offer insights into the complexities of host-pathogen dynamics and the environmental factors that drive fungal diversity and distribution.

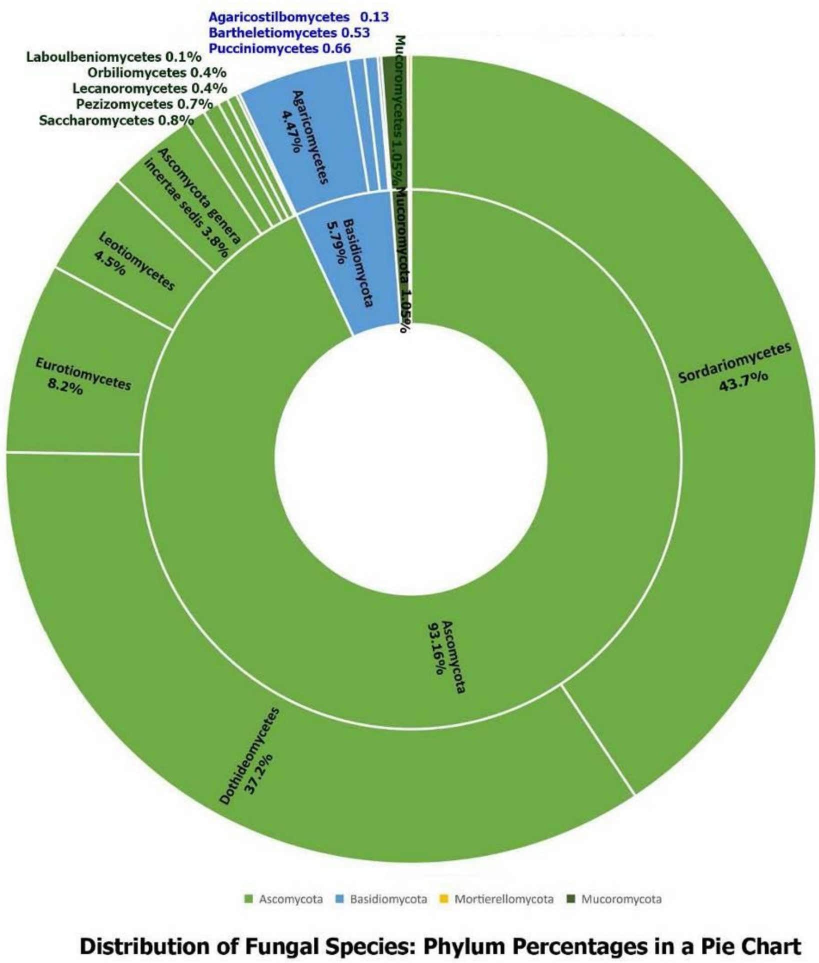

Figure 58 – Percentage occurrence and the distribution of fungi associated with *Musa* hosts worldwide.

Furthermore, the detailed geographical data provided for each fungal species found on *Musa* hosts. This enhances our understanding of the biogeographical patterns of *Musa*-associated fungi. This is crucial for the development of disease management strategies in *Musa* cultivation. These insights into the distribution of these species can inform both conservation efforts and agricultural practices, especially in regions where *Musa* crops are a staple and an economic cornerstone. From a biogeographical perspective, these fungi are not randomly scattered but show a distinct pattern of prevalence across 140 regions. A significant 62% of this diversity is attributed to merely 20 regions, with Thailand leading with 7% of total fungal records. Following Thailand, China and Malaysia, each with a 6% share, underscoring the critical role of the Asia-Pacific region as a hub of fungal biodiversity associated with *Musa*. The representation from Australia, Brazil, the United States, and India further illustrates the global nature of these interactions and the importance of understanding regional differences in fungal communities. The concentrated diversity within certain families and regions invites questions about the evolutionary pressures and ecological factors that shape these communities. It also emphasizes the need for continued exploration of fungal biodiversity in relation to *Musa* species. These efforts are essential for developing sustainable management practices and enhancing the understanding of global fungal ecology.

CONCLUSION

The culmination of this study presents an accurately curated, detailed and digitized list of microfungi associated with *Musa*. It showcases the wide spectrum of endophytic, pathogenic and saprobic lifestyles these fungi exhibit. This is significantly augmenting existing fungal databases, bolstering biodiversity conservation efforts, with a notable impact within Thailand. Through the use of precise fungal nomenclature and comprehensive morphological and phylogenetic analyses, we have laid a robust foundation for future research in taxonomy, plant pathology and biosecurity. The study has shown the interactions of fungi within *Musa* ecosystems, which are validated by strong morphological and phylogenetic evidence. It reveals how fungi can unknowingly cross international borders, potentially via banana leaf wrappers and related trade items. This underscores the need for strict crop security measures to protect global food supplies. One of the key discoveries includes previously uncharted saprobic fungal niches associated with *Musa*, now documented with their DNA sequences deposited in GenBank. This enriches the resource pool for future phylogenetic and taxonomic studies. Additionally, the exploration has led to the identification of novel endophytic fungal niches, some of which were hitherto unreported. These data collections are broadening our understanding of the *Musa* microbiome. These endophytic fungi capable of producing bioactive compounds, were isolated and preserved, for potential industrial and biotechnological applications. The insights derived from this research are significantly enhancing the disease management strategies in *Musa* cultivation. This facilitates the proper identification, isolation, and control of fungal diseases associated with *Musa*. Furthermore, the data obtained will inform the development of quarantine regulations designed to prevent the spread of fungal diseases on an international scale. The extensive account of the diversity of *Musa*-associated fungi has profound implications for the management of *Musa* crops. It emphasizes the substantial role of *Ascomycota*, particularly classes like *Sordariomycetes* and *Dothideomycetes*, known for their pathogenicity and how they influence *Musa* plant health and productivity. Understanding the geographical and ecological distribution of these fungi is crucial for crafting targeted interventions to reduce crop losses. This comprehensive study underscores the necessity to conserve *Musa* ecosystems as reservoirs of fungal biodiversity. These ecological niches play a significant role in the balance of worldwide floristic regions. The identification of novel fungal species is critical, as they have a high potential to be utilized in industrial applications. As *Musa* remains an essential global food resource, the understanding of its associated fungi is paramount for the sustainability of agricultural practices and the conservation of fungal biodiversity. Therefore, this study serves as an invaluable reference for mycological research and *Musa* crop management. The findings of this study further emphasize the necessity of exploring the ecological roles of fungi and their host associations. Additionally, the present study underscores the need to understand the biotic and abiotic factors that shape the fungal distribution in their respective plant hosts.

Table 2 Global checklist of fungi associated with *Musa*.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Atichia sp.	*Ascomycota*	*Ascomycota* families *incertae sedis*	*Ascomycota* families *incertae sedis*	*Seuratiaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Virgariella oblonga Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Mexico	Heredia-Abarcaet al. (1997)
Acumispora biseptata Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Australia	Matsushima (1989)
Arthrobotryum sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Beejadwaya bispora (Matsush.) Subram.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Japan	Matsushima (1975), Dugan et al. (2004), Kobayashi (2007)
Beejadwaya bispora (Matsush.) Subram.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Australia	Matsushima (1989)
Bispora betulina (Corda) S. Hughes*	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Japan	Kobayashi & Kubono (1986)
Ceratosporium gracile Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Cuba, Micronesia	Matsushima (1981), Delgado-Rodriguez et al. (2003)
Ceratosporium palmiforme Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Chlamydomyces sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Chlamydomyces sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Japan	Kobayashi (2007)
Haplobasidion musae M. B. Ellis*	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Fiji, Malaysia, Malay Peninsula	Ellis (1957a), Johnston (1960), Firman (1972)
Haplobasidion musae M. B. Ellis*	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Fiji, Malaysia, Samoa, Tonga	Ellis (1971b), Dingley et al. (1981), McKenzie (1996)
Hymenula musae Pat.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Ecuador	Socie´te´ mycologique de France & Socie´te´ botanique de France (1892)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Imicles aquatica (Cabello, Mengasc. & Aramb.) Shoemaker & Hambl.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Lateriramulosa uniinflata Matsush.*	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Australia	Matsushima (1989)
Leptothyrium musae Cif. & Gonz. Frag.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Dominican Republic	Ciferri (1929, 1961)
Leuliisinea bambusicola Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Australia	Matsushima (1989)
Neta quadriguttata (Matsush.) de Hoog	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Japan	Kobayashi (2007)
Parapyricularia musae M. B. Ellis & Peregrine	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Brunei Darussalam, Malaysia	Ellis (1972), Liu (1977), Peregrine & Ahmad (1982)
Parapyricularia musae M. B. Ellis & Peregrine	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Brunei Darussalam, Malaysia	Ellis (1976)
Pellionella musae Sawada	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa cavendishii*	China	Sawada (1959)
Phaeostalagmus tenuissimus (Corda) W. Gams & Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Bangladesh, Caribbean, China, China, Egypt, Fiji, India, India, Jamaica, Jamaica, Jamaica, Libya, Nigeria, Panama, South Africa, Trinidad and Tobago, United States, Venezuela, Zimbabwe	Kranz (1962), Whiteside (1966), Dennis (1970), Gorter (1977), Tai (1979), El-Buni & Rattan (1981), Dingley et al. (1981), Pantou et al. (2005), Piepenbring (2006), Zare et al. (2007), Chen (2017)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phaeostalagmus tenuissimus (Corda) W. Gams & Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa cavendishii*	Greece, South Africa	Crous et al. (2000), Holevas et al. (2000)
Phaeostalagmus tenuissimus (Corda) W. Gams & Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa acuminata*	Iran, Thailand	Lumyong et al. (2003), Zare et al. (2007)
Phaeostalagmus tenuissimus (Corda) W. Gams & Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Brazil, Iran, Kenya, Taiwan region in China, Tanzania, Zambia	Riley (1956, 1960), Nattrass (1961), Matsushima (1980), Zare et al. (2007)
Phaeostalagmus tenuissimus (Corda) W. Gams & Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Ghana, India, Venezuela, West Indies	Hughes (1952), Sarbhoy et al. (1971), Wallbridge (1981), Urtiaga (2004)
Piricaudilium lobatum Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Mexico	Heredia-Abarca et al. (1997)
Piricaudilium lobatum Hol. -Jech.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951)
Pseudoramularia ruwenzoriensis Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Uganda	Matsushima (1983)
Radaisiella elegans Bainier	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	France	Index of Fungi (1981)
Rhinotrichum sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Sierra Leone	Deighton (1936)
Rhinotrichum sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Sierra Leone	Deighton (1936)
Rhinotrichum sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa cavendishii*	Sierra Leone	Deighton (1936)
Stauronema sacchari Syd., P. Syd. & E. J. Butler	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* sp.	India	Mathur (1979), Nag Raj (1993)
Strossmayeria atriseda (Saut.) Iturr.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Brazil	Photita et al. (2002)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Tricellula taiwanensis Matsush.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa sapientum*	Taiwan region in China	Matsushima (1987)
Trichopeltulum sp.	*Ascomycota*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Ascomycota* genera *incertae sedis*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Diplodia musae Died.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa sapientum*	India, Thailand	Sydow et al. (1916), Mathur (1979), Giatgong (1980)
Diplodia paradisiaca (Mont.) Wollenw.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* × *paradisiaca*	Dominican Republic, Guyana	Ciferri (1929), Photita et al. (2002)
Diplodia radula Berk. & Broome	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* sp.	Sri Lanka	Linnean Society of London (1875)
Diplodia sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa acuminata*	Venezuela, Thailand	Lumyong et al. (2003), Urtiaga (2004)
Lasiodiplodia brasiliensis M. S. B. Netto, M. W. Marques & A. J. L. Phillips *	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* sp.	Brazil, United States	Waliullah et al. (2022), Santos et al. (2023b)
Lasiodiplodia citricola Abdollahz., Javadi & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Lasiodiplodia egyptiaca A. M. Ismail, L. Lombard & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Lasiodiplodia iraniensis Abdollahz., Zare & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* sp.	Brazil	Silva et al. (2023a)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Lasiodiplodia mahajangana Begoude, Jol. Roux & Slippers*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* sp.	Australia	Burgess et al. (2019), Tan et al. (2019)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa* × *paradisiaca*	Brazil, Cuba, India, Panama, Thailand, United States, West Indies	McGuire Jr & Crandall (1967), Mathur (1979), Wallbridge (1981), Alfieri et al. (1984), Arnold (1986), Urtiaga (1986), Mendes et al. (1998), Urtiaga (2004), Salaemae et al. (2022)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa acuminata*	Australia, China, Cote d'Ivoire, Ethiopia, Hong Kong, Malay Peninsula, Mexico, Somalia, Sri Lanka	Castellani & Ciferri (1937, 1950), Resplandy et al. (1954), Goos et al. (1961), Simmonds (1966), Lu et al. (2000), Zhuang (2001), Burgess et al. (2006), Adikaram & Yakandawala (2020)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa acuminata* × *Musa balbisiana*	Thailand	This study
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa acuminata* var. *microcarpa*	Malay Peninsula	Goos et al. (1961)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa balbisiana*	Honduras, Malaysia, Panama	Goos et al. (1961)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeriaceae*	*Musa gracilis*	Malay Peninsula	Goos et al. (1961)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa reflexa*	Malaysia	Goos et al. (1961)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	China, Fiji, Ghana, Guinea, Honduras, India, Japan, Malaysia, Nigeria, Panama, Papua New Guinea, Samoa, South Africa, United States	Hughes (1953), Kranz (1965b), Meredith (1969b), Gorter (1977), Mathur (1979), Tai (1979), Dingley et al. (1981), Shaw (1984), Richardson (1990), Crous et al. (2000), Piepenbring (2006), Kobayashi (2007), Sangeetha et al. (2012), Zakaria & Aziz (2018), Kolombia et al. (2023)
Lasiodiplodia theobromae (Pat.) Griffon & Maubl.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa textilis*	Honduras	Goos (1961)
Leptodothiorella sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	Myanmar	Thaung (2008b)
Macrophoma ensetes Sacc. & Scalia	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa ensete*	Portugal	Saccardo & Saccardo (1906)
Macrophoma sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum*	Malawi	Peregrine & Siddiqi (1972)
Macrophoma sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	Malawi	Corbett (1964)
Macrophomina phaseolina (Tassi) Goid.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa acuminata*	Iran, Venezuela	Urtiaga (2004), Amani (2011)
Macrophomina phaseolina (Tassi) Goid.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* × *paradisiaca*	India, Sri Lanka	Small (1928), Sarkar et al. (2013a)
Macrophomina phaseolina (Tassi) Goid.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* × *paradisiaca* var. *sapientum*	Southern Africa	Doidge (1950)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Macrophomina phaseolina (Tassi) Goid.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum*	India	Mathur (1979)
Macrophomina phaseolina (Tassi) Goid.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	India, Papua New Guinea, Puerto Rico, Virgin Islands, Zimbabwe	Whiteside (1966), Stevenson (1975), Shaw (1984), Sarkar et al. (2013a)
Neodeightonia subglobosa C. Booth*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Neofusicoccum parvum (Pennycook & Samuels) Crous, Slippers & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	Australia	Liddle et al. (2019)
Neofusicoccum parvum (Pennycook & Samuels) Crous, Slippers & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Neofusicoccum ribis (Slippers, Crous & M.J. Wingf.) Crous, Slippers & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa acuminata*	Australia	Simmonds (1966)
Neofusicoccum ribis (Slippers, Crous & M.J. Wingf.) Crous, Slippers & A. J. L. Phillips*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum*	Taiwan region in China	Photita et al. (2002)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Neoscytalidium dimidiatum (Penz.) Crous & Slippers*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa acuminata*	Jamaica, United States	Meredith (1963), Raabe et al. (1981)
Neoscytalidium dimidiatum (Penz.) Crous & Slippers*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	United States	Meredith (1969b)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* × *paradisiaca*	India, Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa humilis*	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum*	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum* var. *cinerea*	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum* var. *lacatan*	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa sapientum* var. *compressa*	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	Philippines	Teodoro (1937)
Sphaeropsis musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa textilis*	Philippines	Teodoro (1937)
Spiropes dorycarpus (Mont.) M. B. Ellis	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Botryosphaeria-ceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Guignardia musicola Wulandari, L. Cai & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Thailand	Wulandari et al. (2010)
Guignardia musicola Wulandari, L. Cai & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	Thailand	Wulandari et al. (2010), Zhou et al. (2015)
Guignardia sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Thailand	Giatgong (1980)
Guignardia stevensii Wulandari & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	United States	Wulandari et al. (2010)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Guignardia sydowiana Trotter*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Congo	Wulandari et al. (2010)
Phyllosticta capitalensis Henn.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	China, Indonesia, South Africa, Thailand, United States	Okane et al. (2003), Meyer et al. (2006), Wulandari et al. (2009), Glienke et al. (2011), Miles et al. (2013), Wikee et al. (2013a, b), Sun et al. (2016)
Phyllosticta capitalensis Henn.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Thailand	Wulandari et al. (2009), Glienke et al. (2011), Wikee et al. (2013a, b), Guarnaccia et al. (2017a)
Phyllosticta capitalensis Henn.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Indonesia, Thailand, United States	Wulandari et al. (2009), Glienke et al. (2011), Wikee et al. (2013a, b)
Phyllosticta cavendishii M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Australia, China, East Timor, Malaysia, Tonga	Wong et al. (2012), Hyde et al. (2014), McMaster et al. (2020)
Phyllosticta cocoicola (Bat.) Sivan.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	Malaysia	Rashmi et al. (2019)
Phyllosticta gastonis Roum.*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Dominican Republic, Haiti	Revue mycologique (1886), Ciferri (1929)
Phyllosticta maculata M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Indonesia, United States	Goos & Gowing (1992), Photita et al. (2002)
Phyllosticta maculata M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	Australia, Indonesia, Sri Lanka, United States	Shivas (1989), Raabe et al. (1981), Wulandari et al. (2010), Wong et al. (2012), Wulandari et al. (2013), Adikaram & Yakandawala (2020)
Phyllosticta maculata M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa cavendishii*	Taiwan region in China	Yen (1972), Index of Fungi (1981)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phyllosticta maculata M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Malaysia, Thailand	Williams & Liu (1976), Giatgong (1980)
Phyllosticta maculata M. H. Wong & Crous*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Australia, Bangladesh, Bhutan, Brunei Darussalam, China, Christmas Island Territory of, Congo, Cook Islands, Fiji, Hong Kong, India, Indonesia, Malaysia, Micronesia, Myanmar, Nepal, New Caledonia, New Guinea, New Zealand, Niue, Pakistan, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Taiwan region in China, Tanzania, Thailand, Tonga, United States, Vanuatu, Vietnam	Stevens (1925), Meredith (1969b), Ebbels & Allen (1979), Dingley et al. (1981), Shaw (1984), Sivanesan (1984), Raabe et al. (1981), Hyde & Alcorn (1993), McKenzie (1996), Photita et al. (2002), Thaung (2008b), Wulandari et al. (2010, 2013), Wong et al. (2012), Hyde et al. (2014)
Phyllosticta musae F. Stevens & P. A. Young	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Cambodia, United States	Litzenberger et al. (1962)
Phyllosticta musae F. Stevens & P. A. Young	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	United States	Raabeet al. (1981)
Phyllosticta musaechinensis S. P. Wu, Zuo Y. Liu & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	China	Wu et al. (2014), Zhang et al. (2022)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phyllosticta musae-sapientium Gonz. Frag. & Cif.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Brazil, Dominican Republic	Ciferri (1929, 1961), Batista & Vital (1952)
Phyllosticta musae-sapientium Gonz. Frag. & Cif.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa× paradisiaca*	Dominican Republic, India, Thailand, United States	Ciferri (1929), Mathur (1979), Ali & Saikia (1997), Kamal (2010), Wong et al. (2012), Sarkar et al. (2013b)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa × paradisiaca* var. *sapientum*	China	Tai (1979)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	China, United States, Sri Lanka	Raabe et al. (1981), Zhuang (2001), Adikaram & Yakandawala (2020)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa basjoo*	China	Tai (1979)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Brunei Darussalam, India, Japan, Mexico, New Caledonia, Philippines, Taiwan region in China, Thailand, Sri Lanka	Reinking (1918, 1919), Huguenin (1966), Alvarez (1976), Mathur (1979), Giatgong (1980), Peregrine & Ahmad (1982), Kobayashi (2007), Adikaram & Yakandawala (2020)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum* var. *paradisiaca*	Dominican Republic	Ciferri (1961)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Australia, Brunei Darussalam, China, India, Malaysia, Myanmar, Nepal, New Caledonia, Sri Lanka, Thailand	Huguenin (1966), Mathur (1979), Thaung (2008c), Wulandari et al. (2010), Wong et al. (2012), Wong et al. (2013)
Phyllosticta musarum (Cooke) Aa*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa textilis*	Philippines	Reinking (1918, 1919)
Phyllosticta rhizophorae Norph. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Thailand	Norphanphoun et al. (2020)
Phyllosticta sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	Cuba, Thailand	Giatgong (1980), Urtiaga (2004)
Phyllosticta sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca*	Cambodia, Cuba	Litzenberger et al. (1962), Arnold (1986), Urtiaga (2004)
Phyllosticta sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* × *paradisiaca* var. *sapientum*	Cuba	Urtiaga (1986)
Phyllosticta sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Malaysia, Thailand	Liu (1977), Giatgong (1980)
Phyllosticta sp.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	Australia, Thailand	Hyde & Alcorn (1993), Li et al. (2020b)
Phyllostictina musarum (Cooke) Petr.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa acuminata*	United States	Raabe et al. (1981)
Phyllostictina musarum (Cooke) Petr.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa sapientum*	Fiji, Malaysia, Philippines	Sydow & Petrak (1931), Teodoro (1937), Johnston (1960), Turner (1971), Firman (1972), Van Der (1973), Williams & Liu (1976)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phyllostictina musarum (Cooke) Petr.	*Ascomycota*	*Dothideomycetes*	*Botryosphaeriales*	*Phyllostictaceae*	*Musa* sp.	United States	Meredith (1969b)
Capnodium musae Viégas	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Capnodiaceae*	*Musa* sp.	Brazil	Hanlin (1992), Mendes et al. (1998)
Capnodium sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Capnodiaceae*	*Musa* × *paradisiaca* var. *sapientum*	Cuba	Urtiaga (1986)
Capnodium sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Capnodiaceae*	*Musa acuminata*	Cuba	Urtiaga (2004)
Cladosporium austrohemisphaericum Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Australia	Bensch et al. (2015)
Cladosporium cladosporioides (Fresen.) G. A. de Vries*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa acuminata*	Hong Kong, Thailand	Lu et al. (2000), Zhuang (2001), Lumyong et al. (2003)
Cladosporium cladosporioides (Fresen.) G. A. de Vries*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa sapientum*	Thailand	Giatgong (1980)
Cladosporium cladosporioides (Fresen.) G. A. de Vries*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	India, Samoa, Trinidad and Tobago	Baker & Dale (1951), Dennis (1970), Dingley et al. (1981), Schubert et al. (2007, 2009), Dugan et al. (2008)
Cladosporium exasperatum Bensch, Summerell, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Cladosporium fumago Link*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Poland	Mulenko & Majewski (2008)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Cladosporium herbarum (Pers.) Link*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa acuminata*	China, Somalia	Castellani & Ciferri (1937), Zhang (2003)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa acuminata*	Egypt, Thailand	Lumyong et al. (2003), Bensch et al. (2015)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa paradisiaca*	Ghana	Hughes (1952)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa sapientum*	Brunei Darussalam, Ghana, Malaysia	Hughes (1952), Williams & Liu (1976), Peregrine & Ahmad (1982)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa schweinfurthii*	Ghana, Sierra Leone	Martyn (1945), Hughes (1952)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	China, France, Jamaica, Malaysia, Papua New Guinea, Ghana, Guinea, Honduras, Hong Kong, Samoa, Sierra Leone, South Africa, Solomon Islands, Sudan, Uganda, Zimbabwe	Martyn (1945), Tarr (1963), Kranz (1965b), Whiteside (1966), Ellis (1971b), Gorter (1977), Shaw (1984), Ho et al. (1999), Crous et al. (2000) Lu et al. (2000), Zhuang (2001), Zhang (2003), Dugan et al. (2004)
Cladosporium limoniforme Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Cladosporium oxysporum Berk. & M. A. Curtis*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* × *paradisiaca*	Brazil, Cuba	Mendes et al. (1998), Delgado-Rodriguez & Mena-Portales (2004)
Cladosporium oxysporum Berk. & M. A. Curtis*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* × *paradisiaca* var. *sapientum*	Venezuela	Urtiaga (1986)
Cladosporium oxysporum Berk. & M. A. Curtis*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa acuminata*	China, Thailand, Venezuela	Zhuang (2001), Lumyong et al. (2003), Zhang (2003), Urtiaga (2004)
Cladosporium oxysporum Berk. & M. A. Curtis*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Cook Islands	Dingley et al. (1981)
Cladosporium pannosum Cooke	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	United States	Dugan et al. (2004), Bensch et al. (2012)
Cladosporium perangustum Bensch, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	India, Pacific Islands	Benschet al. (2010, 2012)
Cladosporium sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Australia, China	Hyde & Alcorn (1993), Cao et al. (2002)
Cladosporium sphaerospermum Penz. *	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Guinea, Hong Kong	Kranz (1965b), Lu et al. (2000), Zhuang (2001)
Cladosporium sphaerospermum Penz. *	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Cladosporium tenuissimum Cooke*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Cote d'Ivoire, India, Indonesia, Mozambique, Pacific Islands	Bensch et al. (2010, 2012), Nam et al. (2015)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Cladosporium xylophilum Bensch, Shabunin, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Cladosporiaceae*	*Musa* sp.	Mexico	Bensch et al. (2012)
Uwebraunia communis (Crous & Mansilla) Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Dissoconiaceae*	*Musa* sp.	Trinidad and Tobago	Arzanlou et al. (2008)
Uwebraunia musae (Arzanlou & Crous) Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Dissoconiaceae*	*Musa acuminata*	India, Indonesia	Stukenbrock et al. (2012), Videira et al. (2016, 2017)
Uwebraunia musae (Arzanlou & Crous) Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Dissoconiaceae*	*Musa* sp.	China, India	Arzanlou et al. (2008), Chen (2017), Crous et al. (2021b)
Ramichloridium schulzeri var. *schulzeri* (Sacc.) de Hoog*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Dissoconiaceae*	*Musa* sp.	Cuba	Mercado-Sierra et al. (1998)
Hormisciomyces sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Euantennariaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Amycosphaerella keniensis (Crous & T. A. Cout.) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia	Videira et al. (2017)
Asperisporium musicola Matsush.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Japan	Matsushima (1975)
Cercospora apii Fresen.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Cercospora apii Fresen. *	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca* var. *sapientum*	Cuba, India	Crous et al. (2020, 2021b)
Cercospora apii Fresen.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Cuba, Bangladesh, India, Panama	Calpouzos (1955), Piepenbring (2006), Arzanlou et al. (2008), Kirschner & Piepenbring (2013)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Cercospora malloti Ellis & Everh.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Thailand	Nguanhom et al. (2015)
Cercospora musigena Nguanhom, Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Thailand	Nguanhom et al. (2015)
Cercospora sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Cambodia	Litzenberger et al. (1962)
Cercospora sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Thailand	Nguanhom et al. (2015)
Cercospora sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Bangladesh, Dominica, Jamaica, Thailand	Groenewald et al. (2013), Nguanhom et al. (2015), Album et al. (2016), Guatimosim et al. (2016a)
Cercospora sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa textilis*	Cambodia	Litzenberger et al. (1962)
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca* var. *sapientum*	China	Tai (1979)
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	China	Tai (1979)
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa basjoo*	China	Tai (1979)
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa cavendishii*	Taiwan region in China	Chupp (1954), Pollack (1987),
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa liukiuensis*	Japan	Kobayashi (2007)
Cercospora musicola Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Japan, Taiwan region in China	Hsieh & Goh (1990), Kobayashi (2007)
Cladocillium musae Chun-Hao Chen & R. Kirschner*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa itinerans*	China	Chen et al. (2020), Crous et al. (2020, 2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Mycosphaerella colombiensis Crous & M. J. Wingf.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Mozambique	Arzanlou et al. (2008)
Mycosphaerella formosana T Y. Lin & J. M. Yen*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	China	Tai (1979), Photita et al. (2002), Crous et al. (2021b)
Mycosphaerella henriquesiana G. Winter*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Africa	Crous et al. (2020)
Mycosphaerella lateralis Crous & M. J. Wingf.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Mauritius	Arzanlou et al. (2008)
Mycosphaerella liukiuensis Sawada*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa formosana*	Taiwan region in China	Sawada (1959), Crous et al. (2021a)
Mycosphaerella liukiuensis Sawada	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa liukiuensis*	Taiwan region in China	Sawada (1959)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Australia, Thailand	Simmonds (1966), Kaewjan et al. (2012)
Mycosphaerella musae (Speg.) Syd. & P. Syd. *	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Simmonds (1966)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa cavendishii*	Philippines	Teodoro (1937)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Cambodia, Philippines, Puerto Rico, Virgin Islands	Teodoro (1937), Litzenberger et al. (1962), Stevenson (1975)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Argentina, Malaysia, Philippines	Reinking (1918, 1919), Teodoro (1937), Williams & Liu (1976), Surridge (2002), Crous et al. (2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum* var. *rubra*	Myanmar	Thaung (2008c)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Brazil, Cameroon, Cook Islands, Malawi, Martinique, Myanmar, Panama, South Africa, Tanzania, Tonga, United States	Meredith (1969a), Dingley et al. (1981), Surridge (2002), Piepenbring (2006), Arzanlou et al. (2008), Thaung (2008c), Kimunye et al. (2020), Crous et al. (2021b)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa textilis*	Philippines	Reinking (1918, 1919)
Mycosphaerella musae (Speg.) Syd. & P. Syd.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa uranoscopos*	Philippines	Teodoro (1937)
Mycosphaerella sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Mycosphaerella sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Fiji	Firman (1972)
Mycosphaerella sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Africa, Fiji	Dingley et al. (1981), Crous et al. (2021b)
Pallidocercospora thailandica (Crous, Himaman & M. J. Wingf.) Phook., Wulandari & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Brazil, Cameroon	Quaedvlieg et al. (2014)
Pantospora guazumae Cif.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia	Crous et al. (2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Paramycosphaerella marksii (Carnegie & Keane) Quaedvl. & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	South Africa	Quaedvlieg et al. (2014), Guatimosim et al. (2016b), Videira et al. (2017)
Paramycosphaerella sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	South Africa	Videira et al. (2017)
Parapallidocercospora thailandica (Crous, Himaman & M. J. Wingf.) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Brazil, Cameroon, Martinique, Mozambique, West Indies	Arzanlou et al. (2008), Crous et al. (2021b)
Passalora loranthi (Petr.) U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Cameroon	Arzanlouet al. (2008)
Pseudocercospora assamensis Arzanlou & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	India	Arzanlou et al. (2008), Crous et al. (2013b), Braun et al. (2014), Guatimosim et al. (2016a), Silva et al. (2016), Crous et al. (2021b)
Pseudocercospora eumusae Crous & Mour.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Sri Lanka, Thailand	Kaewjan et al. (2012), Adikaram & Yakandawala (2020)
Pseudocercospora eumusae Crous & Mour.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	India, Malaysia, Mauritius, Nigeria, Reunion, Sri Lanka, Thailand, Vietnam	Braun et al. (2014), Rieux et al. (2019), Crous et al. (2021b)
Pseudocercospora fengshanensis (T. Y. Lin & J. M. Yen) J. M. Yen & S. K. Sun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	China, Taiwan region in China	Liu & Guo (1998), Crous et al. (2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pseudocercospora fengshanensis (T. Y. Lin & J. M. Yen) J. M. Yen & S. K. Sun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	China, Taiwan region in China	Lin & Yen (1970), Tai (1979), Hsieh & Goh (1990), Liu & Guo (1998), Braun et al. (2014)
Pseudocercospora fijiensis (M. Morelet) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	China, Mexico, Sri Lanka, Thailand, Trinidad and Tobago, United States	Tai (1979), Raabe et al. (1981), Zhuang (2001), Fortune et al. (2004), Kaewjan et al. (2012), Manzo-Sanchez et al. (2019), Adikaram & Yakandawala (2020), Crous et al. (2020, 2021b)
Pseudocercospora fijiensis (M. Morelet) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa cavendishii*	China	Hsieh & Goh (1990)
Pseudocercospora fijiensis (M. Morelet) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Brunei Darussalam	Braun & Sivapalan (1999)
Pseudocercospora fijiensis (M. Morelet) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Bahamas, Bolivia, Brazil, Cameroon, Colombia, Costa Rica, Cote d'Ivoire, Fiji, Honduras, Japan, Martinique, Mexico, Nicaragua, Niue, Panama, Papua New Guinea,	Meredith (1969b), Morelet (1969), Mulder & Stover (1976), Shaw (1984), Sivanesan (1984), Hyde & Alcorn (1993), Mckenzie (1996), Tejerina et al. (1997), Romero & Sutton (1998), Photita et al. (2002), Surridge et al. (2003), Ploetz (2004), Irish et al. (2006), Piepenbring (2006), Arzanlou et al. (2008), Ioos et al. (2011), Delgado (2011),

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Philippines, Puerto Rico, Reunion, Samoa, Somalia, Taiwan region in China, Tanzania, Tonga, Uganda, United States, Zanzibar	Braun et al. (2014), Kirschner & Piepenbring (2013), Nakashima et al. (2016), Liang et al. (2016), Silva et al. (2016), Ramos et al. (2018), Rieux et al. (2019), Fullerton & Casonato (2019), Kimunye et al. (2020), Crous et al. (2021b)
Pseudocercospora indonesiana Arzanlou & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Indonesia	Arzanlou et al. (2008), Braun et al. (2014), Osorio et al. (2015), Guatimosim et al. (2016a), Crous et al. (2021b)
Pseudocercospora longispora Arzanlou & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Indonesia, Malaysia	Arzanlou et al. (2008), Braun et al. (2014), Osorio et al. (2015), Liang et al. (2016), Crous et al. (2021b)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Brazil, Cambodia, China, Costa Rica, Cuba, El Salvador, Guatemala, Haiti, India, Mexico, Nicaragua, Panama, Puerto Rico, South Africa, Thailand, United States, Venezuela,	Stevenson & Wellman (1944), Litzenberger et al. (1962), McGuire Jr & Crandall (1967), Batista et al. (1963), Benjamin & Slot (1969), Stevenson (1975), Alfieri et al. (1984), Arnold (1986), Liu & Guo (1998), Mendes et al. (1998), Crous & Braun (2003), Urtiaga (2004), Kamal (2010), Delgado (2011), Phengsintham et al. (2013), Braun et al. (2014),

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Virgin Islands	Crous et al. (2020, 2021b)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca* var. *sapientum*	China, Cuba, Venezuela	Tai (1979), Urtiaga (1986), Liu & Guo (1998)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa liukiuensis*	China, Taiwan region in China	Sawada (1959), Tai (1979), Liu & Guo (1998)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Barbados, Brazil, Brunei Darussalam, China, Indonesia, Jamaica, Kenya, Laos, Malawi, Malaysia, Mexico, Mozambique, New Caledonia, Taiwan region in China, Tanzania, Thailand, United States	Larter & Martyn (1943), Thompson & Johnston (1953), Riley (1960), Nattrass (1961), Huguenin (1966), Turner (1971), Peregrine & Siddiqi (1972), Norse (1974), Alvarez (1976), Giatgong (1980), Alfieri et al. (1984), Pollack (1987), Hsieh & Goh (1990), Crous & Braun (1996), Mendes et al. (1998), Braun & Sivapalan (1999), Zhuang (2001), Photita et al. (2002), Phengsintham et al. (2010)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Angola, Australia, Belize, Bolivia, Brazil, Brunei Darussalam, Cambodia, Cameroon, China, Colombia, Congo Republic of the, Costa Rica, Cote d'Ivoire,	Larter & Martyn (1943), Doidge (1950), Baker & Dale (1951), Thompson & Johnston (1953), Nattrass (1961), Kranz (1963), Trujillo & Goto (1963), Corbett (1964), Huguenin (1966), Whiteside (1966), Benjamin & Slot (1969), Dennis (1970),

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Fiji, French Polynesia, Ghana, Grenada, Guadeloupe, Guatemala, Guinea, Guyana, Haiti, Honduras, Hong Kong, India, Indonesia, Jamaica, Japan, Kenya, Kiribati, Laos, Madagascar, Malaysia, Malawi, Martinique, Mauritius, Mexico, Montserrat, Mozambique, New Caledonia, Nicaragua, Niue, Norfolk Island, Panama, Papua New Guinea, Peru, Philippines, Puerto Rico, Saint Lucia, Saint Vincent, Samoa, Sierra Leone,	Turner (1971), Norse (1974), Alvarez (1976), Gorter (1977), Shaw (1984), Pollack (1987), McKenzie (1996), Mendes et al. (1998), Gonzalez & Pons (2000), Lu et al. (2000), Zhuang (2001), Surridge et al. (2003), Piepenbring (2006), Kobayashi (2007), Arzanlou et al. (2008), Delgado (2011), Gomes et al. (2013a), Osorio et al. (2015), Liang et al. (2016), Crous et al. (2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Solomon Islands, Somalia, South Africa, Sri Lanka, Suriname, Taiwan region in China, Thailand, Tonga, Trinidad and Tobago, Uganda, United States, Venezuela, Vietnam, West Indies, Zambia, Zimbabwe, Zanzibar	
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa textilis*	Brunei Darussalam, China, Mexico	Alvarez (1976), Tai (1979), Peregrine & Ahmad (1982), Liu & Guo (1998), Braun & Sivapalan (1999)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Australia, China, Cote d'Ivoire, Cuba, India, Nepal, South Africa, Sri Lanka, Thailand, United States, Venezuela	Resplandy et al. (1954), Simmonds (1966), Giatgong (1980), Alfieri et al. (1984), Raabe et al. (1981), Dahal et al. (1992), Crous et al. (2000), Zhuang (2001), Surridge et al. (2003), Urtiaga (2004), Pande (2008), Meeboon et al. (2008), Kaewjan et al. (2012), Urtiaga & Braun (2013)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa banksii*	Australia	Simmonds (1966)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa basjoo*	China	Tai (1979), Roux et al. (1997), Liu & Guo (1998), Guo (1999), Zhuang (2001)
Pseudocercospora musae (Zimm.) Deighton*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa cavendishii*	Brazil, Japan, Puerto Rico, Taiwan region in China, Virgin Islands	Stevenson (1975), Hsieh & Goh (1990), Liu & Guo (1998), Mendes et al. (1998), Kobayashi (2007)
Pseudocercospora musae-sapientium (A. K. Kar & M. Mandal) U. Braun & Mouch.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa* × *paradisiaca*	India	Kamal (2010), Braun et al. (2014), Crous et al. (2021b)
Pseudocercospora musae-sapientium (A. K. Kar & M. Mandal) U. Braun & Mouch.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa sapientum*	India	Kar & Mandal (1975), Crous & Braun (2003), Kamal (2010)
Pseudocercospora musicola U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa acuminata*	Taiwan region in China	Braun et al. (2014), Crous et al. (2021b)
Pseudocercospora musicola U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa balbisiana* var. *liukiuensis*	Taiwan region in China	Braun et al. (2014)
Pseudocercospora pseudomusae Crous & Carlier*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa* sp.	Indonesia	Crous et al. (2021b)
Pseudocercospora sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Rhachisphaerella mozambica (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerellaceae*	*Musa acuminata*	Mozambique	Videira et al. (2017)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Rhachisphaerella mozambica (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Mozambique	Arzanlou et al. (2008), Videira et al. (2017), Crous et al. (2021b)
Septoria eumusae Carlier, M. F. Zapater, Lapeyre, D. R. Jones & Mour.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Iran	Amani & Avagyan (2014)
Septoria sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum* var. *arakanensis*	Myanmar	Thaung (2008c)
Septoria sp.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Sphaerella musae Speg.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Argentina, Dominican Republic	Museo Nacional de Buenos Aires (1909), Ciferri (1929)
Sphaerella musae Speg.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa coccinea*	Philippines	Photita et al. (2002)
Sphaerella musae Speg.	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa uranoscopos*	Philippines	Teodoro (1937)
Sphaerulina musicola J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Taiwan region in China	Index of Fungi (1981)
Sphaerulina pulii J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Venezuela	Urtiaga (1986)
Sphaerulina pulii J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Taiwan region in China	Index of Fungi (1981)
Zasmidium australe (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia	Crous et al. (2020)
Zasmidium biverticillatum (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Zasmidium biverticillatum (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Shivas et al. (2011), Kirschner & Piepenbring (2013)
Zasmidium biverticillatum (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa formosana*	Taiwan region in China	Kirschner & Piepenbring (2013)
Zasmidium biverticillatum (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Suriname	Arzanlou et al. (2006), Videira et al. (2017), Crous et al. (2021b)
Zasmidium biverticillatum (Arzanlou & Crous) Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Panama, Taiwan region in China	Shivas et al. (2011), Kirschner & Piepenbring (2013)
Zasmidium citri (Whiteside) Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Tonga, United States	Arzanlou et al. (2008), Quaedvlieg et al. (2014)
Zasmidium citrigriseum (F. E. Fisher) U. Braun & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	United States	Huang et al. (2015), Videira et al. (2017)
Zasmidium ducassei (R. G. Shivas, Grice & A. J. Young) Y. Marín & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Australia	Kirschner & Piepenbring (2013)
Zasmidium ducassei (R. G. Shivas, Grice & A. J. Young) Y. Marín & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata-balbisiana*	Australia	Shivas et al. (2011), Marin-Felix et al. (2019), Crous et al. (2021b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Zasmidium ducassei (R. G. Shivas, Grice & A. J. Young) Y. Marín & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa balbisiana*	Taiwan region in China	Kirschner & Piepenbring (2013)
Zasmidium ducassei (R. G. Shivas, Grice & A. J. Young) Y. Marín & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Taiwan region in China	Shivas et al. (2011), Kirschner & Piepenbring (2013), Marin-Felix et al. (2019)
Zasmidium musae (Arzanlou & Crous) Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Arzanlou et al. (2007)
Zasmidium musae (Arzanlou & Crous) Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Gabon, Martinique, Netherlands, Saint Lucia, Tonga, West Indies	Arzanlou et al. (2008), Braun et al. (2014), Videira et al. (2017), Crous et al. (2021b)
Zasmidium musae-banksii Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Videira et al. (2017), Crous et al. (2021b)
Zasmidium musicola (Arzanlou & Crous) Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	India	Braun et al. (2014), Videira et al. (2017), Crous et al. (2021b)
Zasmidium musigenum Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa acuminata*	Australia	Simmonds (1966), Crous et al. (2021b)
Zasmidium musigenum Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Simmonds (1966)
Zasmidium musigenum Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Zasmidium musigenum Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa sapientum*	Bolivia, Cameroon, Fiji, Ghana, Guinea, Indonesia, Jamaica, Malaysia, Papua New Guinea, Sierra Leone, Suriname, Uganda	Dade (1940), Larter & Martyn (1943), Turner (1971), Firman (1972), Ellis (1976), Williams & Liu (1976), De Hoog (1977), Videira et al. (2017), Crous et al. (2021b).
Zasmidium musigenum Videira & Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Australia, Bolivia, Cameroon, Cook Islands, Fiji, Ghana, Guinea, Haiti, Indonesia, Jamaica, Panama, Papua New Guinea, Samoa, Sierra Leone, Tonga, Trinidad and Tobago, Uganda, Zimbabwe	Petrak (1950), Kranz (1963), Whiteside (1966), Benjamin & Slot (1969), Ellis (1976), Dingley et al. (1981), Shaw (1984), McKenzie (1996), Shivas et al. (2011), Kirschner & Piepenbring (2013)
Zasmidium queenslandicum (Arzanlou & Crous) Crous & U. Braun*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa banksii*	Australia	Arzanlou et al. (2008), Braun et al. (2014), Videira et al. (2017), Crous et al. (2021b)
Zasmidium syzygii Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Philippines	van Westerhoven et al. (2023)
Zasmidium thailandicum Crous*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Mycosphaerella-ceae*	*Musa* sp.	Thailand	Marin-Felix et al. (2019)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Tripospermum myrti (Lind) S. Hughes*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Neodevriesiaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Chaetothyrina musarum (Speg.) Theiss.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Phaeothecoidiella-ceae*	*Musa x paradisiaca*	Argentina, Brazil, Mexico, Paraguay, Uruguay	McGuire Jr & Crandall (1967), Farr (1973), Photita et al. (2002)
Chaetothyrina musarum (Speg.) Theiss.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Phaeothecoidiella-ceae*	*Musa acuminata*	United States	Raabe et al. (1981)
Chaetothyrina musarum (Speg.) Theiss. *	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Phaeothecoidiella-ceae*	*Musa acuminata-balbisiana*	Thailand	Singtripop et al. (2016)
Chaetothyrina musarum (Speg.) Theiss.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Phaeothecoidiella-ceae*	*Musa sapientum*	Brazil	Batista (1959), Hanlin (1992), Mendes et al. (1998), Singtripopet al. (2016)
Chaetothyrina musarum (Speg.) Theiss.*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Phaeothecoidiella-ceae*	*Musa* sp.	Brazil, China, Thailand, United States	Meredith (1969b), Mendes et al. (1998), Singtripop et al. (2016), Chen (2017)
Schizothyrium inaequale (G.Y. Sun & Liu Gao) Crous & Batzer*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa basjoo*	China	Gao et al. (2014)
Schizothyrium jamaicense (E. W. Mason) Rossman	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986), Urtiaga (1986)
Schizothyrium jamaicense (E. W. Mason) Rossman	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa sapientum*	Jamaica	Martyn (1945)
Schizothyrium jamaicense (E. W. Mason) Rossman	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa* sp.	Fiji	Dingley et al. (1981)
Schizothyrium musae (G. Y. Sun & Liu Gao) Crous & Batzer*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa basjoo*	China	Gao et al. (2014)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Schizothyrium sunii Crous & Batzer, in Rossman, Crous & Hyde*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Schizothyriaceae*	*Musa basjoo*	China	Gao et al. (2014)
Acrodontium crateriforme (J. F. H. Beyma) de Hoog*	*Ascomycota*	*Dothideomycetes*	*Capnodiales*	*Teratosphaeria-ceae*	*Musa* sp.	China	Chen (2017)
Asteromella paradisiaca Petr.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Philippines	Vanev & Van Der (1998)
Asteromella paradisiaca Petr.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa textilis*	Philippines	Teodoro (1937), Vanev & Van Der (1998)
Asteromella sp.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa sapientum* var. *rubra*	Myanmar	Thaung (2008c)
Coniosporium musicola Speg.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* × *paradisiaca* var. *sapientum*	Cuba	Urtiaga (1986)
Coniosporium musicola Speg.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa acuminata*	Cuba	Urtiaga (2004)
Coniosporium musicola Speg.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa sapientum*	Argentina	Museo Nacional de Buenos Aires (1911), Farr (1973)
Dilophia punctata G. Winter	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* sp.	Africa	Winter (1886)
Dothidella musae Höhn.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Samoa	Kaiserl (1907)
Dothidella musae Höhn.	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* sp.	Fiji, Samoa	Dingley et al. (1981)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Monodictys trichocladiopsis Goh & K. D. Hyde	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Tetracrium musicola Sherwood	*Ascomycota*	*Dothideomycetes*	*Dothideomycetes* genera *incertae sedis*	*Dothideomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Guadeloupe	Photita et al. (2002)
Aureobasidium sp.	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa acuminata*	China	Cao et al. (2002)
Metasphaeria musae Sawada	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa acuminata*	China	Tai (1979)
Metasphaeria musae Sawada	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa basjoo*	China	Tai (1979)
Metasphaeria taiwanensis J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa sapientum*	Taiwan region in China	Yen (1972)
Metasphaeria cumanella Sacc. & Berl.	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa* sp.	Africa	Photita et al. (2002)
Selenophoma asterina (Berk. & Broome) B. Sutton	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa* sp.	South Africa	Surridge (2002)
Selenophoma juncea (Mont.) Arx*	*Ascomycota*	*Dothideomycetes*	*Dothideales*	*Saccotheciaceae*	*Musa* sp.	South Africa	Surridge (2002)
Arxiella terrestris Papendorf*	*Ascomycota*	*Dothideomycetes*	*Muyocopronales*	*Muyocopronaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Acrocalymma vagum (D. F. Farr) Crous & Trakun. *	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Acrocalymmaceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Pithomyces musae X. G. Zhang & Y. M. Wu*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Astrosphaeriella-ceae*	*Musa wilsonii*	China	Zhang & Wu (2003), Tianyu (2009)
Pithomyces africanus M. B. Ellis*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Astrosphaeriella-ceae*	*Musa balbisiana*	China	Tianyu (2009)
Corynespora cassiicola (Berk. & M. A. Curtis) C. T. Wei*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporasca-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Corynespora cassiicola (Berk. & M. A. Curtis) C. T. Wei*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa* × *paradisiaca*	Brazil, Cuba, Haiti, India, Jamaica, Japan, Nicaragua, Panama, Puerto Rico, Sierra Leone, South Africa, Virgin Islands	Chupp (1954), Ellis (1957b), McGuire Jr & Crandall (1967), Benjamin & Slot (1969), Sarbhoy et al. (1971), Matsushima (1975), Stevenson (1975), Arnold (1986), Urtiaga (1986), Mendes et al. (1998), Crous et al. (2000), Kobayashi (2007), Delgado (2011)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa* × *paradisiaca* var. *sapientum*	China, Cuba	Tai (1979), Urtiaga (1986)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa acuminata*	Australia, China, Cote d'Ivoire, Cuba, Ethiopia, Mexico, Somalia, Thailand, United States, United States, Venezuela	Castellani & Ciferri (1937, 1950), Resplandy et al. (1954), Simmonds (1966), Tai (1979), Raabe et al. (1981), Alfieri et al. (1984), Shivas (1989), Zhuang (2001), Lumyong et al. (2003), Urtiaga (2004), Giraldo et al. (2017)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa acuminata* × *Musa balbisiana*	Thailand	Samarakoon et al. (2023), This study
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa basjoo*	China	Tai (1979)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa cavendishii*	Bermuda, Brazil, Mexico, Puerto Rico, Sierra Leone, Taiwan region in China, Virgin Islands	Deighton (1936), Ellis (1957b), Stevenson (1975), Mendes et al. (1998), Crous et al. (2013c)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa coccinea*	United States	Raabe et al. (1981)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa errans* var. *botoan*	Philippines	Teodoro (1937)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa ornata*	India	Gupta et al. (1983)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynespora-scaceae*	*Musa sapientum*	Barbados, Bermuda, Brazil, Brunei Darussalam, Jamaica, Mexico, Myanmar, Sierra Leone, Sudan, Taiwan region in China, Thailand, United States	Deighton (1936), Larter & Martyn (1943), Ellis (1957b), Tarr (1963), Norse (1974), Alvarez (1976), Giatgong (1980), Matsushima (1980), Peregrine & Ahmad (1982), Alfieri et al. (1984), Thaung (2008a)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa sapientum* var. *cinerea*	Philippines	Teodoro (1937)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa sapientum* var. *compressa*	Philippines	Teodoro (1937)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa sapientum* var. *paradisiaca*	Dominican Republic	Ciferri (1961)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa sapientum* var. *rubra*	Myanmar	Thaung (2008a)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa* sp.	Australia, Brazil, Cook Islands, Cuba, Egypt, Georgia, Guinea, Haiti, India, Jamaica, Japan, Kiribati, Mauritius, Panama, Samoa, Sierra Leone, Somalia, South Africa, Trinidad and Tobago, United States	Baker & Dale (1951), Ellis (1957b), Kranz (1965b), Meredith et al. (1968), Orieux & Felix (1968), Benjamin & Slot (1969), Meredith (1969b), Gorter (1977), Dingley et al. (1981), Mercado Sierr (1984), Hyde & Alcorn (1993), Mendes et al. (1998), Crous & Braun (2003), Piepenbring (2006), Kobayashi (2007), Crous et al. (2013c)
Corynespora torulosa (Syd. & P. Syd.) Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Corynesporas-caceae*	*Musa textilis*	Brunei Darussalam, Malaysia, Mexico, Papua New Guinea, Philippines	Teodoro (1937), Ellis (1957b), Johnston (1960), Turner (1971), Alvarez (1976), Williams & Liu (1976), Peregrine & Ahmad (1982), Shaw (1984)
Dendryphiella vinosa (Berk. & M. A. Curtis) Reisinger*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Dictyosporiaceae*	*Musa* sp.	Thailand	This study
Dictyocheirospora heptaspora (Garov.) M. J. D'souza, Boonmee & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Dictyosporiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2002, 2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Dictyocheirospora musae (Photita) J. Yang, K. D. Hyde & Z. Y. Liu*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Dictyosporiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2002)
Amerodothis musae Sawada	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa cavendishii*	China, Taiwan region in China	Sawada (1959), Photita et al. (2002)
Ascochyta sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa sapientum*	Malaysia	Johnston (1960)
Chaetosphaeropsis truncata var. *indica* R. N. Rai & B. Lal	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* × *paradisiaca*	India	Rai & Lal (1984)
Didymella musae (P. Joly) Qian Chen & L. Cai*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Didymella sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Epicoccum latusicollum Qian Chen, Crous & L. Cai*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa acuminata*	China	Liu et al. (2023a)
Epicoccum nigrum Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa sapientum*	Malawi	Peregrine & Siddiqi (1972)
Epicoccum nigrum Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Malawi, South Africa	Corbett (1964), Surridge (2002)
Epicoccum sorghinum (Sacc.) Aveskamp, Gruyter & Verkley*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* × *paradisiaca*	Malaysia, West Indies	Wallbridge (1981), Zakaria & Aziz (2018)
Leptosphaerulina trifolii (Rostr.) Petr. *	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951)
Microsphaeropsis sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa acuminata* subsp. *banksii*	Australia	Brown et al. (1998)
Phoma glomerata (Corda) Wollenw. & Hochapfel*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	South Africa	Surridge (2002)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phoma jolyana Piroz. & Morgan-Jones*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	India	Photita et al. (2002)
Phoma jolyi M. Morelet	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	France	Photita et al. (2002)
Phoma musae Sacc.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa acuminata*	United States	Raabe et al. (1981)
Phoma musae Sacc.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa sapientum*	Dominican Republic	Ciferri (1929)
Phoma musae Sacc.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	France, United States	Stevens (1925), Index of Fungi (1972)
Phoma musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa sapientum*	Barbados	Norse (1974)
Phoma musarum Cooke	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	United States	Cooke & Massee (1883)
Phoma musicola Tassi	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* × *paradisiaca*	Argentina, Cuba, India	Saccardo & Sydow (1902), Mathur (1979), Arnold (1986)
Phoma musicola Tassi	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Italy	Saccardo & Sydow (1902)
Phoma sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* × *paradisiaca*	Brazil, India	Mathur (1979), Mendes et al. (1998)
Phoma sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Phoma sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa acuminata* subsp. *banksii*	Australia	Brown et al. (1998)
Phoma sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa sapientum*	Mexico, United States	Alvarez (1976), Alfieri et al. (1984)
Phoma sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Stagonosporopsis cucurbitacearum (Fr.) Aveskamp*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymellaceae*	*Musa* sp.	Bangladesh	Nguanhom et al. (2015)
Dictyoarthrinium musae Samarakoon, Chomnunti & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	Samarakoon et al. (2020b), This study

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Dictyoarthrinium sacchari (J. A. Stev.) Damon*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Dictyoarthrinium sacchari (J. A. Stev.) Damon*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Dictyoarthrinium synnematicum Somrith.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	Somrithipol (2007)
Dictyoarthrinium thailandica G. C. Ren & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	This study
Phaeodothis winteri (Niessl) Aptroot*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa sapientum*	Costa Rica	Aptroot (1995)
Pseudopithomyces chartarum (Berk. & M. A. Curtis) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa sapientum*	Africa, Jamaica, Philippines	Reinking (1918, 1919), Teodoro (1937), Ellis (1960)
Pseudopithomyces chartarum (Berk. & M. A. Curtis) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Pseudopithomyces chartarum (Berk. & M. A. Curtis) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa acuminata* × *Musa balbisiana*	Thailand	This study
Pseudopithomyces chartarum (Berk. & M. A. Curtis) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pseudopithomyces maydicus (Sacc.) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa sapientum*	China, Taiwan region in China	Matsushima (1980), Tianyu (2009)
Pseudopithomyces maydicus (Sacc.) Jun F. Li, Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951)
Pseudopithomyces sacchari (Speg.) Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa sapientum*	Trinidad and Tobago,	Ellis (1960)
Pseudopithomyces sacchari (Speg.) Ariyaw. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	South Africa	Surridge (2002)
Spegazzinia deightonii (S. Hughes) Subram.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	Samarakoon et al. (2020a)
Spegazzinia radermacherae Jayasiri, E. B. G. Jones & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	Chethana et al. (2021b)
Spegazzinia musae Samarakoon, Phookamsak, Wanas., Chomnunti & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Didymosphaeria-ceae*	*Musa* sp.	Thailand	Samarakoon et al. (2020a)
Bahusandhika indica (Subram.) Subram.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Lentimurispora-ceae*	*Musa* sp.	Thailand	This study
Leptosphaeria musae T. Y. Lin & J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa acuminata*	China	Tai (1979)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Leptosphaeria musae T. Y. Lin & J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa cavendishii*	Taiwan region in China	Socie´te´ mycologique de France (1972), Crane & Shearer (1991)
Leptosphaeria musarum Sacc. & Berl.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa* × *paradisiaca*	Venezuela	Urtiaga (1986)
Leptosphaeria musarum Sacc. & Berl.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Leptosphaeria musarum Sacc. & Berl.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa* sp.	Africa, Brazil, India	Revue mycologique (1889), Crane & Shearer (1991), Mendes et al. (1998)
Leptosphaeria musigena T. Y. Lin & J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa acuminata*	China	Tai (1979)
Leptosphaeria musigena T. Y. Lin & J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa cavendishii*	Taiwan region in China	Socie´te´ mycologique de France (1972), Crane & Shearer (1991)
Leptosphaeria sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Leptosphaeria taichungensis J. M. Yen	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Leptosphaeriaceae*	*Musa* sp.	Taiwan region in China	Socie´te´ mycologique de France (1972), Crane & Shearer (1991)
Lophiotrema hydei J. F. Zhang, J. K. Liu & Z. Y. Liu	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Lophiotremataceae*	*Musa* sp.	Thailand	This study
Helminthosporium cubense Matsush.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* sp.	Dominican Republic	Ciferri (1961)
Helminthosporium gibberosporum Curzi*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Helminthosporium gibberosporum Curzi*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa cavendishii*	Somalia	Ciferri (1961)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Helminthosporium palmicola Pat. & Gaillard	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* sp.	Venezuela	Dennis (1970)
Helminthosporium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* × *paradisiaca*	Haiti, South Africa	Crous et al. (2000)
Helminthosporium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa acuminata*	South Africa, Somalia, United States	Castellani & Ciferri (1937), Raabe et al. (1981), Crous et al. (2000)
Helminthosporium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa sapientum*	Thailand	Giatgong (1980)
Helminthosporium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* sp.	South Africa, United States	Meredith (1969b), Gorter (1977)
Helminthosporium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa textilis*	Malay Peninsula, Philippines	Teodoro (1937), Thompson & Johnston (1953)
Helminthosporium velutinum Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Stagonospora sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa* × *paradisiaca* var. *sapientum*	Cuba	Urtiaga (1986)
Stagonospora sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Massarinaceae*	*Musa acuminata*	Cuba	Urtiaga (2004)
Aposphaeria musarum Speg.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Melanommataceae*	*Musa sapientum*	Argentina	Museo Nacional de Buenos Aires (1911)
Byssosphaeria musae Phook. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Melanommataceae*	*Musa* sp.	Thailand	Liu et al. (2015)
Phragmocephala atra var. *atra* (Berk. & Broome) E. W. Mason & S. Hughes	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Melanommataceae*	*Musa* sp.	Mexico	Mercado-Sierra & Heredia (1994)
Periconia byssoides Pers.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* × *paradisiaca*	Cuba, Solomon Islands	Matsushima (1971), Delgado-Rodriguez & Mena-Portales (2004)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Periconia byssoides Pers.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* × *paradisiaca* var. *sapientum*	Venezuela	Urtiaga (1986)
Periconia byssoides Pers.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa acuminata*	Venezuela	Urtiaga (2004)
Periconia digitata (Cooke) Sacc. *	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Periconia digitata (Cooke) Sacc.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Periconia echinochloae (Bat.) M. B. Ellis*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* sp.	Thailand	This study
Periconia lateralis Ellis & Everh.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Periconia minutissima Corda*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* × *paradisiaca*	Ghana	Hughes (1953)
Periconia pycnospora Fresen.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Periconia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa sapientum*	Indonesia, Malay Peninsula, Malaysia, Nigeria	Thompson & Johnston (1953), Ellis (1967), Williams & Liu (1976)
Periconia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* sp.	Iran, Malaysia, Nigeria, Papua New Guinea, Samoa, Sierra Leone, Solomon Islands, South Africa	Ellis (1967), Ellis (1971b), Shaw (1984)
Periconia cortaderiae Thambug. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021a)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Periconia delonicis Jayasiri, E. B. G. Jones & K.D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Periconiaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021a)
Hendersonia musae Cooke	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* sp.	United States	Cooke & Massee (1883)
Hendersonia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Hendersonia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Leptospora musae Drost	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa sapientum*	United States	Saccardo et al. (1931)
Neosetophoma poaceicola Goonas., Thambug. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa acuminata*	Taiwan region in China	Tennakoon et al. (2020)
Ophiobolus sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Phaeoseptoria musae Punith.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa sapientum*	Colombia, India	Punithalingam (1983)
Phaeoseptoria musae Punith.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* sp.	Tanzania	Ebbels & Allen (1979)
Phaeoseptoria sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)
Phaeosphaeria musae Sawada*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa cavendishii*	Taiwan region in China	Sawada (1959)
Phaeosphaeria oryzae I. Miyake *	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* sp.	Thailand	This study
Phaeosphaeriopsis musae Arzanlou & Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* sp.	Mauritius	Arzanlou & Crous (2006)
Saccharicola sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Phaeosphaeria-ceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Alternaria alternata (Fr.) Keissl.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Bangladesh, India	Rao (1969), Bashar et al. (2012)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Alternaria alternata (Fr.) Keissl.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China, Iran, Thailand	Lu et al. (2000), Zhuang (2001), Lumyong et al. (2003), Amani (2011)
Alternaria alternata (Fr.) Keissl.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Malawi, Pakistan	Ahmad (1969), Peregrine & Siddiqi (1972)
Alternaria alternata (Fr.) Keissl.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	India, Malawi, South Africa, United States	Wiehe (1953), Andersen et al. (2001), Surridge (2002), Parkunan et al. (2013)
Alternaria burnsii Uppal, Patel & Kamat*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Cameroon	Bechem & Afanga (2017)
Alternaria citri Ellis & N. Pierce*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Alternaria dianthicola Neerg.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Brazil	Photita et al. (2002)
Alternaria jacinthicola Dagno & Jijakli*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata* cv. Giant Cavendish	China	Wang et al. (2022a)
Alternaria musae Bouriquet & Bataille	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa x paradisiaca*	Cuba	Arnold (1986)
Alternaria musae Bouriquet & Bataille	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Malawi	Peregrine & Siddiqi (1972)
Alternaria musae Bouriquet & Bataille	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Madagascar, Malawi	Index of Fungi (1963), Corbett (1964)
Alternaria sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Alternaria sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum* var. *arakanensis*	Myanmar	Thaung (2008a)
Alternaria sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	China	Chen (2017)
Alternaria tenuissima (Kunze) Wiltshire*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986), Urtiaga (1986)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Alternaria tenuissima (Kunze) Wiltshire*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Pakistan	Ahmad et al. (1997)
Alternaria tenuissima (Kunze) Wiltshire*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Bipolaris bicolor (Mitra) Shoemaker*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Tanzania	Riley (1960)
Bipolaris cynodontis (Marignoni) Shoemaker*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Argentina, South Africa	Surridge (2002), Manamgoda et al. (2011), Khan et al. (2023)
Bipolaris gigantea (S. Ito) B. Lane, Stricker, M. E. Sm., S. L. Flory & Harmon*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	Iran	Amani (2011), Amani & Avagyan (2014)
Bipolaris gigantea (S. Ito) B. Lane, Stricker, M. E. Sm., S. L. Flory & Harmon*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	United States	Meredith (1969b)
Bipolaris oryzae (Breda de Haan) Shoemaker*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China	Zhao et al. (2023)
Bipolaris papendorfii (Aa) Alcorn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018), Khan et al. (2023)
Bipolaris sacchari (E. J. Butler) Shoemaker*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Brazil, West Indies	Wallbridge & Pinegar (1975), Silva et al. (2008)
Bipolaris sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018)
Bipolaris triticicola Sivan.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	West Indies	Sivanesan (1987)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Cochliobolus geniculatus R. R. Nelson*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Cuba	Delgado-Rodriguez et al. (2002)
Cochliobolus geniculatus R. R. Nelson*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Cochliobolus geniculatus R. R. Nelson*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata* cv. Formosana	China	Qi et al. (2022a)
Cochliobolus geniculatus R. R. Nelson*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Brunei Darussalam	Peregrine & Ahmad (1982)
Cochliobolus geniculatus R. R. Nelson	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Fiji	Dingley et al. (1981)
Cochliobolus intermedius R. R. Nelson*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Malaysia	Khan et al. (2023)
Curvularia clavata B. L. Jain*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Bangladesh	Bashar et al. (2012)
Curvularia eragrostidis (Henn.) J. A. Mey. *	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Brunei Darussalam	Peregrine & Ahmad (1982)
Curvularia fallax Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Solomon Islands	Matsushima (1971)
Curvularia fallax Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa textilis*	Malaysia	Turner (1971)
Curvularia hawaiiensis (Bugnic. ex M. B. Ellis) Manamgoda, L. Cai & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Pakistan, Taiwan region in China	Matsushima (1980), Ahmad et al. (1997)
Curvularia lunata (Wakker) Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China, Pakistan, Somalia	Castellani & Ciferri (1937), Zhuang (2001), Khan & Javaid (2020)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Curvularia lunata (Wakker) Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Brunei Darussalam, Taiwan region in China	Matsushima (1980), Peregrine & Ahmad (1982)
Curvularia lunata (Wakker) Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Australia, Ghana, Guinea, South Africa, Trinidad and Tobago	Castellani & Ciferri (1937), Hughes (1953), Kranz (1963), Surridge (2002)
Curvularia lunata (Wakker) Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Castellani & Ciferri (1937), Hughes (1953), Surridge (2002)
Curvularia pallescens Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Curvularia pallescens Boedijn*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Curvularia pseudobrachyspora Y. Marín, Cheew. & Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China	Qi et al. (2022b)
Curvularia senegalensis (Speg.) Subram.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China	Zhuang (2001)
Curvularia senegalensis (Speg.) Subram.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa x paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Curvularia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	United States	Raabe et al. (1981)
Curvularia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Guatemala, Papua New Guinea, United States	Meredith (1969b), Shaw (1984), Marin et al. (1996)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Curvularia sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank, Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Curvularia tsudae H. Deng, Y. P. Tan & R. G. Shivas*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Manamgoda et al. (2011), Khan et al. (2023)
Curvularia umbiliciformis M. Raza, K. D. Hyde & L. Cai*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Thailand	This study
Curvularia verruculosa Tandon & Bilgrami*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Drechslera musae-sapientium (Hansf.) M. B. Ellis	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Brunei Darussalam, Uganda	Index of Fungi (1954), Peregrine & Ahmad (1982), Manamgoda et al. (2014)
Drechslera musae-sapientium (Hansf.) M. B. Ellis	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum* var. *rubra*	Myanmar	Thaung (2008a)
Drechslera musae-sapientium (Hansf.) M. B. Ellis	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Ethiopia, Sudan, Uganda	Tarr (1963), Ellis (1971b)
Exserohilum prolatum K. J. Leonard & Suggs*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Nigeria	Sivanesan (1984)
Exserohilum rostratum (Drechsler) K. J. Leonard & Suggs*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	China, Thailand	Lumyong et al. (2003), Lin et al. (2011)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Exserohilum rostratum (Drechsler) K. J. Leonard & Suggs*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	India	Sarkar et al. (2013b)
Exserohilum rostratum (Drechsler) K. J. Leonard & Suggs*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa sapientum*	Brunei Darussalam, Taiwan region in China	Matsushima (1980), Peregrine & Ahmad (1982)
Exserohilum rostratum (Drechsler) K. J. Leonard & Suggs*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Macrosporium ensetes Thüm.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa ensete*	Portugal	Saccardo (1886)
Pyrenophora dematioidea (Bubák & Wróbl.) Rossman & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Pyrenophora grahamii Rossman & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Stemphylium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* × *paradisiaca*	Cuba, Japan	Matsushima (1975), Urtiaga (1986), Kobayashi (2007)
Stemphylium vesicarium (Wallr.) E. G. Simmons*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Stemphylium vesicarium (Wallr.) E. G. Simmons*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporaceae*	*Musa* sp.	Libya	Kranz (1965a), El-Buni & Rattan (1981)
Chaetophoma musae Cooke	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa* sp.	United States	Cooke & Massee (1883)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pyrenochaeta sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa sapientum var. rubra*	Myanmar	Thaung (2008a)
Pyrenochaeta sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Scleroramularia musae G. Y. Sun & Liu Gao*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa basjoo*	China	Gao et al. (2015b)
Scolecobasidium humicola G. L. Barron & L. V. Busch*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Scolecobasidium musae G. Y. Sun & Lu Hao*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa basjoo*	China	Hao et al. (2013), Crous et al. (2021b)
Scolecobasidium musicola (Crous) Crous, M. Shen & Y. Zhang ter*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa* sp.	Cameroon, France, India, Malaysia	Crous et al. (2018a), Crous et al. (2021b)
Scolecobasidium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Scolecobasidium sp.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Scolecobasidium variabile G. L. Barron & L. V. Busch*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pleosporales* genera *incertae sedis*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Berkleasmium phyllostachydis Matsush.	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pseudoberkleasmiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Pyrenochaetopsis musae Samarakoon & Chomnunti*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Pyrenochaetopsidaceae*	*Musa* sp.	Thailand	This study

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Setoarthopyrenia chromolaenae Mapook & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Roussoellaceae*	*Musa* sp.	Thailand	This study
Sporormiella minima (Auersw.) S. I. Ahmed & Cain*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Sporormiaceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951)
Tetraploa aristata Berk. & Broome*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Tetraplosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Tetraploa aristata Berk. & Broome*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Tetraplosphaeria-ceae*	*Musa textilis*	Malaysia	Liu (1977)
Tetraploa ellisii Cooke	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Tetraplosphaeria-ceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Torula chromolaenae Jun F. Li, Phook., Mapook & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021a)
Torula fici Crous*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa* sp.	China	Samarakoon et al. (2021a)
Torula herbarum (Pers.) Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa* × *paradisiaca*	Papua New Guinea	Matsushima (1971)
Torula herbarum (Pers.) Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa acuminata*	Somalia, Thailand	Castellani & Ciferri (1937), Lumyong et al. (2003)
Torula herbarum (Pers.) Link*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa sapientum*	Taiwan region in China, Zambia	Riley (1956), Matsushima (1980)
Torula mackenziei Jun F. Li, Phook. & K. D. Hyde*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa* sp.	Thailand	This study
Torula mansonii (Castell.) Vuill.*	*Ascomycota*	*Dothideomycetes*	*Pleosporales*	*Torulaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021a)
Helicoma sp.	*Ascomycota*	*Dothideomycetes*	*Tubeufiales*	*Tubeufiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Helicomyces macrofilamentosus Matsush.*	*Ascomycota*	*Dothideomycetes*	*Tubeufiales*	*Tubeufiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Helicomyces roseus Link*	*Ascomycota*	*Dothideomycetes*	*Tubeufiales*	*Tubeufiaceae*	*Musa sapientum*	Australia	Matsushima (1989)
Neohelicosporium terrestris Samarakoon & Chomnunti*	*Ascomycota*	*Dothideomycetes*	*Tubeufiales*	*Tubeufiaceae*	*Musa* sp.	Thailand	This study
Napicladium musae Sawada	*Ascomycota*	*Dothideomycetes*	*Venturiales*	*Venturiaceae*	*Musa cavendishii*	Taiwan region in China	Index of Fungi (1954)
Venturia musae Sawada	*Ascomycota*	*Dothideomycetes*	*Venturiales*	*Venturiaceae*	*Musa cavendishii*	Taiwan region in China	Sawada (1959)
Venturia musae Sawada	*Ascomycota*	*Dothideomycetes*	*Venturiales*	*Venturiaceae*	*Musa formosana*	Taiwan region in China	Sawada (1959)
Sarcinella sp.	*Ascomycota*	*Dothideomycetes*	*Zeloasperisporiales Incertae sedis*	*Englerulaceae*	*Musa acuminata*	China	Cao et al. (2002)
Chaetothyrium sp.	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Chaetothyriaceae*	*Musa* sp.	Puerto Rico	Batista & Ciferri (1962)
Phaeosaccardinula tenuis (Earle) Seaver & Chardón	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Chaetothyriaceae*	*Musa* × *paradisiaca*	Puerto Rico, Virgin Islands	Stevenson (1975), Photita et al. (2002), Piatek et al. (2013)
Limacinula musicola (Bat.) D. R. Reynolds	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Coccodiniaceae*	*Musa* sp.	United Kingdom	Index of Fungi (1957)
Limacinula musicola (Bat.) D. R. Reynolds	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Coccodiniaceae*	*Musa sapientum*	Brazil	Batista & Ciferri (1962)
Cyphellophora musae G. Y. Sun & Liu Gao*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Cyphellophoraceae*	*Musa basjoo*	China	Gao et al. (2015a)
Cladophialophora bantiana (Sacc.) de Hoog, Kwon-Chung & McGinnis*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiella-ceae*	*Musa sapientum*	Australia	Matsushima (1989)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Metulocladosporiella chiangmaiensis Y. Marín, Cheew. & Crous*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	Thailand	Marin-Felix et al. (2019), Crous et al. (2021b)
Metulocladosporiella malaysiana Y. Marín & Crous*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	Malaysia	Crous et al. (2021b)
Metulocladosporiella musae (E. W. Mason) Crous, Schroers, J. Z. Groenew., U. Braun & K. Schub.*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	South Africa, Honduras, Jamaica, Mexico, Thailand	Surridge et al. (2002), Crous et al. (2006, 2021), This study
Metulocladosporiella musae (E. W. Mason) Crous, Schroers, J. Z. Groenew., U. Braun & K. Schub.*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa sapientum*	Cameroon	Crous et al. (2006)
Metulocladosporiella musicola Crous, Schroers & J. Z. Groenew. *	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa acuminata*	Africa	Crous et al. (2021b)
Metulocladosporiella musicola Crous, Schroers & J. Z. Groenew.*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* × *paradisiaca*	Uganda	Crous et al. (2006)
Metulocladosporiella musicola Crous, Schroers & J. Z. Groenew.*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa sapientum*	Kenya, Mozambique, Uganda, Zimbabwe	Crous et al. (2006)
Metulocladosporiella musicola Crous, Schroers & J. Z. Groenew.*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	China, France, Kenya, Mozambique, South Africa, Uganda, Zimbabwe	Crous et al. (2006), Chen (2017)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Metulocladosporiella musigena Y. Marín, Cheew. & Crous*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	Thailand	Marin-Felix et al. (2019), Crous et al. (2021b)
Metulocladosporiella samutensis Y. Marín, Luangsa-ard & Crous*	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	Thailand	Marin-Felix et al. (2019), Crous et al. (2021b)
Minimelanolocus sp.	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Veronaea sp.	*Ascomycota*	*Eurotiomycetes*	*Chaetothyriales*	*Herpotrichiellaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Aspergillus appendiculatus Blaser*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus austroafricanus Jurjevic, S. W. Peterson & B. W. Horn*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus caesiellus Saito*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus carneus Blochwitz*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Iran	Amani (2011), Amani & Avagyan (2014)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Aspergillus clavatus Desm.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa sp.*	Brazil	Mendes et al. (1998)
Aspergillus costiformis H. Z. Kong & Z. T. Qi*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus flavus Link*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Aspergillus flavus Link*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* × *paradisiaca*	Bangladesh, Brazil, India	Mendes et al. (1998), Bashar et al. (2012), Gupta (2023)
Aspergillus flavus Link*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Aspergillus flavus Link	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Aspergillus flavus Link*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus fumigatus Fresen.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* × *paradisiaca*	India	Gupta (2023)
Aspergillus fumigatus Fresen.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Aspergillus glaucus (L.) Link*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Aspergillus niger Tiegh.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* × *paradisiaca*	Bangladesh, Brazil	Mendes et al. (1998), Bashar et al. (2012)
Aspergillus niger Tiegh.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Aspergillus niger Tiegh.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Aspergillus niger Tiegh.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus ochraceus G. Wilh.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Hong Kong	Lu et al. (2000), Zhuang (2001)
Aspergillus oryzae (Ahlb.) Cohn*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Spain	Garoé et al. (2013)
Aspergillus penicillioides Speg.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus puulaauensis Jurjevic, S. W. Peterson & B. W. Horn*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus restrictus G. Sm.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Aspergillus sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa x paradisiaca*	Brazil	Mendes et al. (1998)
Aspergillus sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Aspergillus sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Brazil, United States	Meredith (1969b), Mendes et al. (1998)
Aspergillus sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Aspergillus versicolor (Vuill.) Tirab.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Aspergillus wentii Wehmer*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Citromyces musae Bainier & Sartory	*Ascomycota*	*Eurotiomycetes,*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	France	Socie´te´ mycologique de France (1913)
Penicillium atrobrunneum Cooke	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	United States	Cooke (1878)
Penicillium bialowiezense K. W. Zaleski*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium chlorinum Fresen.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa × paradisiaca*	Germany	Fresenius (1850)
Penicillium cinnamopurpureum S. Abe*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Penicillium citrinum Thom*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium commune Thom*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	England	Smith (1951)
Penicillium corylophilum Dierckx*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Ecuador	Marin et al. (1996)
Penicillium dierckxii Biourge*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium digitatum (Pers.) Sacc.*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Hong Kong, Japan	Lu et al. (2000), Zhuang (2001), Kobayashi (2007)
Penicillium dodgei Pitt*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium italicum Wehmer*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Hong Kong, Japan	Lu et al. (2000), Zhuang (2001), Kobayashi (2007)
Penicillium marinum Frisvad & Samson*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Penicillium melanostipe Houbraken & Samson	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Cuba	Mercado-Sierra et al. (1998)
Penicillium meleagrinum var. *viridiflavum* S. Abe*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium musae Weid.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Germany	Traverso (1911)
Penicillium olsoni Bainier & Sartory	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	France	Bainier & Sartory (1912)
Penicillium solitum Westling*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Penicillium sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Somalia, Thailand	Lumyong et al. (2003)
Penicillium sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* × *paradisiaca*	Bangladesh, Venezuela	Urtiaga (1986), Bashar et al. (2012)
Penicillium sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Penicillium sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Costa Rica, Guatemala, Mexico, United States	Meredith (1969b), Raabe et al. (1981), Marin et al. (1996)
Penicillium steckii K. W. Zaleski*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Penicillium taiwanense (Matsush.) Houbraken & Samson	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1985)
Penicillium purpureogenum Stoll*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018)
Sphaeromyces sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Aspergillaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Paecilomyces musicola Matsush.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Thermoascaceae*	*Musa* × *paradisiaca*	Japan	Matsushima (1975)
Paecilomyces sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Thermoascaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Paecilomyces variotii Bainier*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Thermoascaceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Paecilomyces variotii Bainier*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Thermoascaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Paecilomyces sp.	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Thermoascaceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Talaromyces musae Houbraken, Kraak & M. Meijer*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Trichocomaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Talaromyces musae Houbraken, Kraak & M. Meijer*	*Ascomycota*	*Eurotiomycetes*	*Eurotiales*	*Trichocomaceae*	*Musa* sp.	Germany	Crous et al. (2017)
Treleasia musicola Speg.	*Ascomycota*	*Laboulbeniomycetes*	*Pyxidiophorales*	*Pyxidiophoraceae*	*Musa* sp.	Argentina	Museo Nacional de Buenos Aires (1909)
Physcia sp.	*Ascomycota*	*Lecanoromycetes*	*Caliciales*	*Physciaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Stictis musae Seaver & Waterston	*Ascomycota*	*Lecanoromycetes*	*Ostropales*	*Stictidaceae*	*Musa* sp.	Bermuda	Seaver & Waterston (1941)
Stictis tropicalis Speg.	*Ascomycota*	*Lecanoromycetes*	*Ostropales*	*Stictidaceae*	*Musa* × *paradisiaca*	Argentina	Museo Nacional de Buenos Aires (1909)
Hainesia tellingsii Koord.	*Ascomycota*	*Leotiomycetes*	*Chaetomellales*	*Chaetomellaceae*	*Musa* sp.	Indonesia	Koorders (1907)
Chlorociboria musae Dennis	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Chlorociboriaceae*	*Musa sapientum*	Bolivia	Index of Fungi (1963)
Cryptosporiopsis sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Dermateaceae*	*Musa acuminata*	Hong Kong	Lu et al. (2000), Zhuang (2001)
Gloeosporium chioneum Syd. & P. Syd.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa* sp.	Congo	Sydow & Sydow (1912)
Gloeosporium orbiculare (Berk.) Berk.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa* sp.	United States	Cash (1952)
Gloeosporium orbiculare (Berk.) Berk.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa acuminata*	United States	Ellis & Everhart (1889)
Gloeosporium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Gloeosporium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Gloeosporium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa* × *paradisiaca*	India	Mathur (1979)
Gloeosporium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa cavendishii*	United States	Stevens (1925)
Gloeosporium musae Berk. & M. A. Curtis ex Ellis	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Drepanopezizaceae*	*Musa acuminata*	China	Cao et al. (2002)
Erysiphe geniculata (W. R. Gerard) U. Braun & S. Takam.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Erysiphaceae*	*Musa cavendishii*	Jordan	Amano (1986)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Oidium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Erysiphaceae*	*Musa indica*	India	Paul & Thakur (2006)
Oospora alquieri Delacr.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Erysiphaceae*	*Musa* sp.	Congo	Socie´te´ mycologique de France & Socie´te´ botanique de France (1885)
Oospora roseoflava Sacc.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Erysiphaceae*	*Musa purpurea*	Italy	Saccardo (1877a)
Uncinula sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Erysiphaceae*	*Musa acuminata*	China	Cao et al. (2002)
Hymenoscyphus musicola Dennis	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiaceae*	*Musa* × *paradisiaca*	Bolivia	Farr & Stevenson (1963)
Dactylella atractoides Drechsler	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa basjoo*	Japan	Tubaki (1958), Kobayashi (2007)
Dactylaria dimorphospora Veenb. -Rijks*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Dactylaria obtriangularia Matsush.*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa* × *paradisiaca*	Japan	Matsushima (1975), Kobayashi (2007)
Dactylaria parvispora (Preuss) de Hoog & Arx*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa sapientum*	Taiwan region in China	Matsushima (1987)
Dactylaria sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Dactylaria sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Helotiales* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Harpographium sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Hyaloscyphaceae*	*Musa* sp.	South Africa	Surridge (2002)
Haplographium atrobrunneum (Cooke) Sacc.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Hyaloscyphaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Haplographium musae Sawada	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Hyaloscyphaceae*	*Musa cavendishii*	Taiwan region in China	Sawada (1959)
Exochalara guadalcanalensis (Matsush.) W. Gams & Hol. Jech.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Neolauriomyceta-ceae*	*Musa* sp.	Solomon Islands	Matsushima (1971), Rong & Gams (2000), Reblova et al. (2011)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Chalara musae Sawada	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Pezizellaceae*	*Musa cavendishii*	Taiwan region in China	Sawada (1959)
Botrytis cinerea Pers.*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Sclerotiniaceae*	*Musa acuminata*	China	Zhang (2006)
Botrytis cinerea Pers.*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Sclerotiniaceae*	*Musa cavendishii*	Greece	Holevas et al. (2000)
Botrytis sp.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Sclerotiniaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Sclerotinia sclerotiorum (Lib.) de Bary*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Sclerotiniaceae*	*Musa acuminata*	Australia	Simmonds (1966)
Sclerotinia sclerotiorum (Lib.) de Bary*	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Sclerotiniaceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Diplococcium capitatum Piroz.	*Ascomycota*	*Leotiomycetes*	*Helotiales*	*Vibrisseaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Cylindrocolla musicola Speg.	*Ascomycota*	*Leotiomycetes*	*Leotiomycetes* families *incertae sedis*	*Calloriaceae*	*Musa* × *paradisiaca*	Argentina	Museo Nacional de Buenos Aires (1910), Farr (1973)
Coronellaria musicola (Speg.) Dennis	*Ascomycota*	*Leotiomycetes*	*Leotiomycetes* genera *incertae sedis*	*Leotiomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Argentina	Farr (1973)
Coccomyces annulatus Sherwood	*Ascomycota*	*Leotiomycetes*	*Rhytismatales*	*Rhytismataceae*	*Musa* × *paradisiaca*	Colombia	Sherwood (1980)
Coccomyces clusiae (Lév.) Sacc.	*Ascomycota*	*Leotiomycetes*	*Rhytismatales*	*Rhytismataceae*	*Musa* × *paradisiaca*	Puerto Rico, Virgin Islands	Stevenson (1975)
Coccomyces clusiae (Lév.) Sacc.	*Ascomycota*	*Leotiomycetes*	*Rhytismatales*	*Rhytismataceae*	*Musa* sp.	Central America, Colombia	Dennis (1970), Photita et al. (2002)
Leptostroma musicola Tassi	*Ascomycota*	*Leotiomycetes*	*Rhytismatales*	*Rhytismataceae*	*Musa* × *paradisiaca*	Italy	Saccardo (1906)
Dactylella rhombica Matsush.	*Ascomycota*	*Orbiliomycetes*	*Orbiliales*	*Orbiliaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Orbilia oxyspora (Sacc. & Marchal) E. We3 ber & Baral*	*Ascomycota*	*Orbiliomycetes*	*Orbiliales*	*Orbiliaceae*	*Musa* × *paradisiaca*	Japan	Matsushima (1975), Kobayashi (2007)
Orbilia oxyspora (Sacc. & Marchal) E. Weber & Baral*	*Ascomycota*	*Orbiliomycetes*	*Orbiliales*	*Orbiliaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Orbilia rhopalota (Drechsler) Baral & E. Weber*	*Ascomycota*	*Orbiliomycetes*	*Orbiliales*	*Orbiliaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Peziza musicola (Henn.) Sacc. & D. Sacc.	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pezizaceae*	*Musa* × *paradisiaca*	Brazil	Photita et al. (2002)
Purpureodiscus bananincola (Rehm) Van Vooren	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pezizaceae*	*Musa* sp.	Philippines	Teodoro (1937), Pfister (1991)
Purpureodiscus bananincola (Rehm) Van Vooren	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pezizaceae*	*Musa sapientum*	Philippines	Reinking (1918, 1919), Teodoro (1937)
Oedocephalum guadalcanalense Matsush.	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pezizales* genera *Incertae sedis*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Scutellinia cubensis (Berk. & M. A. Curtis) Gamundí	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pyronemataceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951)
Scutellinia scutellata (L.) Lambotte*	*Ascomycota*	*Pezizomycetes*	*Pezizales*	*Pyronemataceae*	*Musa* × *paradisiaca*	Puerto Rico, Virgin Islands	Stevenson (1975)
Debaryomyces vindobonensis Lopandic, Rents. & Prillinger*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Debaryomyceta-ceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Meyerozyma guilliermondii (Wick.) Kurtzman & M. Suzuki*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Debaryomyceta-ceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa* sp.	South Africa	Gorter (1977)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa cavendishii*	Ghana	Dade (1940)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa* sp.	Papua New Guinea, Zimbabwe	Whiteside (1966), Shaw (1984)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa* × *paradisiaca*	South Africa	Crous et al. (2000)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa acuminata*	China, South Africa	Crous et al. (2000), Zhuang (2001)
Geotrichum candidum Link*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa* × *paradisiaca*	Brazil, South Africa, West Indies	Wallbridge & Pinegar (1975), Mendes et al. (1998), Crous et al. (2000)
Micrococcus sp.	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Dipodascaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Clavispora fructus (Nakase) Kurtzman, Robnett & Basehoar*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Metschnikowia-ceae*	*Musa sapientum*	Japan	Photita et al. (2002)
Candida conglobata (Redaelli) Cif.*	*Ascomycota*	*Saccharomycetes*	*Saccharomycetales*	*Saccharomycetales* genera *incertae sedis*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Apiospora locuta-pollinis (F. Liu & L. Cai) Pintos & P. Alvarado*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Thailand	This study
Apiospora sphaerosperma (Pers.) Pintos & P. Alvarado*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951), Dennis (1970)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Nigrospora aurantiaca Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017), Raza et al. (2019)
Nigrospora camelliae-sinensis Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017)
Nigrospora chinensis Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017)
Nigrospora hainanensis Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017), Raza et al. (2019)
Nigrospora lacticolonia Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017), Raza et al. (2019)
Nigrospora musae McLennan & Hoëtte*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa acuminata*	Australia	Hao et al. (2020)
Nigrospora musae McLennan & Hoëtte*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa acuminata* subsp. *banksii*	Australia	Brown et al. (1998)
Nigrospora musae McLennan & Hoëtte*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	Australia, China	Wang et al. (2017)
Nigrospora musae McLennan & Hoëtte*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa sapientum*	Australia	Wang et al. (2017)
Nigrospora musae McLennan & Hoëtte*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Australia	Petrak (1944)
Nigrospora oryzae (Berk. & Broome) Petch*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa acuminata*	Australia, Hong Kong, Somalia, Thailand	Castellani & Ciferri (1937), Lu et al. (2000), Zhuang (2001), Lumyong et al. (2003), Hao et al. (2020)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Nigrospora oryzae (Berk. & Broome) Petch*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	India, Japan	Kobayashi (2007)
Nigrospora oryzae (Berk. & Broome) Petch*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa sapientum*	Japan	Kobayashi (2007)
Nigrospora oryzae (Berk. & Broome) Petch*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Hong Kong, India, Japan, Malaysia, South Africa	Gorter (1977), Brown et al. (1998), Kobayashi (2007)
Nigrospora pyriformis Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017)
Nigrospora sacchari (Speg.) E. W. Mason*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	South Africa	Surridge (2002)
Nigrospora sp.	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa acuminata*	Guatemala	Tarnowski et al. (2010)
Nigrospora sp.	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)
Nigrospora sphaerica (Sacc.) E. W. Mason*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Australia, Fiji, Guinea, Japan, Malaysia, South Africa, Thailand	Kranz (1965b), Dingley et al. (1981), Surridge (2002), Kobayashi (2007), Zakaria & Aziz (2018), Hao et al. (2020), This study
Nigrospora sphaerica (Sacc.) E. W. Mason*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa sapientum*	Brunei Darussalam, Fiji, Malaysia, Taiwan region in China	Turner (1971), Firman (1972), Matsushima (1980), Peregrine & Ahmad (1982)
Nigrospora sphaerica (Sacc.) E. W. Mason*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa acuminata*	Australia, Somalia, Venezuela	Castellani & Ciferri (1937), Simmonds (1966), Urtiaga (2004)
Nigrospora sphaerica (Sacc.) E. W. Mason*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China, West Indies	Wallbridge & Pinegar (1975), Wang et al. (2017)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Nigrospora vesicularis Mei Wang & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2017), Raza et al. (2019)
Nigrospora zimmermanii Crous*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Apiosporaceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Beltraniella portoricensis (F. Stevens) Piroz. & S. D. Patil*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Beltraniaceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Beltrania rhombica Penz. *	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Beltraniaceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971))
Hansfordia ovalispora S. Hughes	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Hansfordiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Physalospora fallaciosa Sacc.	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Hyponectriaceae*	*Musa* sp.	Germany	Saccardo (1877b)
Neopestalotiopsis clavispora (G. F. Atk.) Maharachch., K. D. Hyde & Crous*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa acuminata*	China	Qi et al. (2023)
Neopestalotiopsis clavispora (G. F. Atk.) Maharachch., K. D. Hyde & Crous*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Thailand	This study
Neopestalotiopsis musae Norph. & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Thailand	Hyde et al. (2016), This study
Pestalotiopsis acaciae (Thüm.) K. Yokoy. & S. Kaneko*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Japan	Watanabe et al. (2010)
Pestalotiopsis chethallensis Sohi & O. Prakash	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	India	Nag Raj (1993)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Pestalotiopsis disseminata (Thüm.) Steyaert	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sapientum*	Malaysia	Johnston (1960)
Pestalotiopsis eugeniae (Thüm.) S. Kaneko*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018)
Pestalotiopsis guepinii (Desm.) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	South Africa	Surridge (2002)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa x paradisiaca* var. *sapientum*	China, Venezuela	Tai (1979), Urtiaga (1986)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sapientum*	Argentina, Brazil, China, India, Malaysia, Taiwan region in China	Johnston (1960), Guba (1961), Mathur (1979), Nag Raj (1993), Photita et al. (2002), Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sp.*	Argentina, India, United States	Guba (1961), Meredith (1969b), Mathur (1979)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa textilis*	China	Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa basjoo*	China	Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa × paradisiaca*	India	Mathur (1979)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sapientum*	Argentina, China, India	Mathur (1979), Nag Raj (1993), Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	India	Mathur (1979)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa textilis*	China	Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa acuminata*	United States, Venezuela	Raabe et al. (1981), Urtiaga (2004)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa basjoo*	China, Somalia	Castellani & Ciferri (1937), Tai (1979), Ge et al. (2009)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa cavendishii*	Taiwan region in China, Venezuela	Guba (1961), Dennis (1970)
Pestalotiopsis leprogena (Speg.) Kausar	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa x paradisiaca*	Argentina, Brazil, India, Puerto Rico, Virgin Islands	Guba (1961), Stevenson (1975), Mathur (1979)
Pestalotiopsis menezesiana (Bres. & Torrend) Bissett*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* × *paradisiaca*	China	Huang et al. (2007)
Pestalotiopsis menezesiana (Bres. & Torrend) Bissett*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	China	Huang et al. (2007)
Pestalotiopsis microspora (Speg.) Bat. & Peres*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Bangladesh	Bhuiyan et al. (2022)
Pestalotiopsis oxyanthi (Thüm.) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018)
Pestalotiopsis palmarum (Cooke) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa acuminata*	Hong Kong	Lu et al. (2000), Zhuang (2001)
Pestalotiopsis palmarum (Cooke) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa acuminata subsp. banksii*	Australia	Brown et al. (1998)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Pestalotiopsis palmarum (Cooke) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Hong Kong	Brown et al. (1998)
Pestalotiopsis psidii (Pat.) Venkatakr.*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* × *paradisiaca*	India	Mathur (1979)
Pestalotiopsis sp.	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)
Pestalotiopsis sp.	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Pestalotiopsis theae (Sawada) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* sp.	Malaysia	Zakaria & Aziz (2018)
Pestalotiopsis versicolor (Speg.) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Pestalotiopsis versicolor (Speg.) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa* × *paradisiaca* var. *robusta*	India	Mathur (1979)
Pestalotiopsis versicolor (Speg.) Steyaert*	*Ascomycota*	*Sordariomycetes*	*Amphisphaeriales*	*Sporocadaceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Catenularia kalakadensis Subram. & Bhat	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeria-ceae*	*Musa* sp.	India	Bhat (2010)
Chloridium sp.	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Dictyochaeta sp.	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeria-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Gonytrichum macrocladum (Sacc.) S. Hughes*	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeria-ceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Multiguttulispora triseptata (Matsush.) Réblová & Hern. -Restr.*	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeria-ceae*	*Musa* sp.	Micronesia	Matsushima (1981)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Sporoschisma hemipsilum (Berk. & Broome) Zelski, A. N. Mill. & Shearer*	*Ascomycota*	*Sordariomycetes*	*Chaetosphaeriales*	*Chaetosphaeriaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Coniochaeta sp.	*Ascomycota*	*Sordariomycetes*	*Coniochaetales*	*Coniochaetaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Cordana terrestris (Timonin) Hern. -Restr., Gené & Guarro*	*Ascomycota*	*Sordariomycetes*	*Coniochaetales*	*Cordanaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Melanospora zamiae Corda*	*Ascomycota*	*Sordariomycetes*	*Coronophorales*	*Ceratostomataceae*	*Musa* sp.	England	Cannon & Hawksworth (1982)
Melanospora zamiae Corda*	*Ascomycota*	*Sordariomycetes*	*Coronophorales*	*Ceratostomataceae*	*Musa sapientum*	Ghana	Dade (1940)
Microthecium argentinense (Speg.) Höhn.	*Ascomycota*	*Sordariomycetes*	*Coronophorales*	*Ceratostomataceae*	*Musa sapientum*	Argentina	Museo Nacional de Buenos Aires (1909)
Cladotrichum mitratum Penz. & Sacc.	*Ascomycota*	*Sordariomycetes*	*Coronophorales*	*Chaetosphaerella-ceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1987)
Cladotrichum mitratum Penz. & Sacc.	*Ascomycota*	*Sordariomycetes*	*Coronophorales*	*Chaetosphaerella-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Phomopsis musicola (F. Stevens & E. Young) Punith.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* sp.	Australia, Hong Kong, United States	Stevens (1925), Meredith (1969b), Raabe et al. (1981), Goos & Gowing (1992), Brown et al. (1998), Photita et al. (2002), Pearce & Hyde (2006)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Phomopsis musicola (F. Stevens & E. Young) Punith.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* × *paradisiaca*	India	Mathur (1979)
Phomopsis musicola (F. Stevens & E. Young) Punith.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa cavendishii*	Taiwan region in China	Sawada (1959)
Phomopsis musicola (F. Stevens & E. Young) Punith.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa acuminata*	China, Thailand, United States	Raabe et al. (1981), Lu et al. (2000), Zhuang (2001), Chi et al. (2007), Hyde et al. (2014)
Phomopsis musicola (F. Stevens & E. Young) Punith.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa banksii*	Australia	Pearce & Hyde (2006)
Phomopsis sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* sp.	Hong Kong	Brown et al. (1998)
Phomopsis sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Phomopsis sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa acuminata subsp. banksii*	Australia	Brown et al. (1998)
Phomopsis sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa acuminata*	Hong Kong	Lu et al. (2000), Zhuang (2001), Lumyong et al. (2003)
Pseudophaeocytostroma sacchari (Ellis & Everh.) B. Sutton*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* sp.	Thailand	This study
Diaporthe melitensis Guarn. & Crous*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Diaporthe musae Speg.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* × *paradisiaca*	Samoa	Photita et al. (2002)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Diaporthe musae Speg.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa sapientum*	Argentina	Museo Nacional de Buenos Aires (1909)
Diaporthe musigena Crous & R. G. Shivas*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* sp.	Australia	Crous et al. (2011)
Diaporthe pterocarpicola Udayanga, Xing Z. Liu & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Diaporthe siamensis Udayanga, Xing Z. Liu & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Diaporthe sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	*Musa* sp.	South Africa	Surridge (2002)
Diaporthe tectonae Doilom, Dissan. & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Diaporthe tectonendophytica Doilom, Dissan. & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Botryodiplodia sp.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthales* families *Incertae sedis*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Botryodiplodia palmarum (Cooke) Petr. & Syd.	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthales* families *Incertae sedis*	*Musa sapientum*	Malaysia	Williams & Liu (1976)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Kapooria musarum (J. N. Kapoor) J. Reid & C. Booth	*Ascomycota*	*Sordariomycetes*	*Diaporthales*	*Diaporthales* genera *incertae sedis*	*Musa sapientum*	India	Sarbhoy et al. (1971), Photita et al. (2002)
Ellisembia minigelatinosa (Matsush.) W. P. Wu	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* genera *incertae sedis*	*Sordariomycetes* genera *incertae sedis*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Colletotrichum acutatum J. H. Simmonds*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Thailand	Udayanga et al. (2013)
Colletotrichum aotearoa B. S. Weir & P. R. Johnst.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	India	Sharma et al. (2015)
Colletotrichum chrysophilum W. A. S. Vieira, W. G. Lima, M. P. S. Câmara & V. P. Doyle*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Brazil, Mexico	Vieira et al. (2017), Zakaria et al. (2021)
Colletotrichum citricola F. Huang, L. Cai, K. D. Hyde & Hong Y. Li*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	China	Huang et al. (2022)
Colletotrichum cliviicola Damm & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	China	Huang et al. (2021)
Colletotrichum fructicola Prihast., L. Cai & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	China	Huang et al. (2021)
Colletotrichum gigasporum Rakotonir. & Munaut*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Japan, Mexico	Liu et al. (2014), Jayawardena et al. (2016b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	Australia, Hong Kong, Malaysia, Sri Lanka, Thailand, United States	Simmonds (1966), Raabe et al. (1981), Brown et al. (1998), Lu et al. (2000), Zhuang (2001), Intan et al. (2013), Hyde et al. (2018), Adikaram & Yakandawala (2020)
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa cavendishii*	Taiwan region in China	Matsushima (1980)
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* x *paradisiaca*	Bangladesh, Brazil, Cambodia, Dominican Republic, United States, West Indies	Ciferri (1929), Litzenberger et al. (1962), Wallbridge & Pinegar (1975), Mendes et al. (1998), Bashar et al. (2012)
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa sapientum*	Barbados, Dominican Republic, Kenya, Malaysia, Malawi, Taiwan region in China, Barbados, Kenya, Malawi, Malaysia, Taiwan region in China	Ciferri (1929), Wiehe (1953), Nattrass (1961), Peregrine & Siddiqi (1972), Norse (1974), Williams & Liu (1976), Matsushima (1980), Sarbhoy & Agarwal (1990), Brown et al. (1998), Abd-Alla et al. (2014), Riera et al. (2019)
Colletotrichum gloeosporioides (Penz.) Penz. & Sacc.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Australia, Ecuador, Guinea, Hong Kong, India, Malaysia, Malawi, Mexico, Sri Lanka, Trinidad and Tobago	Baker & Dale (1951), Wiehe (1953), Kranz (1965b), Hyde & Alcorn (1993), Surridge (2002), Adikaram & Yakandawala (2020), Zakaria (2021)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Colletotrichum graminicola (Ces.) G. W. Wilson*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Colletotrichum karsti You L. Yang, Zuo Y. Liu, K. D. Hyde & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa banksii*	Australia	Shivas et al. (2016)
Colletotrichum karsti You L. Yang, Zuo Y. Liu, K. D. Hyde & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	China, Colombia, Mexico	Damm et al. (2012a), Hou et al. (2016), Guarnaccia et al. (2017b), Douanla-Meli et al. (2018), Costa et al. (2019), Huang et al. (2021), Zakaria (2021)
Colletotrichum liukiuensis Sawada*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa liukiuensis*	Taiwan region in China	Sawada (1959)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	Australia, China, Cote d'Ivoire, Egypt, Hong Kong, Somalia, South Africa, Sri Lanka, Thailand, United States, United States	Castellani & Ciferri (1937), Resplandy et al. (1954), Simmonds (1966), Tai (1979), Alfieri et al. (1984), Shivas (1989), Crous et al. (2000), Lu et al. (2000), Zhuang (2001), Lumyong et al. (2003), Du et al. (2005), Abd-Alla et al. (2014), Jayawardena et al. (2016b), Shivas et al. (2016), Hyde et al. (2018), Adikaram & Yakandawala (2020)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata* × *Musa balbisiana*	Thailand	Samarakoon et al. (2023)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata-babilonica*	Japan	Kobayashi (2007)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa basjoo*	China	Tai (1979)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa cavendishii*	Brazil, Ghana, Puerto Rico, Sierra Leone, Southern Africa, Taiwan region in China, Virgin Islands	Deighton (1936), Dade (1940), Doidge (1950), Sawada (1959), Stevenson (1975), Mendes et al. (1998)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* × *paradisiaca*	Brazil, Costa Rica, Cuba, El Salvador, Guatemala, Haiti, India, Italy, Puerto Rico, Somalia, South Africa, United States, Venezuela, Virgin Islands	Castellani & Ciferri (1937), Gurunath (1966), McGuire Jr & Crandall (1967), Benjamin & Slot (1969), Stevenson (1975), Mathur (1979), Alfieri et al. (1984), Arnold (1986), Urtiaga (1986), Mendes et al. (1998), Crous et al. (2000), Faedda et al. (2011), Schena et al. (2014)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* × *paradisiaca* var. *sapientum*	China, Greece, Southern Africa	Doidge (1950), Pantidou (1973), Tai (1979)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa sapientum*	Barbados, Brunei Darussalam, China, Fiji, Ghana, Iran,	Reinking (1919), Castellani & Ciferri (1937), Maneval (1937), Teodoro (1937), Dade (1940),

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Jamaica, Japan, Kenya, Korea, Malay Peninsula, Malawi, Mexico, Myanmar, Pakistan, Philippines, Somalia, Tanzania, Thailand, United States	Larter & Martyn (1943), Thompson & Johnston (1953), Riley (1960), Nattrass (1961), Firman (1972), Peregrine & Siddiqi (1972), Norse (1974), Alvarez (1976), Giatgong (1980), Peregrine & Ahmad (1982), Alfieri et al. (1984), Ahmad et al. (1997), Zhuang (2001), Moriwaki et al. (2003), Cho & Shin (2004), Kobayashi (2007), Thaung (2008b), Weir et al. (2012), Vieira et al. (2014), Alizadeh et al. (2015), Liu et al. (2015), Diao et al. (2017)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa sapientum* var. *paradisiaca*	Dominican Republic	Ciferri (1961)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Australia, Brazil, China, Cook Islands, Dominican Republic, Fiji, Guinea, Haiti, Hong Kong, India, Indonesia, Japan, Kenya, Libya, Malawi, Malaysia, Mauritius, New Zealand,	Cooke & Massee (1874, 1887), Stevens (1925), Kranz (1963), Corbett (1964), Kranz (1965b), Whiteside (1966), Orieux & Felix (1968), Benjamin & Slot (1969), Meredith (1969b), Gorter (1977), Mathur (1979), Dingley et al. (1981), El-Buni & Rattan (1981), Raabe et al. (1981), Shaw (1984), Braithwaite et al. (1990), Masel et al. (1993),

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
						North America, Pakistan, Papua New Guinea, Samoa, South Africa, Sri Lanka, Thailand, Tonga, United States, Zimbabwe	Ahmad et al. (1997), Mendes et al. (1998), Surridge (2002), Faedda et al. (2011), Su et al. (2011), Ivic et al. (2013), Abd-Alla et al. (2014), Honger et al. (2014), Paul et al. (2014), Vieira et al. (2014), Alizadeh et al. (2015), Liu et al. (2015), Sharma et al. (2015), Chethana et al. (2016), Jayawardena et al. (2016b), Shivas et al. (2016), Chen (2017), De Silva et al. (2017), Diao et al. (2017), Guarnaccia et al. (2017b), Fuentes-Aragon et al. (2018), Hyde et al. (2018), Mo et al. (2018), Costa et al. (2019), Wang et al. (2020)
Colletotrichum musae (Berk. & M. A. Curtis) Arx*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa textilis*	Brunei Darussalam	Peregrine & Ahmad (1982)
Colletotrichum musicola Damm*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Mexico	Damm et al. (2019)
Colletotrichum paxtonii Damm, P. F. Cannon & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	West Indies	Damm et al. (2020)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Colletotrichum paxtonii Damm, P. F. Cannon & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Mexico, Saint Lucia	Damm et al. (2012), Alizadeh et al. (2015), Braganca et al. (2016), Chethana et al. (2016), Jayawardena et al. (2016b), De Silva et al. (2017), Damm et al. (2020), Zakaria (2021)
Colletotrichum plurivorum Damm, Alizadeh & Toy. Sato*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	Sri Lanka	Kurera et al. (2023)
Colletotrichum plurivorum Damm, Alizadeh & Toy. Sato*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Japan	Damm et al. (2019)
Colletotrichum scovillei Damm, P. F. Cannon & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	China	Zhou et al. (2017), Zakaria (2021)
Colletotrichum siamense Prihast., L. Cai & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	Turkey, Thailand	Uysal & Kurt (2020)
Colletotrichum siamense Prihast., L. Cai & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa sapientum*	Thailand	Samarakoon et al. (2023)
Colletotrichum siamense Prihast., L. Cai & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Brazil, China, India, Malaysia, Thailand, Turkey	Su et al. (2011), Sharma et al. (2015), Zakaria & Aziz (2018), Uysal & Kurt (2020), Huang et al. (2021), This study

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Colletotrichum sojae Damm & Alizadeh*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa x paradisiaca*	Bangladesh, Brazil	Mendes et al. (1998), Bashar et al. (2012)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Hong Kong, Mexico, Tonga	Dingley et al. (1981), Marin et al. (1996), Lu et al. (2000), Zhuang (2001)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa textilis*	Mexico	Alvarez (1976)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa acuminata*	Venezuela	Urtiaga (2004)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa banksii*	Australia	Simmonds (1966)
Colletotrichum sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa basjoo*	China	Zhuang (2005)
Colletotrichum theobromicola Delacr.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Brazil	Zakaria (2021)
Colletotrichum tropicale E. I. Rojas, S. A. Rehner & Samuels*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* sp.	Brazil	Zakaria (2021)
Colletotrichum truncatum (Schwein.) Andrus & W. D. Moore*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Glomerella musarum Petch*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Glomerellaceae*	*Musa* × *paradisiaca*	Sri Lanka	Ceylon Department of Agriculture (1917)
Acrostalagmus annulatus (Berk. & M. A. Curtis) Seifert*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Canada	Seifert (1985)
Acrostalagmus luteoalbus (Link) Zare, W. Gams &	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Brazil	Giraldo & Crous (2019)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Schroers*							
Gibellulopsis serrae (Maffei) Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	India	Giraldo & Crous (2019), This study
Musicillium elettariae Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Thailand	Giraldo & Crous (2019), This study
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Australia, Iran, United States, Sri Lanka, Venezuela	Simmonds (1966), Alfieri et al. (1984), Shivas (1989), Raabe et al. (1981), Urtiaga (2004), Giraldo & Crous (2019), Adikaram & Yakandawala (2020)
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa cavendishii*	Ghana, Sierra Leone	Deighton (1936), Dade (1940)
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* × *paradisiaca*	Brazil, Costa Rica, Cuba, El Salvador, Haiti, Mexico, Panama, United States	McGuire Jr & Crandall (1967), Benjamin & Slot (1969), Alfieri et al. (1984), Arnold (1986), Mendes et al. (1998)
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* × *paradisiaca* var. *sapientum*	Southern Africa	Doidge (1950)
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Iran, Thailand	Giatgong (1980), Giraldo & Crous (2019)
Musicillium theobromae (Turconi) Zare & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Brazil, China, Cote d'Ivoire, Egypt, Eritrea, Ethiopia,	Castellani & Ciferri (1937), Baker & Dale (1951), Resplandy et al. (1954), Mendes et al.

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Jamaica, Morocco, Netherlands, Nicaragua, Trinidad and Tobago	(1998), Delgado (2011), Chen (2017), Giraldo & Crous (2019)
Musicillium tropicale Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Bangladesh, Thailand, Zambia	Giraldo & Crous (2019), This study
Musidium stromaticum (W. Gams & R. H. Stover) Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Colombia, Costa Rica, Honduras, Panama, Philippines, Tanzania, United Kingdom	Giraldo & Crous (2019)
Musidium stromaticum (W. Gams & R. H. Stover) Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Honduras	Zare et al. (2007), Giraldo & Crous (2019)
Plectosphaerella cucumerina (Lindf.) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	India	Kanakala & Singh (2013)
Stachylidium bicolor Link*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Stachylidium bicolor Link*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* × *paradisiaca*	Cuba, Ghana	Hughes (1952), Arnold (1986), Delgado-Rodriguez & Mena-Portales (2004)
Stachylidium bicolor Link*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Ghana, Taiwan region in China	Hughes (1952), Matsushima (1980)
Stachylidium bicolor Link*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Cuba	Mercado Sierra (1984)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Stachylidium bicolor Link*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa textilis*	Malaysia	Johnston (1960), Williams & Liu (1976)
Verticillium dahliae Kleb.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Australia	Simmonds (1966)
Verticillium dahliae Kleb.*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Tanzania	Riley (1960)
Verticillium sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Verticillium sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa cavendishii*	Greece	Pantidou (1973)
Verticillium sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa x paradisiaca*	Brazil	Mendes et al. (1998)
Verticillium sp.	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* sp.	Brazil, Canada, Mauritius	Wiehe (1948), Orieux & Felix (1968), Ginns (1986), Mendes et al. (1998)
Verticillium tenerum Nees*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Verticillium tenerum Nees*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Verticillium albo-atrum Reinke & Berthold*	*Ascomycota*	*Sordariomycetes*	*Glomerellales*	*Plectosphaerella-ceae*	*Musa* × *paradisiaca*	Papua New Guinea	Matsushima (1971)
Acremonium elatum (C. H. Dickinson) W. Gams	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Sierra Leone	Dickinson (1968)
Acremonium longisporum (Preuss) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa sapientum*	Netherlands	Kiyuna et al. (2011)
Acremonium murorum (Corda) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Sierra Leone	Ellis (1971b)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Acremonium murorum (Corda) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Acremonium polychromum (J. F. H. Beyma) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Acremonium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Canada, China, Costa Rica, Ecuador, England, Honduras, Papua New Guinea, Philippines, Tanzania	Shaw (1984), Ginns (1986), Marin et al. (1996), Chen (2017)
Acremonium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa acuminata*	Iran, Thailand	Lumyong et al. (2003), Amani & Avagyan (2014)
Bionectria byssicola (Berk. & Broome) Schroers & Samuels*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa acuminata*	Philippines	Alvindia et al. (2011)
Bionectria ochroleuca (Schwein.) Schroers & Samuels*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa acuminata*	Malaysia	Zakaria et al. (2016)
Clonostachys rosea (Link) Schroers, Samuels, Seifert & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Clonostachys rosea (Link) Schroers, Samuels, Seifert & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Costa Rica	Marin et al. (1996)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Furcasterigmium furcatum (C. Moreau & Moreau ex W. Gams) Giraldo López & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	China	Chen (2017)
Gliomastix cerealis (P. Karst.) C. H. Dickinson*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge & Pinegar (1975)
Gliomastix musicola (Speg.) C. H. Dickinson	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	French Guiana	Photita et al. (2002)
Gliomastix roseogrisea (S. B. Saksena) Summerb.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Nicaragua	Delgado (2011)
Gliomastix sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Ecuador	Marin et al. (1996)
Gliomastix sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Hydropisphaera nymaniana (Henn.) Rossman & Samuels	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Indonesia	Warburg (1899)
Hydropisphaera suffulta (Berk. & M. A. Curtis) Rossman & Samuels*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* × *paradisiaca*	Cuba, Puerto Rico, Virgin Islands	Stevenson (1975), Arnold (1986)
Hydropisphaera suffulta (Berk. & M. A. Curtis) Rossman & Samuels*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	Vietnam	Saccardo et al. (1887)
Hydropisphaera yunnanensis J. Luo & W.Y. Zhuang*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* sp.	China	Luo & Zhuang (2010)
Nectriella musicola (Speg.) Sacc. & Trotter	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa* × *paradisiaca*	Argentina	Linnean Society of London (1869)
Stilbocrea gracilipes (Tul. & C. Tul.) Samuels & Seifert*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Bionectriaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Metacordyceps chlamydosporia (H.C. Evans) G. H. Sung, J. M. Sung, Hywel-Jones & Spatafora*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Clavicipitaceae*	*Musa acuminata*	Spain	Mingot-Ureta et al. (2020)
Metarhizium anisopliae (Metschn.) Sorokin*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Clavicipitaceae*	*Musa* sp.	Brazil	Lopes et al. (2013)
Beauveria bassiana (Bals. -Criv.) Vuill.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Cordycipitaceae*	*Musa* sp.	Brazil, Uganda	Akello et al. (2008), Lopes et al. (2013)
Cordyceps fumosorosea (Wize) Kepler, B. Shrestha & Spatafora*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Cordycipitaceae*	*Musca domestica*	France	Cantone & Vandenberg (1998)
Gliocladium caespitosum Petch*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	Nicaragua	Delgado (2011)
Gliocladium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	Costa Rica, Mexico	Marin et al. (1996)
Mycogone rufa Petch	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* × *paradisiaca*	Sri Lanka	Ceylon Department of Agriculture (1915)
Trichoderma asperellum Samuels, Lieckf. & Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China	Xia et al. (2011)
Trichoderma atroviride P. Karst.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa acuminata*	Malaysia	Zakaria et al. (2016)
Trichoderma atroviride P. Karst.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China	Xia et al. (2011)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Trichoderma brevicompactum G. F. Kraus, C. P. Kubicek & W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China	Xia et al. (2011)
Trichoderma harzianum Rifai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa acuminata*	Philippines	Alvindia et al. (2011)
Trichoderma harzianum Rifai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* × *paradisiaca*	Cameroon	Bechem & Afanga (2017)
Trichoderma harzianum Rifai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Trichoderma koningii Oudem.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China, Papua New Guinea	Shaw (1984), Xia et al. (2011)
Trichoderma lixii (Pat.) P. Chaverri*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* × *paradisiaca*	Cameroon	Bechem & Afanga (2017)
Trichoderma lixii (Pat.) P. Chaverri*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China	Xia et al. (2011)
Trichoderma longibrachiatum Rifai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Trichoderma reesei E. G. Simmons*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa Paradisiaca*	India	Savani et al. (2021)
Trichoderma sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Trichoderma sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* × *paradisiaca*	Bangladesh	Bashar et al. (2012)
Trichoderma sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Trichoderma virens (J. H. Mill., Giddens & A. A. Foster) Arx*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* sp.	China	Xia et al. (2011)
Trichoderma viride Pers.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreaceae*	*Musa* × *paradisiaca*	Brazil, West Indies	Wallbridge & Pinegar (1975), Mendes et al. (1998)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Cephalosporium acremonium Corda*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Cephalosporium crassum Petch*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa* sp.	Philippines	Teodoro (1937)
Cephalosporium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa acuminata*	China	Cao et al. (2002)
Cephalosporium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa* sp.	Brazil	Mendes et al. (1998)
Cephalosporium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa x paradisiaca*	Brazil	Mendes et al. (1998)
Cephalosporium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa sapientum*	Tanzania	Riley (1960)
Harzia palmara (Cooke) D. W. Li & N.P. Schult.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa sapientum*	Ghana	Dade (1940)
Harzia palmara (Cooke) D. W. Li & N.P. Schult.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Hypocreales* genera *incertae sedis*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Trichothecium roseum (Pers.) Link*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Myrotheciomycetaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Trichothecium roseum (Pers.) Link*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Myrotheciomycetaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Trichothecium roseum (Pers.) Link*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Myrotheciomycetaceae*	*Musa x paradisiaca*	India	Gurunath Rao (1966)
Bidenticula cannae Deighton*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa × paradisiaca*	Sierra Leone	Deighton (1972), Ellis (1976)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Bisifusarium dimerum (Penz.) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Nicaragua, West Indies	Wallbridge & Pinegar (1975), Delgado (2011)
Calonectria apoensis Petr.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Philippines	Photita et al. (2002)
Calonectria clavata Alfieri, El-Gholl & E.L. Barnard*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Guadeloupe, Martinique, Saint Lucia	Crous et al. (2006)
Calonectria gracilis Crous, M. J. Wingf. & Alfenas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Malaysia	Zakaria et al. (2016)
Calonectria gracilis Crous, M. J. Wingf. & Alfenas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Cameroon, Martinique, Saint Lucia	Crous (2002b), Crous et al. (2006)
Calonectria multiseptata Crous & M. J. Wingf.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Cameroon	Crous et al. (2005)
Calonectria pteridis Crous, M. J. Wingf. & Alfenas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Cameroon, Costa Rica, Martinique	Crous (2002b)
Calonectria spathiphylli El-Gholl, J. Y. Uchida, Alfenas, T. S. Schub., Alfieri & A. R. Chase*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Cameroon, Costa Rica, Dominica, Guadeloupe, Martinique	Crous (2002b)
Calostilbe striispora (Ellis & Everh.) Seaver*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Jamaica	Larter & Martyn (1943)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Corallomycetella elegans (Berk. & M. A. Curtis) C. S. Herrera & P. Chaverri*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Congo, Costa Rica	Herrera et al. (2013), Lombard et al. (2015)
Cylindrocarpon congoense J. A. Mey.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Iran	Gerlach & Ershad (1970)
Cylindrocarpon didymum (Harting) Wollenw.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Dominica	Booth (1964)
Cylindrocarpon musae C. Booth & R. H. Stover*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Asia, Colombia, Costa Rica, Costa Rica, Ecuador, Guadeloupe, Martinique, North America, Panama, Papua New Guinea, Philippines, South America.	Booth & Stover (1974), Shaw (1984), Brayford (1987), Piepenbring (2006)
Cylindrocarpon sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Somalia, Thailand	Castellani & Ciferri (1937), Lumyong et al. (2003)
Cylindrocarpon supersimplex Matsush.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Japan	Matsushima (1975), Kobayashi (2007)
Cylindrocladium musae Semer, D. J. Mitch., M. E. Mitch., F. N. Martin & Alfenas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Costa Rica	Semer et al. (1987)
Fusarium acuminatum Ellis & Everh.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia	Shivas (1989)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium acuminatum Ellis & Everh.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa x paradisiaca*	Ecuador, Panama	Altomare et al. (1997)
Fusarium acuminatum Ellis & Everh.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Turkey	Altomare et al. (1997)
Fusarium acuminatum Ellis & Everh.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Panama	Piepenbring (2006)
Fusarium breviconum (Wollenw.) O'Donnell, Geiser, Kasson & T. Aoki*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Honduras	Sandoval-Denis et al. (2019)
Fusarium camptoceras Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, China, Ecuador, Malaysia,	Marasas et al. (1998), Summerell et al. (2011), Abd-Murad et al. (2017)
Fusarium chlamydosporum Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	India	Sarkar et al. (2013b)
Fusarium chlamydosporum Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Honduras	Lombard et al. (2019b)
Fusarium chlamydosporum Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Malaysia	Zeng et al. (2013), Du et al. (2017), Zakaria & Aziz (2018)
Fusarium chlamydosporum Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Fusarium chuoi R. Hill, Gaya, D. T. Vu, Sand. Den. & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa itinerans*	Vietnam	Crous et al. (2021b)
Fusarium compactum (Wollenw.) Raillo*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia	Summerell et al. (2011)
Fusarium concentricum Nirenberg & O'Donnell*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Costa Rica, Guatemala	Nirenberg & O'Donnell (1998), Jacobs et al. (2010), Scauflaire et al. (2011), Lima et al. (2012), Herron et al. (2015), Ibrahim et al. (2016), Abd-Murad et al. (2017), Sandoval-Denis et al. (2018)
Fusarium concentricum Nirenberg & O'Donnell*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, China, Malaysia	Summerell et al. (2011), Zeng et al. (2013), Abd-Murad et al. (2017)
Fusarium concentricum Nirenberg & O'Donnell*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Fusarium concolor Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Malaysia	Abd-Murad et al. (2017)
Fusarium concolor Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Fusarium crassum (Sand. -Den. & Crous) O'Donnell, Geiser, Kasson & T. Aoki*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Guatemala	Sandoval-Denis et al. (2019)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium cugenangense Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Vietnam	Le Thi et al. (2022)
Fusarium cugenangense Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia, Thailand	Maryani et al. (2019b)
Fusarium desaboruense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China	Zhuang (2001)
Fusarium desaboruense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)
Fusarium duoseptatum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia, Malaysia	Maryani et al. (2019b)
Fusarium duoseptatum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Vietnam	Le Thi et al. (2022)
Fusarium duoseptatum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malaysia	Lombard et al. (2019a)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium duoseptatum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia, Malaysia	Maryani et al. (2019b)
Fusarium equiseti (Corda) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Fusarium equiseti (Corda) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Kenya	Nattrass (1961)
Fusarium equiseti (Corda) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Iran, Libya, Malaysia	Gerlach & Ershad (1970), El-Buni & Rattan (1981), Abd-Murad et al. (2017), Papizadeh et al. (2018), Zakaria & Aziz (2018)
Fusarium ershadii M. Papizadeh, A. van Diepeningen & H. R. Zamanizadeh*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Vietnam	Le Thi et al. (2022)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, Guatemala, Egypt, Iran, Somalia, South Africa, United States	Castellani & Ciferri (1937), Shivas (1989), Raabe et al. (1981), Crous et al. (2000), Tarnowski et al. (2010), Amani (2011), Amani & Avagyan (2014), Maswada (2017)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa cavendishii*	Cuba, Mexico	Arnold (1986), Hirata et al. (2001)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Brazil, Cuba, India, West Indies	Wallbridge (1981), Arnold (1986), Sarbhoy & Agarwal (1990), Mendes et al. (1998)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca* var. *sapientum*	China	Tai (1979)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	India, Korea, Malawi, Pakistan	Peregrine & Siddiqi (1972), Sarbhoy & Agarwal (1990), Ahmad et al. (1997), Cho & Shin (2004)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Congo, Costa Rica, Ecuador, Guatemala, Indonesia, Jordan, Malaysia, Philippines, South Africa, Thailand, Turkey	Gorter (1977), Marin et al. (1996), O'Donnell et al. (1998), Van Hove et al. (2011), Zeng et al. (2013), Abd-Murad et al. (2017), Maryani et al. (2019b), Salem et al. (2020)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Fusarium fujikuroi Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Fusarium graminearum Schwabe*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Fusarium graminearum Schwabe*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Honduras	Schilling et al. (1995)
Fusarium grosmichelii Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia	Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium grosmichelii Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)
Fusarium guilinense M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China	Wang et al. (2019b), Xia et al. (2019)
Fusarium hainanense M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China, Indonesia	Wang et al. (2019b), Xia et al. (2019)
Fusarium hexaseptatum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia	Maryani et al. (2019b)
Fusarium humuli M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China	Wang et al. (2019b), Xia et al. (2019)
Fusarium humuli M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2019b)
Fusarium incarnatum Subraman. & Rao*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Sri Lanka	Adikaram & Yakandawala (2020)
Fusarium incarnatum Subraman. & Rao*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Malaysia	Abd-Murad et al. (2017)
Fusarium ipomoeae M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China	Wang et al. (2019b)
Fusarium ipomoeae M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Xia et al. (2019)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Fusarium kalimantanense Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Brazil, Indonesia	Maryani et al. (2019b), Santos et al. (2023a)
Fusarium kotabaruense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b), Xia et al. (2019)
Fusarium kurunegalense Samuels, Nalim & Geise*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Fusarium lateritium Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Hong Kong, South Africa	Crous et al. (2000), Lu et al. (2000), Zhuang (2001)
Fusarium lateritium Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa x paradisiaca*	South Africa	Crous et al. (2000)
Fusarium lateritium Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Hong Kong, South Africa	Gorter (1977), Brown et al. (1998)
Fusarium longipes Wollenw. & Reinking*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium lumajangense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia	Maryani et al. (2019b)
Fusarium lumajangense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)
Fusarium mesoamericanum T. Aoki, Kistler, Geiser & O'Donnell*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, Honduras	O'Donnell et al. (2004), Summerell et al. (2011), Hafez et al. (2020)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China, Philippines	Zhuang (2001), Nozawa et al. (2023)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Australia, Cuba, United States	Alfieri et al. (1984), Urtiaga (1986), Shivas (1989)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca* var. *sapientum*	China	Tai (1979)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malawi, Pakistan, United States	Peregrine & Siddiqi (1972), Alfieri et al. (1984), Ahmad et al. (1997)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Libya, Pakistan, Trinidad and Tobago, United States.	Baker & Dale (1951), Kranz (1962), Kranz (1965a), Meredith (1969b), El-Buni & Rattan (1981), Ahmad et al. (1997)
Fusarium mindoanum Petr.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Philippines	Teodoro (1937)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium mucidum J. W. Xia, L. Lombard, Sand. Den., X. G. Zhang & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia	Xia et al. (2019)
Fusarium musae Van Hove, Waalwijk, Munaut, Logrieco & Ant. Moretti*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa lanceolata*	Tanzania	Photita et al. (2002)
Fusarium musae Van Hove, Waalwijk, Munaut, Logrieco & Ant. Moretti*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Brazil, Canary Islands, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Philippines	Van Hove et al. (2011), Herron et al. (2015), Costa et al. (2019), Pfenning et al. (2019)
Fusarium musarum Logrieco & Marasas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Australia, Panama	Marasas et al. (1998)
Fusarium musarum Logrieco & Marasas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Panama	Piepenbring (2006)
Fusarium nanum M. M. Wang, Qian Chen & L. Cai*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China	Wang et al. (2019b), Xia et al. (2019)
Fusarium neosemitectum J. W. Xia, L. Lombard, Sand. -Den., X. G. Zhang & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Congo	Xia et al. (2019)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium odoratissimum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China, Colombia, Indonesia, Jordan, Lebanon, Pakistan, Philippines	Maryani et al. (2019b), Garcia-Bastidas et al. (2020)
Fusarium odoratissimum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Vietnam	Le Thi et al. (2022)
Fusarium odoratissimum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malaysia	Lombard et al. (2019a)
Fusarium odoratissimum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, Indonesia	Lombard et al. (2019b), Maryani et al. (2019b)
Fusarium orthoceras Appel & Wollenw.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, China, Cuba, India, Indonesia, Israel, Iran, Jordan, Laos, Lebanon, Mozambique, Nepal, Nigeria, Pakistan, Peru, South Africa, Sri Lanka, Taiwan region in China, Turkey, Uganda, United States,	Castellani and Ciferri (1937), Alfieri et al. (1984), Su et al. (1986), Shivas (1989), Raabe et al. (1981), Dahal et al. (1992), Tushemereirwe & Ploetz (1993), Crous et al. (2000), Zhuang (2001), Urtiaga (2004), Schroer et al. (2004), Qi et al. (2008), Chittarath et al. (2018), Hung et al. (2018), Maymon et al. (2018), Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
						Venezuela, Vietnam	Thangavelu et al. (2019), Adikaram & Yakandawala (2020), Irandegani et al. (2023).
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa basjoo*	China	Tai (1979)
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Australia, Bangladesh, Brazil, Cameroon, Cuba, Dominican Republic, Haiti, India, Japan, Puerto Rico, South Africa, United States, Virgin Islands, West Indies	Ciferri (1929), Gurunath (1966), Benjamin & Slot (1969), Stevenson (1975), Wallbridge (1981), Alfieri et al. (1984), Arnold (1986), Shivas (1989), Mendes et al. (1998), Crous et al. (2000), Bashar et al. (2012), Sarkar et al. (2013a), Bechem & Afanga (2017), Nitani et al. (2018).
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca* var. *sapientum*	China, Cuba, Venezuela	Tai (1979), Urtiaga (1986)
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Brazil, Dominican Republic, Ghana, India, Jamaica, Kenya, Malaysia, Malay Peninsula, Mexico, Philippines, Sierra Leone, Tanzania, Thailand, Tropical America	Stevens (1925), Ciferri (1929), Saccardo et al. (1931), Deighton (1936), Teodoro (1937), Padwick (1939), Dade (1940), Larter & Martyn (1943), Thompson & Johnston (1953), Riley (1960), Nattrass (1961), Alvarez (1976), Williams & Liu (1976), Giatgong (1980), Araujo et al. (2017)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum* var. *paradisiaca*	Dominican Republic	Ciferri (1961)
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, Bangladesh, Brazil, Burundi, Cambodia, Canary Islands, China, Congo, Costa Rica, Cuba, Fiji, Honduras, India, Indonesia, Iran, Island of Mayotte, Israel, Jamaica, Jordan, Laos, Lebanon, Malawi, Malaysia, Mauritius, Mozambique, Nepal, Nicaragua, Pakistan, Panama, Papua New Guinea, Peru, Philippines, Puerto Rico, Rwanda, South Africa, Sri Lanka, Taiwan region in China, Tanzania, Thailand, Trinidad and Tobago, Turkey, Uganda, United States, Venezuela, Vietnam	Stevens (1925), Padwick (1939), Wiehe (1948), Baker & Dale (1951), Orieux & Felix (1968), Meredith (1969b), Gerlach & Ershad (1970), Dennis (1970), Dingley et al. (1981), Shaw (1984), Ploetz & Shepard (1988), Raabe et al. (1981), Mendes et al. (1998), O’Donnell et al. (1998), Skovgaard et al. (2003), Piepenbring (2006), Thangavelu & Mustaffa (2010), Sarkar et (2013a), Zeng et al. (2013), Koyyappurath et al. (2016), O’Neill et al. (2016), Mostert (2017), Abd-Murad et al. (2017), Deltour et al. (2018), Garcia et al. (2018), Karangwa et al. (2018), Damodaran et al. (2019), Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium oxysporum Schltdl.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia, Philippines	Teodoro (1937), Williams & Liu (1976)
Fusarium pallidoroseum (Cooke) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia, Philippines, South Africa, Spain	Crous et al. (2000), Maryani et al. (2019b)
Fusarium pallidoroseum (Cooke) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	India, South Africa	Crous et al. (2000), Sarkar et al. (2013b)
Fusarium pallidoroseum (Cooke) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, China, Indonesia	Zeng et al. (2013), Maryani et al. (2019b)
Fusarium poae (Peck) Wollenw.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	India	Sarkar et al. (2013b)
Fusarium proliferatum (Matsush.) Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Guatemala, Indonesia, Iran, Malaysia, Sri Lanka	Tarnowski et al. (2010), Amani (2011), Amani & Avagyan (2014), Zakaria et al. (2016), Maryani et al. (2019b), Adikaram & Yakandawala (2020)
Fusarium proliferatum (Matsush.) Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca cv.* Awak	China	Huang et al. (2019)
Fusarium proliferatum (Matsush.) Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Indonesia, Malaysia	Zeng et al. (2013), Abd-Murad et al. (2017), Huang et al. (2019), Maryani et al. (2019b)
Fusarium pseudocircinatum O'Donnell & Nirenberg*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Guatemala, United States	Tarnowski et al. (2010)
Fusarium purpurascens Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	United States	Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium purpurascens Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Honduras, Indonesia	Maryani et al. (2019b)
Fusarium sacchari (E. J. Butler) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Guatemala, Italy	Tarnowski et al. (2010), Riolo et al. (2020)
Fusarium sacchari (E. J. Butler) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Guatemala, Honduras	Nirenberg & O'Donnell (1998), O'Donnell et al. (1998)
Fusarium sacchari (E. J. Butler) W. Gams*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Malaysia, Puerto Rico	Zeng et al. (2013), Abd-Murad et al. (2017), Garcia et al. (2018)
Fusarium sambucinum Brondeau*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, Honduras, Iran, Panama	Simmonds (1966), Stover (1966), Shivas (1989), Amani (2011), Amani & Avagyan (2014)
Fusarium sambucinum Brondeau*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	India, Brazil	Gurunath Rao (1966), Mendes et al. (1998)
Fusarium sambucinum Brondeau*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Fusarium sambucinum Brondeau*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Brazil, Libya, Trinidad and Tobago	Baker & Dale (1951), Kranz (1962), Kranz (1965a), Dennis (1970), El-Buni & Rattan (1981), Mendes et al. (1998)
Fusarium sangayamense Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)
Fusarium scirpi Lambotte & Fautrey*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Cote d'Ivoire	Resplandy et al. (1954)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium scirpi Lambotte & Fautrey*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Libya	Kranz (1962)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, China, Egypt, Iran, Malaysia	Shivas (1989), Zhuang (2001), Amani (2011), Zakaria & Rahman (2011), Abd-Alla et al. (2014), Amani & Avagyan (2014)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa cavendishii*	Ghana	Dade (1940)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Brunei Darussalam, Pakistan	Peregrine & Ahmad (1982), Ahmad et al. (1997)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, Costa Rica, Ecuador, Guatemala, Mexico, Papua New Guinea, South Africa, Sri Lanka, Trinidad and Tobago, United States	Dennis (1970), Gorter (1977), Shaw (1984), Marin et al. (1996), Photita et al. (2002), Summerell et al. (2011), Abd-Alla et al. (2014)
Fusarium semitectum Berk. & Ravenel*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, Honduras, Malaysia, Panama	Stover (1966), Shivas (1989), Chehri et al. (2014)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Australia, Brazil, Puerto Rico, West Indies, Virgin Islands	Stevenson (1975), Wallbridge (1981), Shivas (1989), Mendes et al. (1998)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca* var. *sapientum*	China	Tai (1979)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	India	Sarbhoy & Agarwal (1990)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Malaysia, Papua New Guinea	Shaw (1984), Zeng et al. (2013), Abd-Murad et al. (2017)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Fusarium solani (Mart.) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	Seed collection of *Musa* spp. in the Millennium Seed Bank (MSB), Royal Botanic Gardens, Kew	Malaysia and Vietnam	Hill et al. (2021)
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, Guatemala, Indonesia, Somalia, Thailand.	Castellani & Ciferri (1937), Simmonds (1966), Lumyong et al. (2003), Tarnowski et al. (2010), Maryani et al. (2019b)
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa cavendishii*	Greece	Holevaset al. (2000)
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Brazil, Nicaragua	Mendes et al. (1998), Delgado (2011)
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Fiji, Mexico	Firman (1972), Alvarez (1976)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Fiji, Hong Kong, Indonesia, Papua New Guinea, United States	Meredith (1969b), Dingley et al. (1981), Shaw (1984), Lu et al. (2000), Zhuang (2001), Chen (2017), Maryani et al. (2019b), Xia et al. (2019)
Fusarium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Mexico	Alvarez (1976)
Fusarium succisae J. Schröt. ex Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Trinidad and Tobago	Baker & Dale (1951), Dennis (1970)
Fusarium sulawesiense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b)
Fusarium sulawesiense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	China, Indonesia	Maryani et al. (2019b), Wang et al. (2019b), Xia et al. (2019)
Fusarium sulawesiense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	China	Wang et al. (2019b)
Fusarium sulawesiense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Bahamas	Xia et al. (2019)
Fusarium tanahbumbuense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Indonesia	Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium tanahbumbuense Maryani, Sand. Den., L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Maryani et al. (2019b), Xia et al. (2019)
Fusarium tardichlamydosporum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Australia, Indonesia	Maryani et al. (2019b)
Fusarium tardichlamydosporum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa lutea*	Vietnam	Le Thi et al. (2022)
Fusarium tardichlamydosporum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Vietnam	Le Thi et al. (2022)
Fusarium tardichlamydosporum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malaysia	Lombard et al. (2019a)
Fusarium tardichlamydosporum Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Australia, Brazil, Honduras, Malaysia, Tanzania	Maryani et al. (2019b)
Fusarium tardicrescens Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Malawi	Maryani et al. (2019b)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Fusarium tardicrescens Maryani, L. Lombard, Kema & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Malawi	Maryani et al. (2019b)
Fusarium thapsinum Klittich, J. F. Leslie, P. E. Nelson & Marasas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Saudi Arabia, Thailand	O'Donnell et al. (1998), Abd-Elsalam (2009)
Fusarium tonkinense (Bugnic.) O'Donnell, Geiser & T. Aoki*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Indonesia	Booth (1964)
Fusarium tricinctum (Corda) Sacc.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Brazil	Mendes et al. (1998)
Fusarium stilboides Wollenw.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China	Zeng et al. (2013)
Fusarium subglutinans (Wollenw. & Reinking) P. E. Nelson, Toussoun & Marasas*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa acuminata*	Iran	Amani (2011), Amani & Avagyan (2014)
Gliocephalotrichum simplex (J. A. Mey.) B. J. Wiley & E. G. Simmons*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	New Zealand	Lombard et al. (2014)
Ilyonectria destructans (Zinssm.) Rossman, L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Malaysia	Booth (1964)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Ilyonectria destructans (Zinssm.) Rossman, L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Ilyonectria radicicola (Gerlach & L. Nilsson) P. Chaverri & Salgado*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Ilyonectria radicicola (Gerlach & L. Nilsson) P. Chaverri & Salgado*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Nectria foliicola Berk. & M. A. Curtis	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Cuba	Linnean Society of London (1869)
Nectria foliicola Berk. & M. A. Curtis	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa textilis*	Malaysia	Johnston (1960), Williams & Liu (1976)
Nectria foliicola Berk. & M. A. Curtis	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* × *paradisiaca*	Cuba	Arnold (1986)
Nectria henningsii Rehm	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Germany	Photita et al. (2002)
Nectria sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Brazil, Ecuador	Hanlin (1992), Marin et al. (1996), Mendes et al. (1998)
Nectria subfalcata Henn.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	Indonesia	Samuels et al. (1990)
Neocosmospora tonkinensis (Bugnic.) Sand. Den. & Crous	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Vietnam	Sandoval-Denis et al. (2019)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pseudonectria musae Hochapfel	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa* sp.	China, Germany	Wollenweber (1930), Liu & Guo (1998)
Sphaerostilbe musarum S. F. Ashby	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Jamaica	Ashby (1913)
Ustilaginoidella musaeperda Essed	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa sapientum*	Tropical America	Photita et al. (2002)
Volutella sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Nectriaceae*	*Musa cavendishii*	Cuba	Arnold (1986)
Blistum musae Seifert	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Ophiocordycipitaceae*	*Musa* sp.	Canada	Seifert (1979), Ginns (1986)
Sarocladium strictum (W. Gams) Summerb.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Sarocladiaceae*	*Musa* × *paradisiaca*	West Indies	Wallbridge (1981)
Albifimbria verrucaria (Alb. & Schwein.) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	South Africa, Thailand, Venezuela	Dennis (1970), Surridge (2002), Samarakoon et al. (2022), This study
Brevistachys globosa L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Mexico, Sri Lanka	Lombard et al. (2016)
Brevistachys lateralis L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Australia, Thailand	Lombard et al. (2016), Crous et al. (2019)
Brevistachys ossiformis L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* × *paradisiaca*	Brazil	Lombard et al. (2016)
Brevistachys ossiformis L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Mexico	Lombard et al. (2016)

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Brevistachys subsimplex (Cooke) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Hong Kong, Thailand, Venezuela	Lumyong et al. (2003), Photita et al. (2003), Urtiaga (2004)
Brevistachys subsimplex (Cooke) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* × *paradisiaca*	Cuba, Japan	Matsushima (1975), Arnold (1986), Kobayashi (2007)
Brevistachys subsimplex (Cooke) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* × *paradisiaca* var. *sapientum*	Venezuela	Urtiaga (1986)
Brevistachys subsimplex (Cooke) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Brevistachys subsimplex (Cooke) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Bermuda, Cuba, Fiji, Mexico, Samoa, Sierra Leone, Sudan, United States	Deighton (1960), Dingley et al. (1981), Mercado-Sierra (1984), McKenzie (1996), Heredia-Abarca et al. (1997)
Brevistachys variabilis L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa sp.*	Australia	Lombard et al. (2016)
Memnoniella dichroa (Grove) L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Thailand	Photita et al. (2003)
Memnoniella echinata (Rivolta) Galloway*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* × *paradisiaca*	Honduras, Japan	McGuire Jr & Crandall (1967), Matsushima (1975), Kobayashi (2007)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Memnoniella levispora Subram.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021b)
Myrothecium sp.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Brazil, United States	Miller (1991), Junior et al. (2018)
Myxospora musae L. Lombard & Crous*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Madagascar	Lombard et al. (2016)
Smaragdiniseta musae Samarakoon & Chomnunti*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2022)
Stachybotrys chartarum (Ehrenb.) S. Hughes*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Stachybotrys microsporus (B. L. Mathur & Sankhla) S. C. Jong & E. E. Davis*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2021b)
Stachybotrys musae Samarakoon & Chomnunti*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	China	Samarakoon et al. (2021b)
Stachybotrys subcylindrosporus C. Y. Jie, Y. L. Jiang, D. W. Li, McKenzie & Yong Wang*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	Thailand	This study
Stachybotrys suthepensis Photita, P. Lumyong, K. D. Hyde & McKenzie*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Stachybotrys theobromae Hansf.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Stachybotrys globosus P. C. Misra & S. K. Srivast.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* sp.	India	Misra & Srivastava (1982)
Stachybotrys kampalensis Hansf.*	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa* × *paradisiaca*	Japan	Matsushima (1975), Kobayashi (2007)
Stachybotrys nephrosporus Hansf.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Thailand	Photita et al. (2003a)
Stachybotrys ruwenzoriensis Matsush.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Stachybotrys ruwenzoriensis Matsush.	*Ascomycota*	*Sordariomycetes*	*Hypocreales*	*Stachybotryaceae*	*Musa sapientum*	Uganda	Matsushima (1985)
Clavatisporella musicola K. D. Hyde	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa* sp.	Indonesia, Java	Hyde (1995)
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa* sp.	Africa, Cameroon, Ghana, Guinea, Hong Kong, Jamaica, Malaysia, Sierra Leone, Taiwan region in China	Revue mycologique (1889), Kranz (1963), Ellis (1971b), Klaubauf et al. (2014)
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa acuminata*	Thailand, Venezuela	Lumyong et al. (2003), Urtiaga (2004)
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (2004)
Pyriculariopsis parasitica (Sacc. & Berl.) M. B. Ellis*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Magnaporthaceae*	*Musa sapientum*	Australia, Taiwan region in China	Matsushima (1980, 1989)
Neocordana johnstonii (M. B. Ellis) Hern. -Restr. & Crous	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum*	Australia, Indonesia, Iran, Ireland, Malaysia, Philippines, Tonga	Ellis (1971a), Ellis (1976), Hernandez-Restrepo et al. (2015)
Neocordana johnstonii (M. B. Ellis) Hern. -Restr. & Crous	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Australia, Tonga	Dingley et al. (1981), Allen & Dettmann (1990)
Neocordana malayensis Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Malaysia	Crous et al. (2019)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa acuminata*	Australia, Samoa, Somalia, Sri Lanka, United States, Thailand, Venezuela	Castellani & Ciferri (1937), Simmonds (1966), Dingley et al. (1981), Raabe et al. (1981), Lumyong et al. (2003), Urtiaga (2004), Adikaram & Yakandawala (2020)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa banksii*	Australia	Simmonds (1966)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa cavendishii*	Sierra Leone, Taiwan region in China	Deighton (1936)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa ornata*	India	Gupta et al. (1983)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* × *paradisiaca*	Brazil, Cuba, Costa Rica, El Salvador, Haiti, Mexico, Panama, South Africa	McGuire Jr & Crandall (1967), Benjamin & Slot (1969), Arnold (1986), Mendes et al. (1998), Crous et al. (2000)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* × *paradisiaca* var. *arakanensis*	Myanmar	Thaung (2008c)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* × *paradisiaca* var. *sapientum*	China	Tai (1979)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum*	Brunei Darussalam, Fiji, Ghana, Ghana, Indonesia, Jamaica, Malaysia, Malay Peninsula, New Caledonia, Sierra Leone,	Saccardo & Saccardo (1906), Deighton (1936), Dade (1940), Hughes (1952), Thompson & Johnston (1953), Riley (1960), Huguenin (1966), Turner (1971), Firman (1972), Williams & Liu (1976), Giatgong (1980), Matsushima (1980), Peregrine & Ahmad (1982),

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
						Taiwan region in China, Taiwan region in China, Tanzania, Thailand	Matsushima (1987), Hernandez-Restrepo et al. (2015)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum* var. *paradisiaca*	Dominican Republic	Ciferri (1961)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa schweinfurthii*	Ghana	Dade (1940), Hughes (1952)
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Australia, Brazil, China, Cook Islands, Dominican Republic, Fiji, Haiti, Hong Kong, Malaysia, Mauritius, Mexico, Niue, Panama, Papua New Guinea, Puerto Rico, Samoa, South Africa, Thailand, Tonga, United States, Venezuela, Virgin Islands, Zimbabwe	Doidge (1950), Ciferri (1961), Whiteside (1966), Orieux & Felix (1968), Benjamin & Slot (1969), Meredith (1969b), Dennis (1970), Stevenson (1975), Gorter (1977), Dingley et al. (1981), Shaw (1984), Hyde & Alcorn (1993), McKenzie (1996), Mendes et al. (1998), Lu et al. (2000), Zhuang (2001), Surridge (2002), Piepenbring (2006), Hernandez-Restrepo et al. (2015), Chen (2017), This study

Table 2 Continued.

Species Fungorum current name	**Phylum**	**Class**	**Order**	**Family**	**Host**	**Country**	**References**
Neocordana musae (Zimm.) Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa textilis*	Brunei Darussalam, Malaysia, Malay PeninsulaPapua New Guinea	Thompson & Johnston (1953), Turner (1971), Williams & Liu (1976), Peregrine & Ahmad (1982), Shaw (1984)
Neocordana musarum Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	France, Reunion	Hernandez-Restrepo et al. (2015), Crous et al. (2016)
Neocordana musicola Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Mauritius, Mexico	Hernandez-Restrepo et al. (2015)
Neocordana musigena Crous*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Morocco	Crous et al. (2017)
Pyricularia angulata Hashioka*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa acuminata*	Australia	Male et al. (2011)
Pyricularia angulata Hashioka*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum*	Japan, Korea, Thailand	Index of Fungi (1981), Cho & Shin (2004), Bussaban et al. (2005)
Pyricularia angulata Hashioka*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	India	Ganesan et al. (2017)
Pyricularia grisea Cooke ex Sacc.*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa acuminata*	Australia, China, India, Somalia	Castellani & Ciferri (1937), Simmonds (1966), Zhuang (2001), Sonah et al. (2009)
Pyricularia grisea Cooke ex Sacc.*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa × paradisiaca*	Brazil, Cuba	Arnold (1986), Mendes et al. (1998)
Pyricularia grisea Cooke ex Sacc.*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Pyricularia grisea Cooke ex Sacc.*	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Haiti	Benjamin & Slot (1969)
Pyricularia pyricularioides (Matsush.) de Hoog & Oorschot	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Pyricularia rabaulensis Matsush.	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* sp.	Papua New Guinea	Matsushima (1971)
Pyricularia sp.	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)
Pyricularia buloloensis Matsush.	*Ascomycota*	*Sordariomycetes*	*Magnaporthales*	*Pyriculariaceae*	*Musa* × *paradisiaca*	Papua New Guinea	Matsushima (1971)
Meliola sp.	*Ascomycota*	*Sordariomycetes*	*Meliolales*	*Meliolaceae*	*Musa acuminata*	China	Cao et al. (2002)
Ceratocystis musarum Riedl*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa* sp.	New Zealand	Mbenoun et al. (2014)
Ceratocystis musarum Riedl*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa speciosa*	Austria	Mbenoun et al. (2014)
Ceratocystis paradoxa (Dade) C. Moreau*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa acuminata*	Australia, Cote d'Ivoire, Egypt, Turkey, United States	Resplandy et al. (1954), Simmonds (1966), Raabe et al. (1981), Maswada (2017), Demiray et al. (2020)
Ceratocystis paradoxa (Dade) C. Moreau*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa* × *paradisiaca*	Brazil, El Salvador, New Zealand, West Indies	McGuire Jr & Crandall (1967), Wallbridge (1981), Mendes et al. (1998), Barnes et al. (2003)
Ceratocystis paradoxa (Dade) C. Moreau*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa sapientum*	Fiji, Jamaica, Japan, Mexico, Taiwan region in China, Tanzania, Thailand	Larter & Martyn (1943), Riley (1960), Firman (1972), Alvarez (1976), Giatgong (1980), Kobayashi (2007)
Ceratocystis paradoxa (Dade) C. Moreau*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa* sp.	Brazil, Canada, China, Fiji, Haiti, Jamaica, South Africa, Southern Africa, Tanzania, Trinidad and Tobago, United States	Doidge (1950), Baker & Dale (1951), Benjamin & Slot (1969), Meredith (1969b), Nag Raj & Kendrick (1975), Gorter (1977), Tai (1979), Dingley et al. (1981), Ginns (1986), Crous et al. (2000), Roux & Wingfield (2013)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Thielaviopsis musarum (R. S. Mitchell) Riedl*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa sapientum*	Brazil	de Melo et al. (2016)
Thielaviopsis musarum (R. S. Mitchell) Riedl*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa* sp.	New Zealand	De Beer et al. (2014), Guatimosim et al. (2016b)
Thielaviopsis musarum (R. S. Mitchell) Riedl*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa cavendishii*	Australia	Photita et al. (2002)
Thielaviopsis sp.	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Ceratocystidaceae*	*Musa textilis*	Mexico	Alvarez (1976)
Graphium sp.	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Graphiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Triadelphia queenslandica Matsush.*	*Ascomycota*	*Sordariomycetes*	*Microascales*	*Triadelphiaceae*	*Musa sapientum*	Australia	Matsushima (1989)
Sporothrix sp.	*Ascomycota*	*Sordariomycetes*	*Ophiostomatales*	*Ophiostomataceae*	*Musa acuminata*	Guatemala	Tarnowski et al. (2010)
Phyllachora afzeliae Syd. & P. Syd.	*Ascomycota*	*Sordariomycetes*	*Phyllachorales*	*Phyllachoraceae*	*Musa* sp.	Samoa	McKenzie (1996)
Phyllachora musae (Klotzsch) Sacc.	*Ascomycota*	*Sordariomycetes*	*Phyllachorales*	*Phyllachoraceae*	*Musaceae sp.*	India	Garcke (1833)
Phyllachora musicola C. Booth & D. E. Shaw	*Ascomycota*	*Sordariomycetes*	*Phyllachorales*	*Phyllachoraceae*	*Musa sapientum*	Fiji	Firman (1972)
Phyllachora musicola C. Booth & D. E. Shaw	*Ascomycota*	*Sordariomycetes*	*Phyllachorales*	*Phyllachoraceae*	*Musa* sp.	Australia, Fiji, Niue, Papua New Guinea, Samoa, Tonga	Index of Fungi (1972), Dingley et al. (1981), Shaw (1984), Hyde & Alcorn (1993)
Phaeoisaria sp.	*Ascomycota*	*Sordariomycetes*	*Pleurotheciales*	*Pleurotheciaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Canalisporium caribense (Hol. -Jech. & Mercado) Nawawi & Kuthub.*	*Ascomycota*	*Sordariomycetes*	*Savoryellales*	*Savoryellaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Chaetomium elatum Kunze*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa textilis*	Philippines	Teodoro (1937)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Chaetomium globosum Kunze*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa* × *paradisiaca*	Cameroon	Bechem & Afanga (2017)
Chaetomium globosum Kunze*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Chaetomium sp.	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Dichotomopilus erectus (Skolko & J. W. Groves) X. Wei Wang & Samson*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Dichotomopilus funicola (Cooke) X. Wei Wang & Samson*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Chaetomiaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Triangularia microsclerotigena (Madrid, Cano, Gené & Guarro) S. K. Huang & K. D. Hyde*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Lasiosphaeriaceae*	*Musa* sp.	Turkey	Madrid et al. (2011)
Bombardia musae (Maire) C. Moreau	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Lasiosphaeriaceae*	*Musa sapientum*	Mauritania	Trotter (1926)
Podospora austroamericana (Speg.) J. H. Mirza & Cain*	*Ascomycota*	*Sordariomycetes*	*Sordariales*	*Podosporaceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Acrodictys oblonga G. Z. Zhao*	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* family *incertae sedis*	*Acrodictyaceae*	*Musa* sp.	China	Zhao et al. (2011)
Junewangia globulosa (Tóth) W. A. Baker & Morgan-Jones*	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* family *incertae sedis*	*Junewangiaceae*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)
Ellisembia minigelatinosa (Matsush.) W. P. Wu*	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* genera *incertae sedis*	*Sordariomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Solomon Islands	Matsushima (1971)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Ellisembia minigelatinosa (Matsush.) W. P. Wu*	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* genera *incertae sedis*	*Sordariomycetes* genera *incertae sedis*	*Musa sapientum*	Taiwan region in China	Matsushima (1980)
Leptosphaerella sp.	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* genera *incertae sedis*	*Sordariomycetes* genera *incertae sedis*	*Musa acuminata*	Thailand	Lumyong et al. (2003)
Leptosphaerella musicola Speg.*	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* genera *incertae sedis*	*Sordariomycetes* genera *incertae sedis*	*Musa* × *paradisiaca*	Argentina	Museo Nacional de Buenos Aires (1909), Farr (1973)
Catabotrys sp.	*Ascomycota*	*Sordariomycetes*	*Sordariomycetes* order *incertae sedis*	*Catabotrydaceae*	*Musa* sp.	Bermuda, Sri Lanka	von Arx & Mueller (1954)
Myxosporium sp.	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Diatrypaceae*	*Musa acuminata*	China	Cao et al. (2002)
Peroneutypa scoparia (Schwein.) Carmarán & A. I. Romero*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Diatrypaceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Hyponectria sp.	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Hyponectriaceae*	*Musa* sp.	Hong Kong	Jeewon et al. (2003)
Nodulisporium sp.	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Hypoxylaceae*	*Musa acuminata*	China	Nuangmek et al. (2008)
Daldinia eschscholtzii (Ehrenb.) Rehm*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Hypoxylaceae*	*Musa* sp.	Thailand	Samarakoon et al. (2019)
Microdochium colombiense Hern. -Restr. & Crous*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Microdochiaceae*	*Musa sapientum*	Colombia	Hernandez-Restrepo et al. (2016), Rana et al. (2017), Liang et al. (2019)
Microdochium musae Crous*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Microdochiaceae*	*Musa* sp.	China, Costa Rica, Malaysia, Mauritius, Mexico	Laboratoire de cryptogamie (1971), Tai (1979), Crous et al. (2018b)
Microdochium stoveri (C. Booth) Samuels & I. C. Hallett*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Microdochiaceae*	*Musa* sp.	Fiji, Honduras	Booth (1964), Dingley et al. (1981), Photita et al. (2002), Rana et al. (2017)
Anthostomella clypeoides Rehm	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa acuminata*	Thailand	Lumyong et al. (2003)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Anthostomella moelleriana G. Winter	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa* sp.	Virgin Islands	Photita et al. (2002)
Astrocystis formosa (Penz. & Sacc.) L. E. Petrini	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa textilis*	Malaysia	Johnston (1960)
Dematophora bunodes (Berk. & Broome) C. Lamb., Wittstein & M. Stadler*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa sapientum*	Brazil	Hanlin (1992)
Rosellinia sp.	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa cavendishii*	Brazil	Hanlin (1992), Mendes et al. (1998)
Zygosporium minus S. Hughes*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa* sp.	Kiribati	Dingley et al. (1981)
Zygosporium oscheoides Mont.*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa sapientum*	Ghana, Taiwan region in China, Tanzania	Hughes (1952), Riley (1960), Matsushima (1980)
Zygosporium oscheoides Mont.*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa* × *paradisiaca*	Ghana, Japan, Papua New Guinea	Hughes (1952), Matsushima (1971, 1975), Kobayashi (2007)
Zygosporium oscheoides Mont.*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa* sp.	Philippines	van Westerhoven et al. (2023)
Zygosporium oscheoides Mont.*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariaceae*	*Musa acuminata*	Thailand, United States	Raabe et al. (1981), Lumyong et al. (2003)
Gyrothrix hughesii Piroz.	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariales* genera *incertae sedis*	*Musa* × *paradisiaca*	Sierra Leone	Pirozynski (1962)
Pseudosubramaniomyces fusisaprophyticus (Matsush.) Crous*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariales* genera *incertae sedis*	*Musa* × *paradisiaca*	Papua New Guinea	Index of Fungi (1981)
Stromatoneurospora phoenix (Kunze) S. C. Jong & E. E. Davis*	*Ascomycota*	*Sordariomycetes*	*Xylariales*	*Xylariales* genera *incertae sedis*	*Musa acuminata*	Malaysia	Zakaria et al. (2016)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Agaricus musicola Berk. & M. A. Curtis	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricaceae*	*Musa cavendishii*	Taiwan region in China	Photita et al. (2002)
Coprinus musicola (Berk.) Sacc.	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricaceae*	*Musa* sp.	French Polynesia	Photita et al. (2002)
Calyptella musae (Jungh.) W. B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* sp.	Cuba	Photita et al. (2002)
Calyptella musae (Jungh.) W. B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* × *paradisiaca*	Indonesia	Photita et al. (2002)
Calyptella musae (Jungh.) W. B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa ensete*	Germany, Netherlands	Batista & Ciferri (1962)
Cellypha musicola (Berk. & M. A. Curtis) W. B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* sp.	Cuba	Batista & Ciferri (1962)
Collybia semiusta (Berk. & M. A. Curtis) Dennis	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa textilis*	Papua New Guinea, Malaysia	Williams & Liu (1976), Shaw (1984)
Collybia semiusta (Berk. & M. A. Curtis) Dennis	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* sp.	Fiji, Samoa, United States	Meredith (1969b), Dingley et al. (1981), McKenzie (1996)
Collybia semiusta (Berk. & M. A. Curtis) Dennis	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Collybia semiusta (Berk. & M. A. Curtis) Dennis	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa acuminata*	Cote d'Ivoire, Cuba, United States	Resplandy et al. (1954), Arnold (1986), Raabe et al. (1981)
Glabrocyphella bananae (Cooke) W.B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* sp.	United States	Cooke (1878), Photita et al. (2002)
Glabrocyphella bananae (Cooke) W.B. Cooke	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa sapientum*	United States	Batista & Ciferri (1962)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Marasmius sp.	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* × *paradisiaca*	United States	Alfieri et al. (1984)
Marasmius sp.	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa sapientum*	United States	Alfieri et al. (1984)
Marasmius sp.	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Agaricales* genera *incertae sedis*	*Musa* sp.	Papua New Guinea, Samoa	Shaw (1984), McKenzie (1996)
Mycena citricolor (Berk. & M. A. Curtis) Sacc.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Mycenaceae*	*Musa* × *paradisiaca*	Puerto Rico	Stevenson (1975)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa textilis*	Malaysia, Malay Peninsula	Thompson & Johnston (1953), Turner (1971)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa* sp.	Fiji, Haiti, Trinidad and Tobago	Baker & Dale (1951), Benjamin & Slot (1969), Dingley et al. (1981)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa* × *paradisiaca*	Cuba, Ghana, Sierra Leone	Deighton (1936), Dade (1940), Arnold (1986)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa sapientum*	Fiji, Ghana, Jamaica, Malay Peninsula, Sierra Leone, Tanzania	Deighton (1936), Dade (1940), Larter & Martyn (1943), Thompson & Johnston (1953), Riley (1960), Firman (1972)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa sinensis*	Guinea	Kranz (1963)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa cavendishii*	Sierra Leone	Deighton (1936)
Collybiopsis stenophylla (Mont.) R. H. Petersen	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa acuminata*	Australia	Simmonds (1966)
Marasmiellus epochnous (Berk. & M. A. Curtis) Singer	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa acuminata*	China	Tai (1979)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Marasmiellus inoderma (Berk.) Singer ex Furneaux*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa* × *paradisiaca*	Cuba	Urtiaga (1986)
Marasmiellus inoderma (Berk.) Singer ex Furneaux*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa sapientum*	Malaysia	Williams & Liu (1976)
Marasmiellus inoderma (Berk.) Singer ex Furneaux*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Marasmiellus inoderma (Berk.) Singer ex Furneaux*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa* sp.	Haiti, Samoa	Benjamin & Slot (1969), McKenzie (1996)
Marasmiellus scandens (Massee) Dennis & D. A. Reid*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa sapientum*	Malaysia	Turner (1971)
Nothopanus eugrammus (Mont.) Singer*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Omphalotaceae*	*Musa* × *paradisiaca*	Venezuela	Urtiaga (1986)
Armillaria sp.	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa acuminata*	Kenya	Perez Sierra et al. (2003)
Armillaria mellea (Vahl) P. Kumm.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa textilis*	Mexico	Alvarez (1976)
Armillaria mellea (Vahl) P. Kumm.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa acuminata*	Australia	Simmonds (1966)
Armillaria mellea (Vahl) P. Kumm.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa sapientum*	Kenya, Malawi, Tanzania	Riley (1960), Nattrass (1961)
Armillaria mellea (Vahl) P. Kumm.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa* sp.	Papua New Guinea, Southern Africa, Zimbabwe	Doidge (1950), Whiteside (1966), Peregrine & Siddiqi (1972), Gorter (1977), Shaw (1984), Crous et al. (2000)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Desarmillaria tabescens (Scop.) R. A. Koch & Aime*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa acuminata*	United States	Alfieri et al. (1984)
Desarmillaria tabescens (Scop.) R. A. Koch & Aime*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa* sp.	Mauritius	Orieux & Felix (1968)
Desarmillaria tabescens (Scop.) R. A. Koch & Aime*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa sapientum*	United States	Alfieri et al. (1984)
Desarmillaria tabescens (Scop.) R. A. Koch & Aime*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Physalacriaceae*	*Musa* × *paradisiaca*	United States	Orieux & Felix (1968), Alfieri et al. (1984)
Volvaria esculenta Massee	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Pluteaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Volvaria esculenta Massee	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Pluteaceae*	*Musa* sp.	Philippines	Teodoro (1937)
Schizophyllum commune Fr.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Schizophyllaceae*	*Musa sapientum*	Philippines	Reinking (1919), Teodoro (1937)
Schizophyllum commune Fr.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Schizophyllaceae*	*Musa* sp.	Brazil	Assunção, et al. (2010)
Agrocybe musicola Natarajan & Purush.*	*Basidiomycota*	*Agaricomycetes*	*Agaricales*	*Strophariaceae*	*Musa* sp.	India	Photita et al. (2002)
Mycocalia reticulata (Petch) J. T. Palmer*	*Basidiomycota*	*Agaricomycetes*	*Agaricales* genera *incertae sedis*	*Mycocalia*	*Musa* sp.	Panama	Piepenbring (2006)
Agroathelia rolfsii (Sacc.) Redhead & Mullineux*	*Basidiomycota*	*Agaricomycetes*	*Amylocorticiales*	*Amylocorticiaceae*	*Musa* × *paradisiaca*	Cuba, Panama	McGuire Jr & Crandall (1967), Urtiaga (1986)
Agroathelia rolfsii (Sacc.) Redhead & Mullineux*	*Basidiomycota*	*Agaricomycetes*	*Amylocorticiales*	*Amylocorticiaceae*	*Musa sapientum*	Malaysia, Taiwan region in China	Sawada (1959), Johnston (1960)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Agroathelia rolfsii (Sacc.) Redhead & Mullineux*	*Basidiomycota*	*Agaricomycetes*	*Amylocorticiales*	*Amylocorticiaceae*	*Musa* sp.	India, Japan, Trinidad and Tobago	Baker & Dale (1951), Kobayashi (2007), Thangavelu & Mustaffa (2010)
Agroathelia rolfsii (Sacc.) Redhead & Mullineux*	*Basidiomycota*	*Agaricomycetes*	*Amylocorticiales*	*Amylocorticiaceae*	*Musa acuminata*	Australia, India	Simmonds (1966), Thangavelu & Mustaffa (2010)
Athelia rolfsii (Curzi) C. C. Tu & Kimbr.*	*Basidiomycota*	*Agaricomycetes*	*Atheliales*	*Atheliaceae*	*Musa* × *paradisiaca*	Philippines	Acabal et al. (2019)
Athelia rolfsii (Curzi) C. C. Tu & Kimbr.*	*Basidiomycota*	*Agaricomycetes*	*Atheliales*	*Atheliaceae*	*Musa* sp.	Panama, Philippines	Piepenbring (2006), Acabal et al. (2019)
Ceratobasidium sp.	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa* sp.	United States	Charlton et al. (2008)
Ceratobasidium sp.	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa sapientum*	Malaysia	Liu (1977)
Rhizoctonia grisea (J. A. Stev.) Matz*	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa* × *paradisiaca*	Puerto Rico, Virgin Islands	Stevenson (1975)
Rhizoctonia solani J. G. Kühn*	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa* × *paradisiaca*	United States	Alfieri et al. (1984)
Rhizoctonia solani J. G. Kühn*	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa sapientum*	Taiwan region in China	Gao et al. (2015a)
Rhizoctonia solani J. G. Kühn*	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa textilis*	Malaysia, Mexico	Alvarez (1976), Williams & Liu (1976)
Rhizoctonia sp.	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa x paradisiaca*	Bangladesh, Cuba	Arnold (1986), Bashar et al. (2012)
Rhizoctonia sp.	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa sapientum*	Mexico	Alvarez (1976)
Rhizoctonia sp.	*Basidiomycota*	*Agaricomycetes*	*Cantharellales*	*Ceratobasidiaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Rhizoctonia sp.	*Basidiomycota*	*Agaricomycetes*	*Corticiales*	*Ceratobasidiaceae*	*Musa acuminata*	Somalia	Castellani & Ciferri (1937)
Thanatephorus microsclerotium (Matz) Boidin, Mugnier & Canales	*Basidiomycota*	*Agaricomycetes*	*Incertae sedis*	*Ceratobasidiaceae*	*Musa* × *paradisiaca*	Puerto Rico, Virgin Islands	Stevenson (1975)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Lyomyces sambuci (Pers.) P. Karst.*	*Basidiomycota*	*Agaricomycetes*	*Incertae sedis*	*Corticiaceae*	*Musa* × *paradisiaca*	United States	Gilbertson et al. (2002)
Dictyophora phalloidea Desv.*	*Basidiomycota*	*Agaricomycetes*	*Phallales*	*Phallaceae*	*Musa cavendishii*	Taiwan region in China	Photita et al. (2002)
Sporotrichum musarum Torrend	*Basidiomycota*	*Agaricomycetes*	*Polyporales*	*Phanerochaeta-ceae*	*Musa sapientum*	Brazil	Photita et al. (2002)
Fomes sp.	*Basidiomycota*	*Agaricomycetes*	*Polyporales*	*Polyporaceae*	*Musa acuminata*	Australia	Simmonds (1966)
Poria ravenalae (Berk. & Broome) Sacc.*	*Basidiomycota*	*Agaricomycetes*	*Polyporales*	*Polyporaceae*	*Musa textilis*	Malay Peninsula	Thompson & Johnston (1953)
Trametes tenuis (Berk.) Justo	*Basidiomycota*	*Agaricomycetes*	*Polyporales*	*Polyporaceae*	*Musa sapientum*	Philippines	Teodoro (1937), Reinking (1919)
Peniophora crassitunicata Boidin, Lanq. & Gilles*	*Basidiomycota*	*Agaricomycetes*	*Russulales*	*Peniophoraceae*	*Musa* sp.	Brazil	Junior et al. (2018)
Pseudobensingtonia musae (M. Takash., S. O. Suh & Nakase) F. Y. Bai, Q. M. Wang, M. Groenew. & Boekhout*	*Basidiomycota*	*Agaricostilbomycetes*	*Agaricostilbales*	*Agaricostilbaceae*	*Musa* × *paradisiaca*	Thailand	Takashima et al. (1995)
Corticium centrifugum (Weinm.) Fr.	*Basidiomycota*	*Bartheletiomycetes*	*Corticiales*	*Corticiaceae*	*Musa* sp.	China	Tai (1979)
Pyrrhoderma noxium (Corner) L. W. Zhou & Y. C. Dai*	*Basidiomycota*	*Bartheletiomycetes*	*Hymenochaetales*	*Hymenochaetaceae*	*Musa acuminata-balbisiana*	Australia	Stewart et al. (2020)
Rigidoporus microporus (Sw.) Overeem*	*Basidiomycota*	*Bartheletiomycetes*	*Polyporales*	*Meripilaceae*	*Musa* × *paradisiaca*	United States	Gilbertson et al. (2002)
Rigidiporus vinctus (Berk.)	*Basidiomycota*	*Bartheletiomycetes*	*Polyporales*	*Meripilaceae*	*Musa Paradisiaca*	India	Savani et al. (2021)
Rigidiporus vinctus (Berk.)	*Basidiomycota*	*Bartheletiomycetes*	*Polyporales*	*Meripilaceae*	*Musa acuminata*	Australia	Simmonds (1966)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Puccinia heliconiae (Dietel) Arthur	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniaceae*	*Musa textilis*	Brazil	Mendes et al. (1998), Hennen et al. (2005)
Uromyces musae Henn.*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniaceae*	*Musa* sp.	Fiji, Samoa	Dingley et al. (1981)
Uromyces musae Henn.*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniaceae*	*Musa sapientum*	Fiji, Philippines	Teodoro (1937), Firman (1972)
Uredo musae Cummins*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniales* genera *incertae sedis*	*Musa sapientum*	Malaysia, Pacific Islands	Turner (1971), Mouchacca & Horak (1998)
Uredo musae Cummins*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniales* genera *incertae sedis*	*Musa* × *paradisiaca*	Indonesia	Boedijn (1959)
Uredo musae Cummins*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniales* genera *incertae sedis*	*Musa acuminata* subsp. *banksii*	Samoa	Dingley et al. (1981)
Uredo musae Cummins*	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniales* genera *incertae sedis*	*Musa* sp.	Fiji, New Guinea, Papua New Guinea, Samoa, Thailand	Cummins (1941), Dingley et al. (1981), Shaw (1984), McKenzie (1996), Engkhaninun et al. (2005)
Uredo musicola J. M. Yen	*Basidiomycota*	*Pucciniomycetes*	*Pucciniales*	*Pucciniales* genera *incertae sedis*	*Musa* sp.	Philippines	Yen (1974)
Mortierella sp.	*Mortierellomycota*	*Mortierellomycetes*	*Mortierellales*	*Mortierellaceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Cunninghamella echinulata var. *echinulata* (Thaxt.) Thaxt. ex-Blakeslee*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Cunninghamella-ceae*	*Musa acuminata*	Honduras, Panama	Stover (1966)
Cunninghamella echinulata var. *echinulata* (Thaxt.) Thaxt. ex-Blakeslee*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Cunninghamella-ceae*	*Musa* sp.	Papua New Guinea	Shaw (1984)
Mucor caespitulosus Speg.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Mucoraceae*	*Musa ensete*	Argentina	Photita et al. (2002)

Table 2 Continued.

Species Fungorum current name	Phylum	Class	Order	Family	Host	Country	References
Mucor hiemalis Wehmer*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Mucoraceae*	*Musa textilis*	Malaysia	Williams & Liu (1976)
Mucor racemosus Bull.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Mucoraceae*	*Musa textilis*	Philippines	Teodoro (1937)
Mucor sp.	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Mucoraceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Rhizoctonia sp.	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa textilis*	Malay Peninsula, Philippines	Teodoro (1937), Thompson & Johnston (1953)
Rhizopus arrhizus A. Fisch., in Winter*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa textilis*	Philippines	Teodoro (1937)
Rhizopus arrhizus A. Fisch., in Winter*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa sapientum*	South Korea	Kwon et al. (2012)
Rhizopus sp.	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa* × *paradisiaca*	Brazil	Mendes et al. (1998)
Rhizopus stolonifer (Ehrenb.) Vuill.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa sapientum*	Japan, Kenya, South Korea, Taiwan region in China	Nattrass (1961), Kobayashi (2007), Kwon et al. (2012)
Rhizopus stolonifer (Ehrenb.) Vuill.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa* × *paradisiaca* var. *sapientum*	Cuba	Urtiaga (1986)
Rhizopus stolonifer (Ehrenb.) Vuill.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa* × *paradisiaca*	Cuba, South Africa	Urtiaga (1986), Crous et al. (2000)
Rhizopus stolonifer (Ehrenb.) Vuill.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa acuminata*	Cuba, South Africa	Crous et al. (2000), Urtiaga (2004)
Rhizopus stolonifer (Ehrenb.) Vuill.*	*Mucoromycota*	*Mucoromycetes*	*Mucorales*	*Rhizopodaceae*	*Musa* sp.	South Africa, United States	Whiteside (1966), Stevenson (1975), Gorter (1977), Shaw (1984), Sarkar et al. (2013b)

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