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Mycosphere notes 1-50: Grass (*Poaceae*) inhabiting Dothideomycetes

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Abstract

This is a first of a series of papers where we bring collaborating mycologists together to produce a set of notes of 50 taxa of fungi, including the new genera *Phaeopoacea*, *Kalmusibambusa* and *Neoramichloridium*, 33 new species, three new combinations, two reference specimens, one epitype, an asexual report and new host records or distribution records for seven species. In this paper, we deal with 50 taxa on grasses (*Poaceae* or *Gramineae*). Grasses are ecologically dominant, monocotyledonous plants, which occur in almost every habitat worldwide. In this study, molecular sequence data and descriptions linked to morphological illustrations are used to show the diversity and taxonomy of grass-inhabiting fungal species. Sixty strains of newly collected dothideomycetous species on *Poaceae* in China, Italy, Russia and Thailand were identified based on morphological characters and analyses of sequence data. This research is expected to stimulate interest in grass fungi.

Keywords - *Bambusicolaceae* - *Coniothyriaceae* - *Didymellaceae* - *Didymosphaeriaceae* - *Massarinaceae* - *Mycosphaerellaceae* - *Periconiaceae* - *Phaeosphaeriaceae* - *Pleosporaceae* - *Roussoellaceae* - *Sporormiaceae* - new species

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Introduction

This is a first of a series of papers where we bring collaborating mycologists together to produce a set of notes of 50 taxa of fungi. In this paper, we report on 50 taxa from grasses. Grasses (*Poaceae*) are annual, biennial, or perennial flowering plants that are usually herbaceous and occur in almost every habitat worldwide, but are mostly prominent in terrestrial habitats with an estimated number of 10,000 species (Watson 1990, Kellogg 2001, Sharp & Simon 2002). Grasses are also ecologically dominant, covering approximately 20% of the earth's land surface and include agriculturally, economically and ecologically important plants (Wheeler et al. 1982, Gibson 2009). Humans depend on grasses, including cereal crops (such as barley, maize, rice, rye sorghum and wheat) for a major portion of their diet and making alcoholic beverages, bamboo for building construction and food, sugarcane for producing sugar, rum and also an energy source (Kellogg 2001, Gibson 2009). Natural grasslands are used for grazing wild and domestic herbivores and grasses are also weeds in various ecosystems (Watson 1990, Kellogg 2001, Sharp & Simon 2002, Dai et al. 2017).

Although grasses are economically important the study of fungi on grasses has been restricted to a few important hosts. The pathogens of grasses have been relatively well-studied (Lamprecht et al. 2011, Manamgoda et al. 2012, 2015, Damm et al. 2014, Bakhshi et al. 2015) and some books on grass diseases have been published. For example, Smiley et al. (2005) in their book of Turfgrass Diseases (Compendium of Turfgrass Diseases) have broadly discussed the damage caused by noninfectious agents in the turfgrass ecosystem and ecology and taxonomy of fungi pathogenic to turfgrasses. *Phyllachora* species have a broad distribution on many graminicolous hosts worldwide (Orton 1944, Parbery 1967, Pearce et al. 2000). Smut diseases are common on grasses including agriculturally important crops such as barley, wheat and rice and they reduce both yield and quality of the crops (Fischer 1937, García-Guzmán & Burdon 1997, Brooks et al. 2009). Rust fungi (Basidiomycota, Urediniomycetes and Uredinales) comprise more than 7000 species of obligate plant pathogens that are prevalent on a number of graminicolous hosts (Cummins 1971, Aime 2006). *Aegilops*, *Avena*, *Hordeum*, *Triticum* and *Secale* are the common agriculturally and

economically important grass genera on which rust diseases occur (Cummins 1971, Anikster & Wahl 1979). Apart from that rust fungi are frequently associated with grass genera such as *Arundinella*, *Bambusa*, *Bromus*, *Molinia*, *Panicum* and *Phragmites* (Cummins 1971).

There have been many studies on fungal endophytes of grasses and their ecological importance, especially those that cause disease in grazing animals (Latchs & Christensen 1985, Clay 1988, Purahong & Hyde 2011). Purahong and Hyde (2011) discussed the effects of fungal endophytes on grass litter decomposition rates and many studies showed that fungal endophytes reduced decomposition rates of grass species (Omacini et al. 2004, Siegrist et al. 2010, Purahong & Hyde 2011). On the other hand, saprobes on grasses are relatively poorly studied. However, Hyde and coworkers carried out a series of studies on fungi associated with grasses based on morphology and phylogeny (Manamgoda et al. 2012, Hyde et al. 2013, Ariyawansa et al. 2014b, Liu et al. 2014, Jayasiri et al. 2015b, Li et al. 2015, Thambugala et al. 2015a, Hyde et al. 2016, Dai et al. 2017). The fungi on *Poaceae* in freshwater and marine habitats have also been studied (Poon & Hyde 1998, Wong et al. 2001, Cai et al. 2003, 2006), but much more work needs to be carried out.

Dothideomycetes occurring on grasses can be pathogens, saprobes or endophytes; the pathogens are responsible for significant annual crop losses worldwide (Wong & Hyde 2001, Manamgoda et al. 2011, Hyde et al. 2013, 2016, Quaedvlieg et al. 2013, Thambugala et al. 2014a, 2015a, Ariyawansa et al. 2015a, Bakhshi et al. 2015, Liu et al. 2015, Wijayawardene et al. 2016, Dai et al. 2017). Most of the species of *Alternaria* Nees, *Bipolaris* Shoemaker, *Parastagonospora* Quaedvlieg, *Pseudoseptoria* Speg and *Stagonospora* (Sacc.) Sacc. are significant plant pathogens (Manamgoda et al. 2011, 2015, Quaedvlieg et al. 2013), while members of *Bambusicola* D.Q. Dai & K.D. Hyde, *Neokalmusia* Kaz. Tanaka et al., *Phaeosphaeria* I. Miyake and *Poaceicola* W.J. Li et al are common saprobes usually associated with *Poaceae* hosts (Ariyawansa et al. 2014a, Phookamsak et al. 2014a, Li et al. 2015, Dai et al. 2017). Most of the Dothideomycetes on *Poaceae* need to be re-visited using a comprehensive morphology and phylogenetic study, based on DNA data. In this study, we collected Dothideomycetes on common terrestrial grasses in China, Italy, Russia and Thailand. Comprehensive descriptions with detailed illustrations of these fresh collections together with multi-gene phylogenetic analyses were used to establish their taxonomic placement within Dothideomycetes. We treat 50 taxa belong to *Bambusicolaceae*, *Didymellaceae*, *Didymosphaeriaceae*, *Massarinaceae*, *Mycosphaerellaceae*, *Periconiaceae*, *Phaeosphaeriaceae*, *Pleosporaceae*, *Roussoellaceae* and *Sporormiaceae*. Most of the fresh collections were reported on nearly 15 grass (*Poaceae*) genera including *Anthoxanthum*, *Arrhenatherum*, *Arundo*, *Bambusa*, *Cortaderia*, *Dactylis*, *Lolium*, *Phleum*, *Phragmites*, *Poa*, *Sorghum*, *Triticum* and *Zea*.

Materials and methods

Sample collection, morphological study and isolation

Fungal species associated with grasses (*Poaceae* / *Gramineae*) were collected from China (Guizhou Province), Italy (Province of Forlì-Cesena and Trento), Russia (Rostov Region) and Thailand (Provinces of Chiang Mai and Chiang Rai). Fungi from the fresh collections were isolated by a modified single spore/conidial isolation method (Manamgoda et al. 2012, Chomnunti et al. 2014). Growth rates, colony characteristics and asexual morph morphology were determined from cultures grown on 2 % potato-dextrose agar (PDA), malt extract agar (MEA) or water agar (WA; 15 g/l sterile distilled water) at room temperature (25°C) in the dark. Morphological observations and photomicrographs were made following the method of Thambugala et al. (2015a). Ex-type or representative isolates were deposited in Mae Fah Luang University Culture Collection (MFLUCC) with duplicates in International Collection of Microorganisms from Plants (ICMP); Guizhou Culture Collection (GZCC) or Kunming Institute of Botany Culture Collection (KUMCC), China. The collected specimens were deposited in the Herbarium of Mae Fah Luang University (MFLU), Thailand; Cryptogamic Herbarium, Kunming Institute of Botany (HKAS) or Guizhou Academy of Agricultural Sciences (GZAAS), China. Taxonomic descriptions were deposited in the Faces of

Fungi (FOF) database as described in Jayasiri et al. (2015a) and Index Fungorum numbers were obtained as detailed in Index Fungorum (2017).

DNA extraction, PCR amplification and sequencing

Genomic DNA was extracted from fresh mycelium, following the method of Thambugala et al. (2015a) or using a DNA extraction kit (Biospin Fungus Genomic DNA Extraction Kit, BioFlux ®, China). The PCR amplifications were performed in a total volume of 25 µL of PCR mixtures containing 8.5−9.5 µL ddH_2O, 12.5 µL 2×PCR Master Mix (TIANGEN Co., China), 1−2 µL of DNA template, 1 µL of each primer. The translation elongation factor-1α (EF1-α), internal transcribed spacer region (ITS), 28S nrDNA (LSU), 18S nrDNA (SSU), RNA polymerase II second largest subunit (RPB2) and β-tubulin (β-tub) gene regions were amplified for relevant strains following the conditions mentioned in Thambugala et al. (2017). The PCR products were visualized under UV light on 1% agarose electrophoresis gels stained with ethidiumbromide. Purification and sequencing of PCR products were carried out at Invitrogen Biotechnology Co., Shanghai, China.

Phylogenetic analyses

Multi-gene phylogenetic analyses based on selected ITS, LSU, SSU, EF1-α, β-tub and RPB2 sequence data were done to establish the phylogenetic placement of each isolated taxon. Single gene data sets were aligned with Bioedit 7.1.3.0 (Hall 1999) and the consensus sequences were further improved with MUSCLE implemented in MEGA 5v (Tamura et al. 2011). Alignments were checked and optimized manually when necessary.

Phylogenetic analyses were based on maximum likelihood (ML) criterion using RAxML-HPC BlackBox (8.2.4) (Stamatakis 2006, Stamatakis et al. 2008) in the CIPRES portal (Miller et al. 2010). The general time reversible model of evolution including estimation of invariable sites (GTRGAMMA + I) and assuming a discrete gamma distribution with four rate categories was used for the ML analysis. Trees were rooted with appropriate outgroups in each analysis. The best scoring trees were selected and visualized with MEGA v. 5 (Tamura et al. 2011). ML Bootstrap supports (BS) (greater than or equal to 50 %) are shown below or above each branch. All the newly generated sequences in this study were deposited in GenBank (Table 1). The resulting phylogenetic trees are presented under each relevant description.

Results

Taxonomy

In this study 50 fungal taxa were studied in 28 genera and eleven families. Species descriptions, phylogenetic results and notes are presented under the relevant family and genus.

Bambusicolaceae D.Q. Dai & K.D. Hyde, in Hyde et al., Fungal Diversity 63: 49 (2013)

Hyde et al. (2013) introduced *Bambusicolaceae* to accommodate the genus *Bambusicola* D.Q. Dai & K.D. Hyde and currently the family comprises three genera including *Neobambusicola* Crous & M.J. Wingf. (Crous et al. 2014b) and *Palmiascoma* Phook. & K.D. Hyde (Liu et al. 2015).

Bambusicola D.Q. Dai & K.D. Hyde, Cryptog. Mycol. 33(3): 367 (2012)

The genus *Bambusicola* currently comprises ten species that are widely distributed on bamboo species in Asia. This genus is characterized by uni to multi-loculate ascostromata, slightly broad fusiform, 1-septate ascospores and the asexual morphs with holoblastic, annelidic conidiogenous cells and pale to dark brown, cylindrical conidia (Dai et al. 2012, Dai et al. 2017).

Bambusicola dimorpha Thambugala, Senanayake & K.D. Hyde, ***sp. nov.*** Fig. 3

Index Fungorum number: IF552971, *Facesoffungi number*: FoF 03191

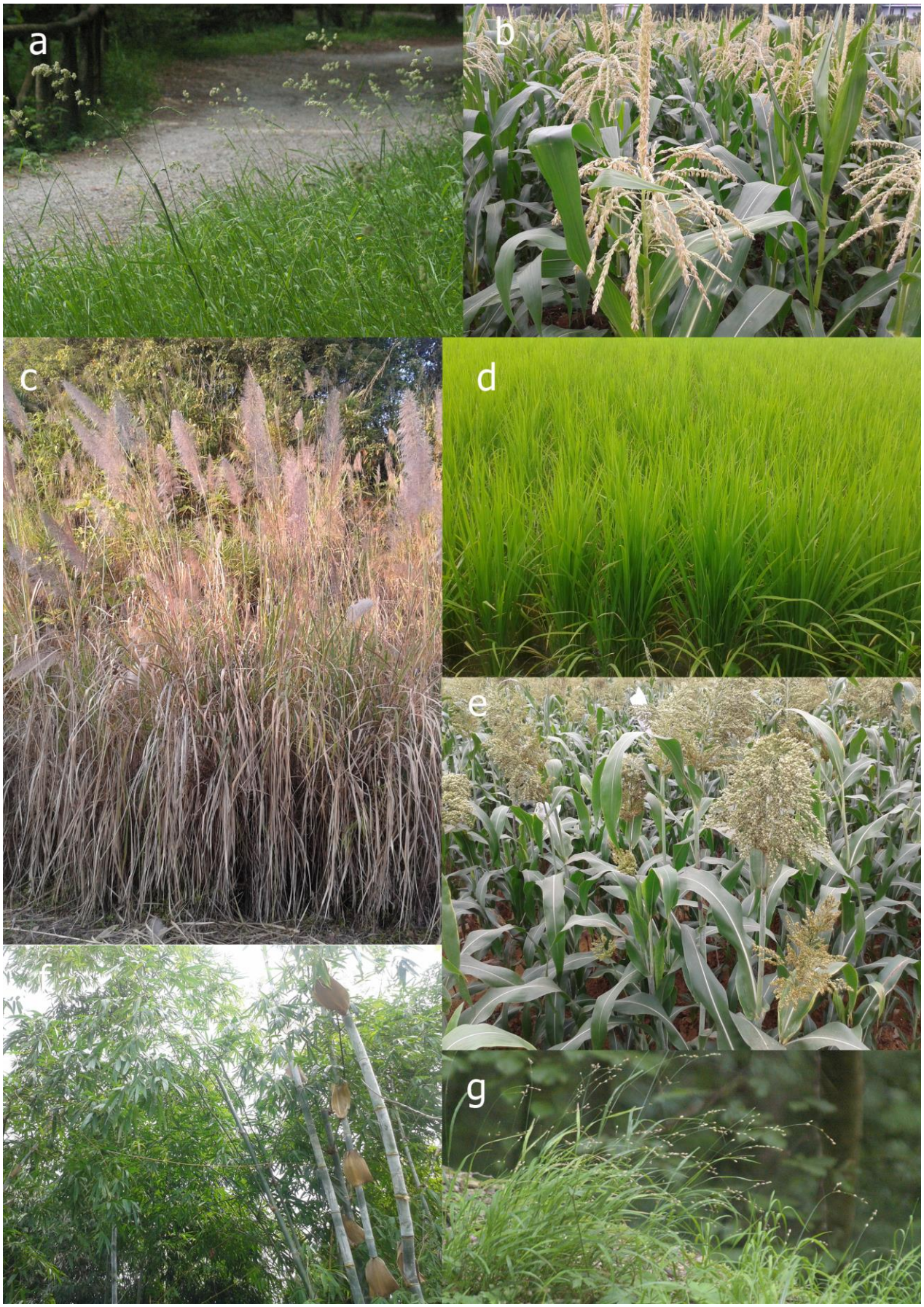

Fig. 1 – a-e. Different kinds of grasses in their natural habitats; a. *Dactylis glomerata*. b. *Zea mays*, c. *Cortaderia* sp. d. *Oryza sativa*. e. *Sorghum bicolor*. f. *Bambusa* sp. g. *Melica uniflora*.

Table 1. GenBank and culture collection accession numbers of species generated in this study.

Species Name	Strain/Specimen No.	LSU	ITS	SSU	RPB2	EF1-α	β-tubulin
Allophaeosphaeria muriformia	MFLUCC 13–0277	KX910089	KX926415	KX950400	KX863710	_	_
Alternaria alternata	MFLUCC 16–0595, GZCC 15–0044	KY000652	KY026592	KX986353	KX938348	KY402270	_
	MFLUCC 16–0343, GZCC 15–0031	KY000653	KY026591	KX986354	KX938349	KY402269	_
	MFLUCC 16–0279, GZCC 15–0040	KY000654	KY026588	KX986355	_	KY402268	_
	MFLUCC 16–0280, GZCC 15–0041	KY000655	KY026590	KY038359	_	KY402271	_
	MFLUCC 16–0594, GZCC 15–0030	KY000657	KY026586	KY038356	KY113378	KY494645	_
Alternaria dactylidicola	MFLUCC 15–0466, ICMP 21430	KY703617	KY703616	KY703618	KY750720	_	_
Alternaria forlicesenensis	MFLUCC 13–0456, ICMP 21559	KY769658	KY769657	KY769659	_	_	_
Alternaria longipes	MFLUCC 16–0592, GZCC 15–0035	KY000658	KY026585	KY038355	KY056664	KY542121	_
Alternaria poaceicola	MFLUCC 13–0346, ICMP 21560	KY205718	KY026587	KY038357	KY460971	_	_
Bambusicola dimorpha	MFLUCC 13–0282, ICMP 21404	KY000661	KY026582	KY038354	KY056663	_	_
Comoclathris arrhenatheri	MFLUCC 15–0465, ICMP 21426	KY000647	KX965737	KX986348	KX938346	_	_
	MFLUCC 15–0476	KY000648	KY026595	KX986349	KX938345	_	_
Comoclathris italica	MFLU 16–0243	KY659566	_	KY659569	_	_	_
Comoclathris permunda	MFLUCC 14–0974, ICMP 21561	KY659564	KY659561	KY659568	_	_	_
Coniothyrium chiangmaiense	MFLUCC 16–0891, KUMCC 17–0025	KY550384	KY568987	KY550385	KY607015	–	–
Didymella poaceicola	MFLUCC 13–0212, ICMP 21584	KX954395	KX965726	_	KX898364	_	_
Epicoccum poaceicola	MFLUCC 15–0448, ICMP 21417	KX954396	KX965727	_	KX898365	_	KY197980
Epicoccum thailandicum	MFLUCC 16–0892, KUMCC 17–0026	KY703620	KY703619	_	_	_	_
Epicoccum tritici	MFLUCC 16–0276, GZCC 15–0033	KX954391	KX926426	_	_	_	KY197979
	MFLUCC 16–0277, GZCC 15–0034	KX954393	KX965724	_	_	_	_
	MFLUC 16–0597, GZCC 15–0039	KX954394	KX965725	_	_	_	_
	MFLUCC 16–0598, GZCC 15–0043	KX954392	KX965723	_	KX891172	_	_

Table 1 continued. GenBank and culture collection accession numbers of species generated in this study.

Species Name	Strain/Specimen No.	LSU	ITS	SSU	RPB2	EF1-α	β-tubulin
Kalmusibambusa triseptata	MFLUCC 13–0232, KUMCC 16–0183	KY682695	KY682697	KY682696	_	_	_
Neokalmusia arundinis	MFLUCC 15–0463, ICMP 21431	KX954399	KX965730	KX986343	_	KY244024	_
	MFLUCC 14–0222	KX954400	KX965731	KX986344	_	KY271091	_
Neokalmusia thailandica	MFLUCC 16-0405, ICMP 21564	KY706132	KY706142	KY706142	KY706148	KY706145	_
	MFLUCC 16–0399	KY706131	KY706141	KY706136	_	_	_
Neoramichloridium bambusicola	MFLUCC 15–0455, ICMP 21407	KY205720	KY205719	_	_	_	_
Neosetophoma poaceicola	MFLUCC 16–0886, KUMCC 17–0023	KY550382	KY568986	KY550383	_	_	_
Neostagonospora arrhenatheri	MFLUCC 15–0464, ICMP 21422	KX910091	KX926417	KX950402	_	_	_
Neostagonospora phragmitis	MFLUCC 16–0493, ICMP 21424	KX910090	KX926416	KX950401	KX880498	_	_
Paraphaeosphaeria graminicola	MFLUCC 15–0450, ICMP 21421	KX954398	KX965729	KX986342	_	_	KY197981
Parastagonospora forlicesenica	MFLUCC 13–0557, MFLUCC 15–0461	KY769661	KY769660	KY769662	_	_	_
Parastagonospora fusiformis	MFLUCC 13–0215	KX910088	KX926418	KX950403	KX863711	_	_
Parastagonospora poaceicola	MFLUCC 15–0471, ICMP 21415	KX910092	KX926419	KX950404	KX880499	_	_
Periconia cortaderiae	MFLUCC 15–0457, ICMP 21414	KX954401	KX965732	KX986345	_	KY310703	_
	MFLUCC 15–0451	KX954403	KX965734	KX986346	_	KY429208	_
	MFLUCC 15–0453, ICMP 21429	KX954402	KX965733	_	_	KY320574	_
Phaeopoacea festucae	MFLUCC 17–0056	KY824767	KY824766	KY824769	KY824768	_	_
Pleospora herbarum	MFLUCC 14–0920	KY659563	KY659560	KY659567			
Poaceicola dactylidis	MFLUCC 14–0002	KY657264	_	KY657265	_	_	_
Poaceicola forlicesenica	MFLUCC 15–0470, ICMP 21411	KX910095	KX926422	KX950406	KY131966	_	_
Poaceicola garethjonesii	MFLUCC 15–0469, ICMP 21408	KX954390	KX926425	KY205717	KX898363	_	_
	MFLUCC 13–0275	KX910093	KX926420	KX950405	KX880500	_	_
Poaceicola italica	MFLUCC 13–0267, ICMP 21567	KX910094	KX926421	KX950409	KX891169	_	_

Table 1. continued. GenBank and culture collection accession numbers of species generated in this study.

Species Name	Strain/Specimen No.	LSU	ITS	SSU	RPB2	EF1-α	β-tubulin
Pyrenophora tritici-repentis	MFLUCC 16–0494, ICMP 21428	KY000649	KY026596	KX986350	KY073135	_	_
	MFLUCC 16–0495, ICMP 21405	KY000650	KY026594	KX986351	KY073137	_	_
	MFLUCC 16–0492	KY000651	KY026593	KX986352	KY073136	_	_
Septoriella tridentina	MFLUCC 15–0474, ICMP 21423	KX910096	KX926423	KX950407	KX891170	_	_
	MFLUCC 15–0475	KX910097	KX926424	KX950408	KX891171	_	_
Setophoma poaceicola	MFLUCC 16–0880	KY550386	KY568988	KY550387	KY609967	_	_
Sparticola junci	MFLU 16–0242	KY659565	KY659562	_	_	_	_
Spegazzinia neosundara	MFLUCC 15–0456; ICMP 21565	KX954397	KX965728	KX986341	_	_	_
Stagonospora imperaticola	MFLUCC 15–0026, ICMP 21563	KY706133	KY706143	KY706138	KY706149	KY706146	_
Stagonospora multiseptata	MFLUCC 15–0449, ICMP 21562	KX954404	KX965735	–	–	–	KY197982
Roussoella doimaesalongensis	MFLUCC 14–0584, ICMP 21416	KY000659	KY026584	_	KY678394	KY651249	_
Roussoella scabrispora	MFLUCC 14–0582, ICMP 21406	KY000660	KY026583				
Vagicola arundinis	MFLUCC 15–0027	KY706129	KY706139	KY706134	_	_	_
	MFLUCC 15–0046	KY706130	KY706140	KY706135	KY706147	KY706144	_

Etymology – Referring to the two types of conidia in the asexual morph.

Holotype – MFLU 16–2598

Saprobic on dead culm of bamboo. **Sexual morph**: *Ascostromata* up to 1–2 mm diameter, solitary to gregarious, immersed in the host tissue, becoming erumpent, multi-loculate, black, coriaceous. *Locules* 300–500 µm diameter × 300–520 µm high ($\bar{x}$ = 406 × 360 µm, n = 6), completely immersed in ascostromata, globose to subglobose, ostiolate. *Peridium* up to 60 µm wide, comprising several layers of dark brown to lightly pigmented, thick-walled cells of *textura angularis* to *textura prismatica*, intermingled with host cells. *Hamathecium* composed of 1–1.5 µm wide, dense, aseptate, unbranched, anastomosing, trabeculate pseudoparaphyses, situated between and above the asci. *Asci* 70–90 × 9.5–11(–12) µm ($\bar{x}$ = 80 × 10.4 µm, n = 20), 8-spored, bitunicate, fissitunicate, cylindrical, short-pedicellate, straight or slightly curved, apically rounded with an ocular chamber. *Ascospores* (17.5–)20–23(–25) × 3.4–5.6 µm ($\bar{x}$ = 21.2 × 4.5 µm, n = 30), overlapping 1–2-seriate, hyaline, fusiform, 1-septate, 2-euseptate, occasionally with large upper cell, with narrowly rounded ends, surrounded by a thin mucilaginous sheath, guttulate, smooth-walled. **Asexual morph**: Coelomycetous,

produced on bamboo pieces on PDA after 1 month. *Conidiomata* (140–)210–340 µm diameter × (100–)200–250 µm high ($\bar{x}$ = 230 × 200 µm, n = 5), pycnidial, solitary to gregarious, superficial, uni- to multi-loculate, with indistinct ostioles. *Conidiomatal wall* 17–30(–50) µm wide, composed of several layers, of thin- to thick-walled, dark brown to black cells of *textura angularis* to *textura prismatica*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 6.5–10(−12) × 1.4–2.4 µm ($\bar{x}$ = 8.6 × 1.8 µm, n = 30), holoblastic, cylindrical to subcylindrical, hyaline, smooth. *Conidia* two types, macro and micro conidia. *Macro-conidia* 13–21 × (2.5–)3–4.2 µm ($\bar{x}$ = 17 × 3.4 µm, n = 40), cylindrical to ellipsoidal, with narrow to broadly rounded ends, 1-septate, pale brown to brown, slightly constricted at the septum, smooth, with small to large guttules. *Micro-conidia* 2.4–4.8 × 1.6–2.4 µm ($\bar{x}$ = 3.1 × 1.9 µm, n = 50), oblong to ellipsoidal, with rounded to obtuse ends, initially hyaline, becoming brown, aseptate, guttulate, smooth-walled, without a mucilaginous sheath.

Culture characteristics — Ascospores germinating on PDA within 24 h and germ tubes produced from both ends. Colonies growing on PDA, reaching a diam. of 12–15 mm after 10 d at 25 °C, flat to slightly umbonate, surface smooth to velvety, with entire to slightly undulate edge, greenish olivaceous to white, moderately dense, circular; reverse greenish to black.

Notes – *Bambusicola dimorpha* and *B. pustulata* are the morphologically and phylogenetically closest species in the genus, but *B. dimorpha* differs from *B. pustulata* in having multi-loculate ascostromata, larger ascospores with a sheath and two different types of conidia. *Bambusicola dimorpha* also received high bootstrap support value (97 %) in the phylogenetic analysis (Fig. 2).

Material examined — THAILAND, Chiang Mai Province, Doi Inthanon, on dead bamboo culms, 2 November 2012, Indunil C. Senanayake, TL 022 (MFLU 16–2598, **holotype**); *ibid*., (GZAAS 16–0128, **isotype**), ex-type living culture MFLUCC 13–0282, ICMP 21404

Coniothyriaceae W.B. Cooke, Revta Biol., Lisb. 12: 289 (1983)

The family *Coniothyriaceae* was introduced by Cooke (1983b) and it has been considered as a synonym of *Leptosphaeriaceae* (Kirk et al. 2008, de Gruyter et al. 2009). However, currently *Coniothyriaceae* is accepted as a distinct family in Pleosporales (Hyde et al. 2013, Quaedvlieg et al. 2013, Wijayawardene et al. 2016).

Coniothyrium Corda, Icon. Fung. (Prague) 4: 38. 1840

Coniothyrium and coniothyrium-like species are considered to be polyphyletic with species occurring in several clades of the order Pleosporales (Hyde at al. 2013, Verkley et al. 2014, Chen et al. 2015). However, *Coniothyrium sensu stricto* groups within *Coniothyriaceae*, Pleosporales (Verkley et al. 2014, Chen et al. 2015, Wijayawardene et al. 2016).

Coniothyrium chiangmaiense Goonas., Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 5

Index Fungorum number: IF552972, *Facesoffungi number*: FoF 03192

Etymology – Referring to the province Chiang Mai, where the species was first encountered.

Holotype – MFLU 16–2854

Saprobic on dead stem of grass litter, forming black, elongated, raised structures, ascostromata opening through slits along the length. **Sexual morph**: *Ascostromata* 0.13–0.25 mm long, 0.1–0.18 mm wide, 0.1–0.2 mm high, solitary, immersed, fusiform. *Ascomata* perithecial, 120–270 µm high, 200–380 µm diameter, 3–4 perithecia immersed within the ascostromata, subglobose or globose with a flattened base, dark brown, with centrally located short ostiole. *Peridium* 6.8–9 µm wide, thick to thin-walled, of unequal thickness, poorly developed at the base and merging with host tissue, composed of several layers of outer brown to inner hyaline, pseudoparenchymatous cells of *textura prismatica*. *Hamathecium* of dense, 1–2.2 µm wide, filamentous, indistinct, septate, cellular pseudoparaphyses, not constricted at the septum. *Asci* 60–75 × 5.5–8 µm ($\bar{x}$ = 67 × 7 µm, n = 15), 8-spored, bitunicate, fissitunicate, cylindric-clavate, with broad flat pedicel, apex rounded. *Ascospores* 13–17 × 3.5–5 µm ($\bar{x}$ = 15 × 4.2 µm, n = 20),

overlapping uni-seriate, hyaline, fusiform, with rounded to acute ends, 1-septate, slightly constricted at the septum, cells broader near the septum, smooth-walled, guttulate. **Asexual morph**: Undetermined.

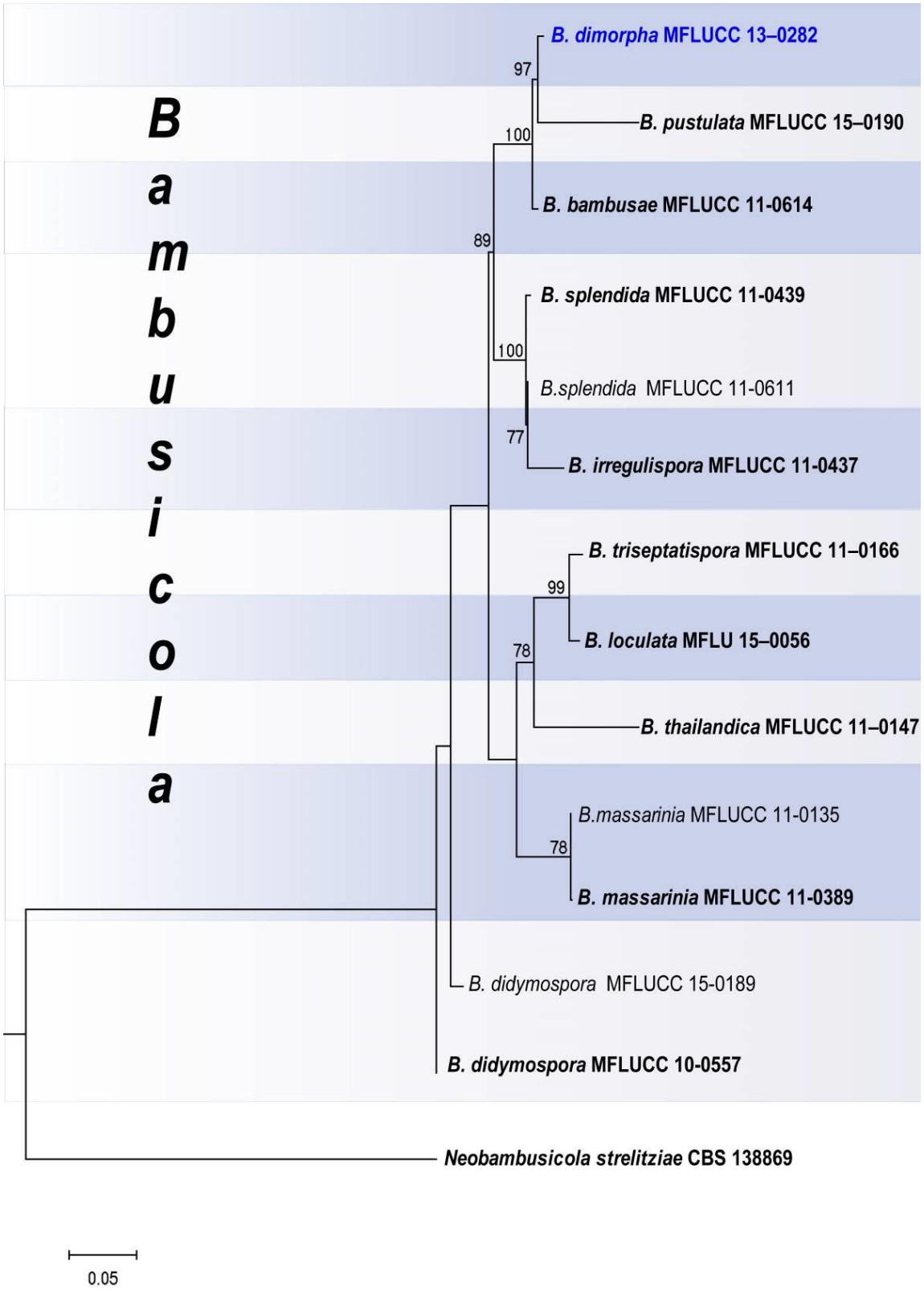

Fig. 2 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU, ITS and RPB2 dataset of *Bambusicola, Bambusicolaceae*. Bootstrap support values equal or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolate in blue. The tree is rooted to *Neobambusicola strelitziae*.

Culture characteristics — Conidia germinating on PDA within 12 h reaching a diameter of 25 mm after 7 d at 25 °C, irregular, dense, floccose and velvety, slightly raised with fimbriate margin, greenish-grey; reverse dark grey.

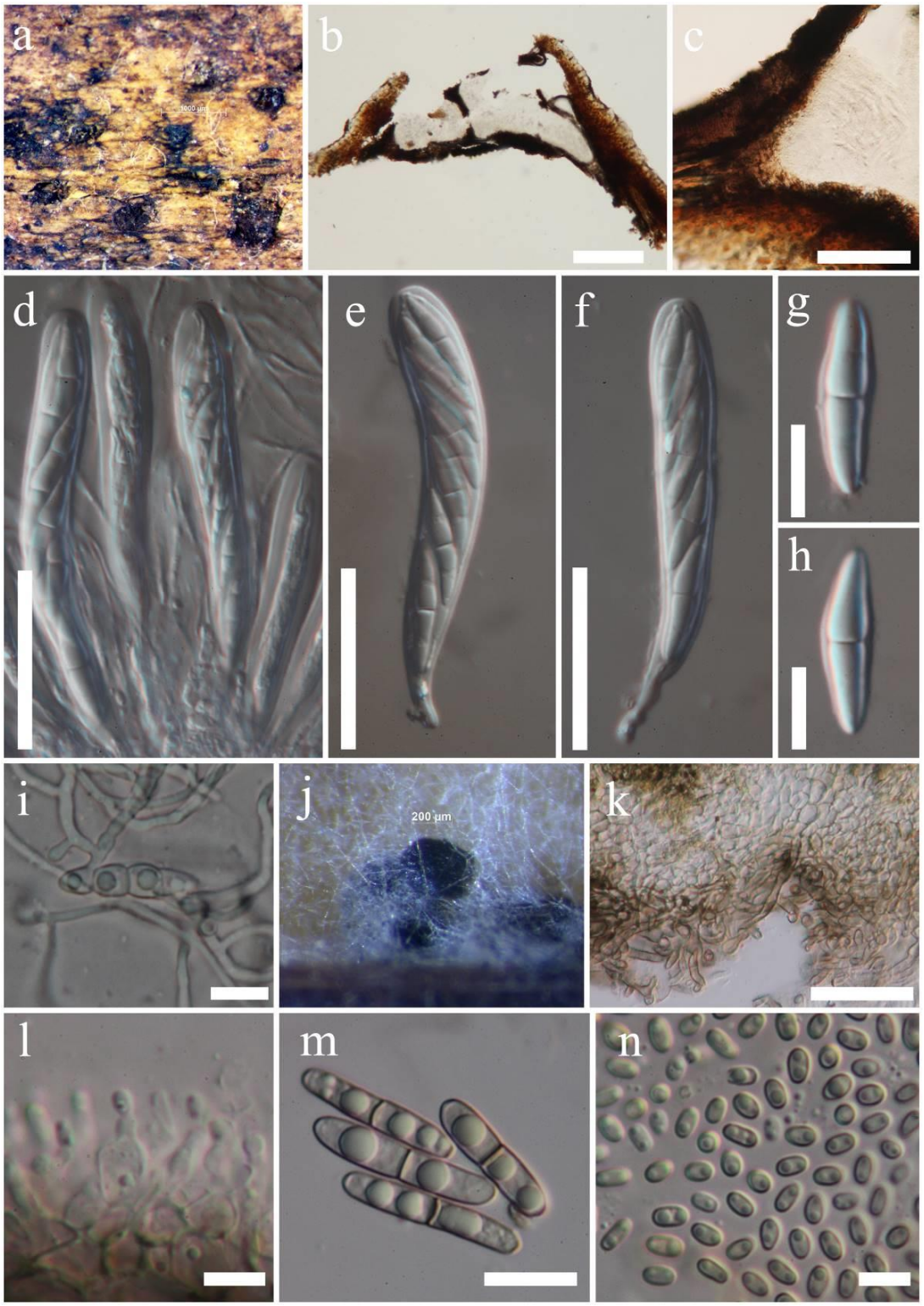

Fig. 3 – ***Bambusicola dimorpha*** (MFLU 16–2598, holotype). a. Appearance of ascostromata on a bamboo culm. b. Vertical section through ascostroma. c. Peridium. d–f. Asci. g, h. Ascospores. i. Germinating ascospore. j. Conidiomata formed on a toothpick. k. Conidiomatal wall. l. Conidiogenous cells. m, n. Conidia. Scale bars: b = 250 µm; c = 100 µm, d–f, k = 30 µm, g–i, m = 10 µm, l = 5 µm.

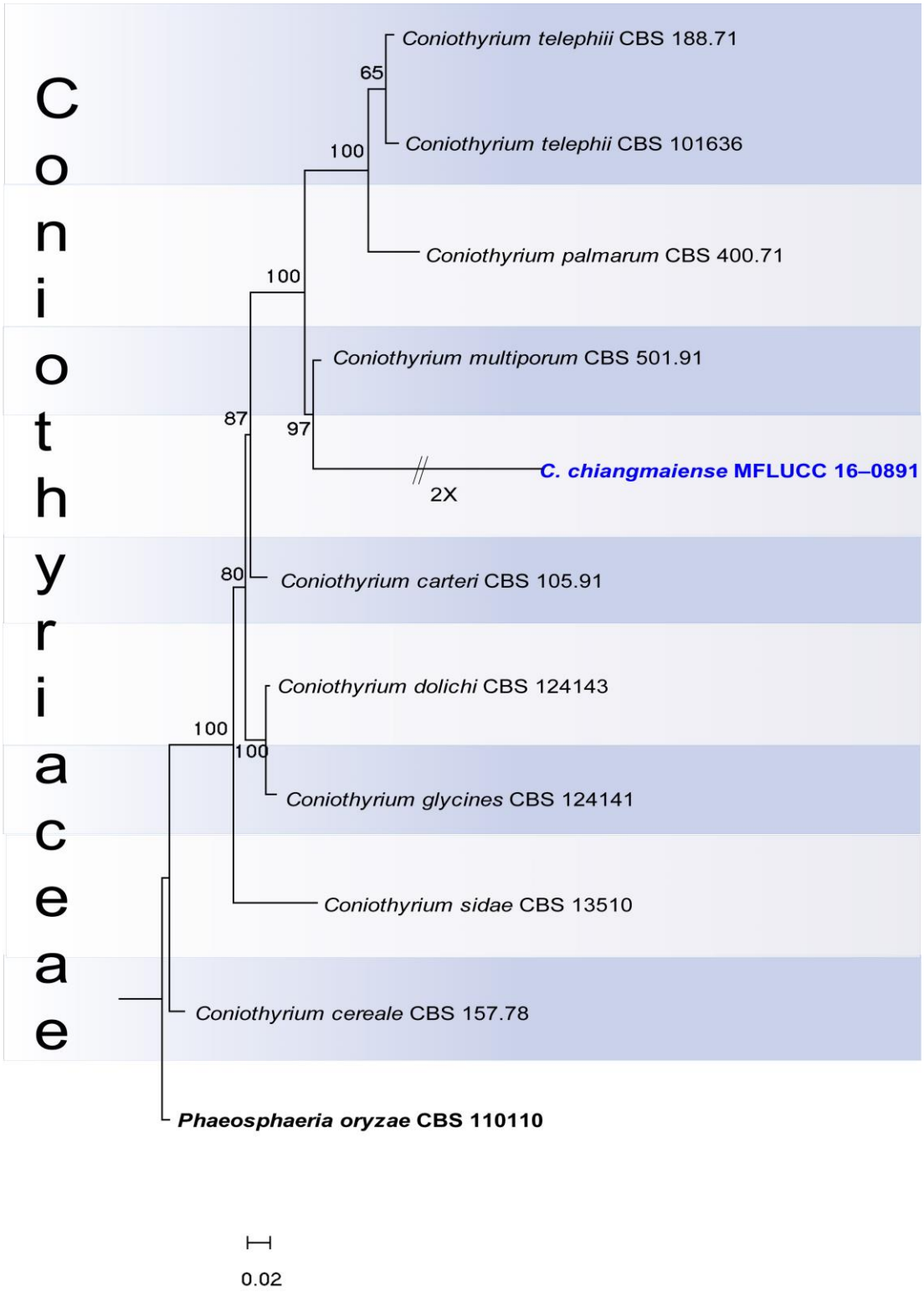

Fig. 4 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU, SSU, ITS and RPB2 dataset of *Coniothyrium, Coniothyriaceae*. Bootstrap support values equal or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolate in blue. The tree is rooted to *Phaeosphaeria oryzae*.

Material examined — THAILAND, Chiang Mai Province, Mae Taeng, Mushroom Research Center, on grass litter, 24 March 2016, Ishani D. Goonasekara IGm 28 (MFLU 16–2854,

holotype); *ibid*. (HKAS 97390, **isotype**), ex-type living culture MFLUCC 16–0891, KUMCC 17–0025.

Notes – A sexual morph of *Coniothyrium* was collected in this study and phylogenetic analysis confirmed its placement in *Coniothyriaceae* (Fig. 4). The sexual morphs of *Coniothyrium* are rarely reported, however a paraphaeosphaeria-like sexual morph was recorded in the genus *Coniothyrium* by Quaedvlieg et al. (2013).

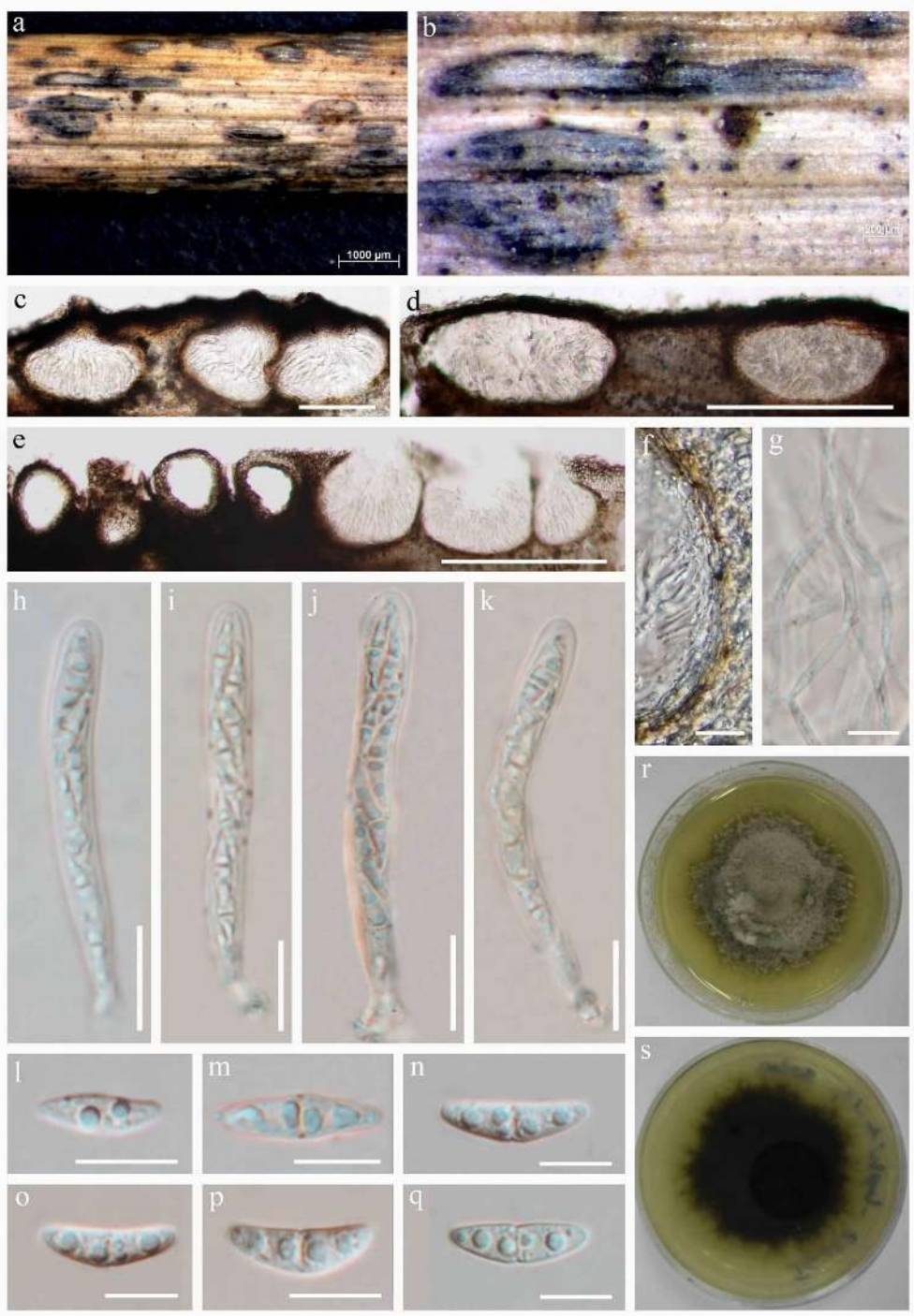

Fig. 5 – ***Coniothyrium chiangmaiense*** (MFLU 16–2854, holotype). a. Appearance of ascostromata on host surface. b. Close up of ascostromata c–e. Vertical sections through ascostromata. f. Peridium of locule. g. Pseudoparaphyses. h–k. Asci. l–q. Ascospores. r, s. Culture characteristics (from above and reverse). Scale bars: c–e = 250 µm, f = 20 µm, g, l–q = 10 µm, h–k = 15 µm.

Didymellaceae Gruyter, Aveskamp & Verkley, Mycol. Res. 113(4): 516 (2009)

This family includes plant pathogenic, saprobic and endophytic species associated with a wide range of hosts and substrates worldwide (Hyde et al. 2013, Chen et al. 2015, Liu et al. 2015, Thambugala et al. 2017). Chen et al. (2015) revised the family based on multi-gene (ITS, LSU, RPB2 and tub2) phylogenetic analysis and morphological observations and introduced new nine genera.

Didymella Sacc., Michelia 2(no. 6): 57 (1880)

Didymella was introduced by Saccardo (1880) with *Didymella exigua* (Niessl) Sacc. as the type species of the genus. Recently Chen et al. (2015) emended *Didymella* to accommodate *Peyronellaea* and several other phoma-like species that grouped together with type species of *Didymella*.

Didymella poaceicola Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 7

Index Fungorum number: IF552994, *Facesoffungi number*: FoF 03213

Etymology – in reference to the holotype occurring on grasses (*Poaceae*)

Holotype – MFLU 16–2574

Saprobic on grasses. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 125–270 × 120–260 µm ($\bar{x}$ = 200 × 205 µm, n = 10), pycnidial, solitary, gregarious, or in groups, scattered, semi-immersed to erumpent, unilocular, globose to subglobose, ostiolate. *Conidiomatal wall* 15–25 µm wide, comprising several layers of lightly pigmented to dark brown, thick-walled, cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 6–9 × 5.5–10 µm ($\bar{x}$ = 7.7 × 8.5 µm, n = 20), holoblastic, hyaline, smooth, ampulliform to doliiform, lining the conidiomatal cavity. *Conidia* 4–9.5 × 2.4–4.5 µm ($\bar{x}$ = 6 × 3 µm, n = 40), ellipsoidal to cylindrical, initially hyaline, becoming pale brown, 0–1-septate, thin-walled, smooth, sometimes with small guttules.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced from one or both ends. Colonies growing on PDA, reaching a diameter of 30 mm after 7 d at 25 °C, flat, surface smooth, with entire edge, white to pale brown olivaceous, moderately dense, circular; white to pale brown olivaceous.

Material examined — THAILAND, Chiang Rai, Mae Fah Luang University, on dead leaves of *Poaceae* sp., 21 December 2012, K.M. Thambugala KM 685 (MFLU 16–2574, **holotype**); *ibid*. (GZAAS 16–0119, **isotype**), ex-type living culture MFLUCC 13–0212, ICMP 21584

Notes – *Didymella poaceicola* is described here as a new species mainly based on phylogeny. *Didymella poaceicola* separates from other *Didymella* species forming a robust clade with 88% ML bootstrap support (Fig. 6).

Epicoccum Link, Mag. Gesell. naturf. Freunde, Berlin 7: 32 (1816) [1815]

The genus *Epicoccum* is known as a hyphomycetous asexual morph in the family *Didymellaceae* (Hyde et al. 2013). However, Chen et al. (2015) emended the genus with coelomycetous synasexual morphs and five *Phoma* species were recombined into the genus *Epicoccum* based on multi-gene phylogenetic analysis.

Epicoccum poaceicola Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 9

Index Fungorum number: IF552995, *Facesoffungi number*: FoF 03214

Etymology – in reference to the holotype occurring on grasses (*Poaceae*)

Holotype – MFLU 16–2573

Saprobic on grasses. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 75–270–(330) × 85–200(–350) µm ($\bar{x}$ = 148 × 156 µm, n = 15), pycnidial, solitary or gregarious, scattered, semi-immersed to erumpent, or superficial uniloculate to multi-loculate, globose to subglobose, ostiolate. *Conidiomatal wall* 15–35 µm wide, comprising several layers of dark brown to lightly pigmented, cells of *textura angularis*, with outer layers composed of thick-walled, dark brown, somewhat flattened cells, becoming lighter towards the inner layers of hyaline cells. *Conidiophores*

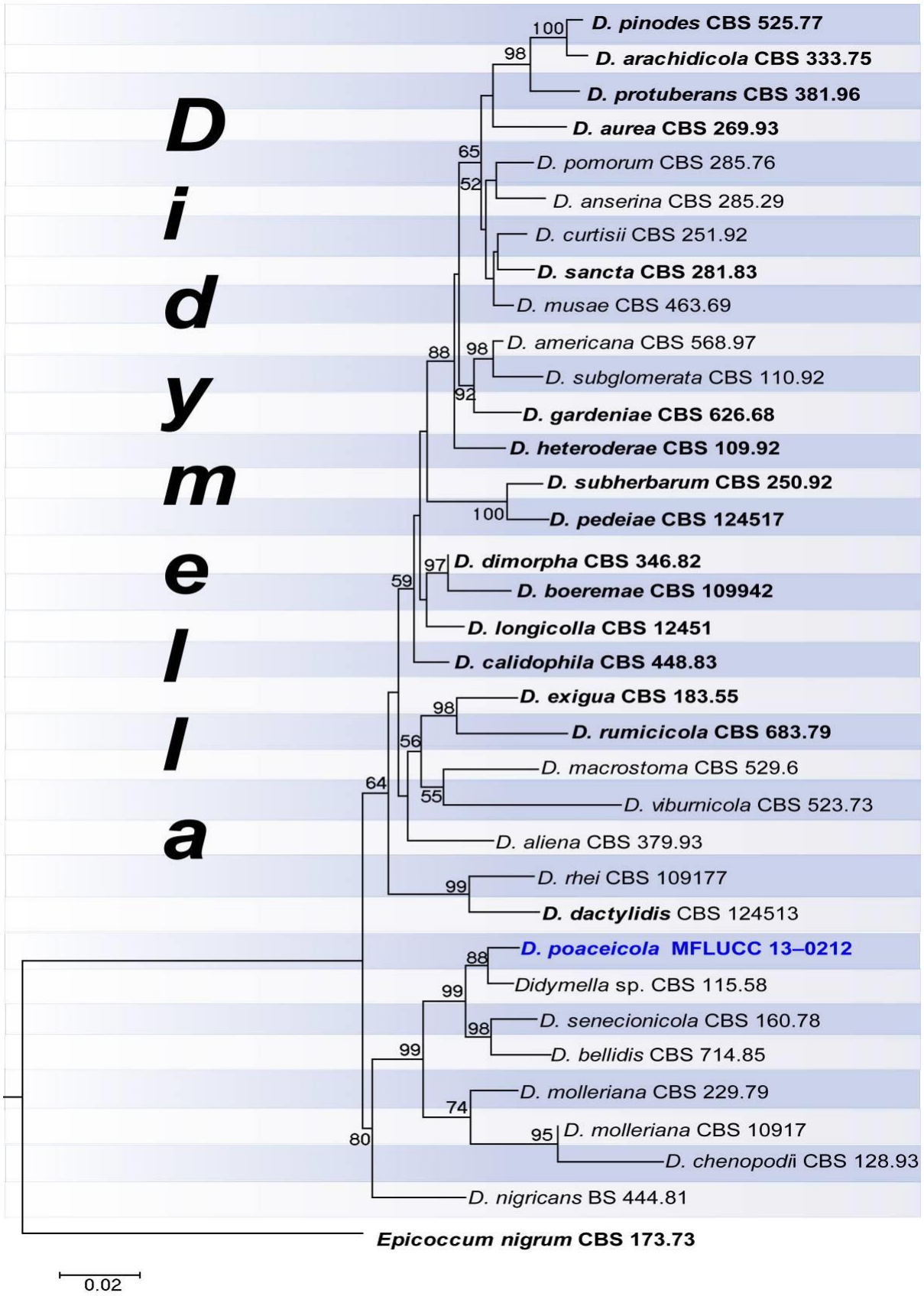

Fig. 6 – Phylogram resulting from maximum likelihood (RAxML) analysis of the combined LSU, ITS, RPB2 and β-tubulin sequences of 34 strains representing the genus *Didymella*. Maximum likelihood bootstrap support values equal to or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Epicoccum nigrum* (CBS 173.73).

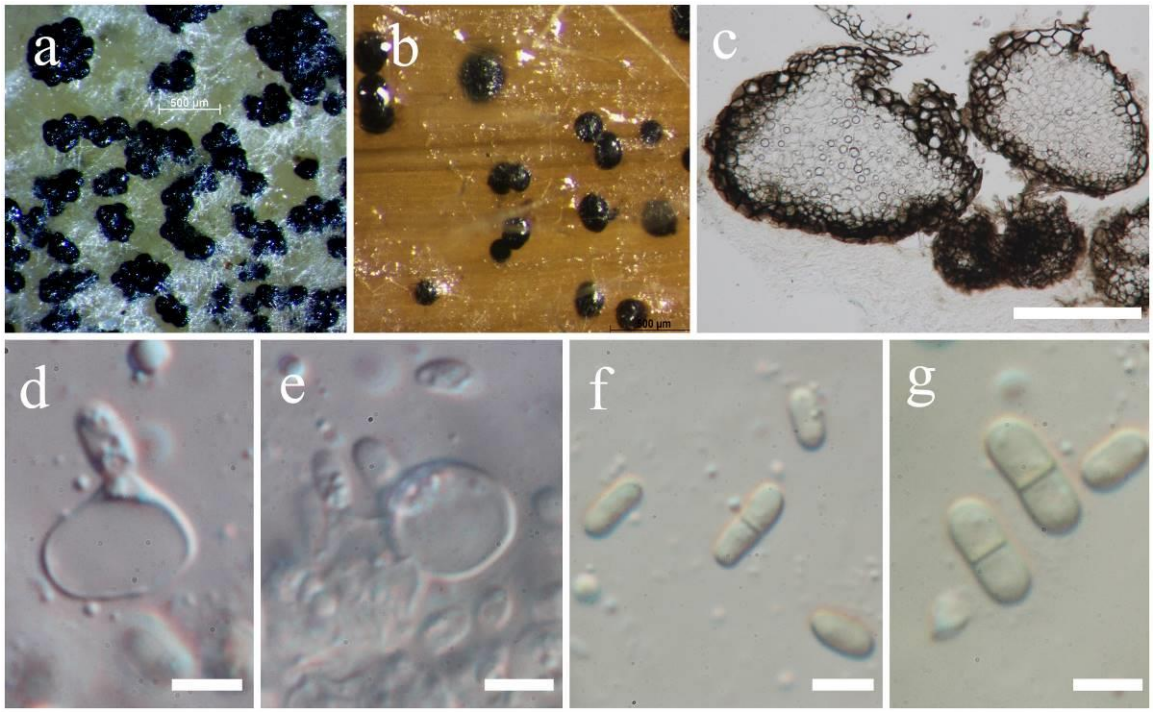

Fig. 7 – ***Didymella poaceicola*** (MFLU 16–2574, holotype). Appearance of conidiomata sporulating a. on PDA. b. on *Poaceae* host. c. Vertical sections through conidiomata. d, e. Conidiogenous cells and developing conidia. f, g. Conidia. Scale bars: c = 100 µm, d–g = 5 µm.

reduced to conidiogenous cells. *Conidiogenous cells* 3.5–6.5(–10) × 4.5–10 µm ($\bar{x}$ = 5.4 × 6.7 µm, n = 15), holoblastic to phialidic, hyaline, smooth, ampulliform to doliiform, lining the conidiomatal cavity. *Conidia* (2–)3–5.7 × 1.8–3 µm ($\bar{x}$ = 4 × 2.2 µm, n = 70), ellipsoidal to cylindrical, hyaline, aseptate, smooth-walled, sometimes with small guttules.

Culture characteristics — Conidia germinating on PDA within 18 h. Colonies growing on PDA, reaching a diameter of 38 mm after 3 d at 25 °C, flat to umbonate, surface smooth to velvety, with entire edge, white to pale pink, dense, circular; reverse reddish to pinkish, with a pale-reddish pigmentation.

Material examined — THAILAND, Chiang Rai Province, Doi Mae Salong, on dead leaves of *Poaceae* sp., 17 July 2014, K.M. Thambugala KM 13–2 (MFLU 16–2573, **holotype**); *ibid.* (GZAAS 16–0118, **isotype**), ex-type living culture MFLUCC 15–0448, ICMP 21417

Notes – *Epicoccum poaceicola* is described here as another new phoma-like species based on our phylogenetic analysis. *Epicoccum sorghinum* (Sacc.) Aveskamp et al. is the phylogenetically closest species to *E. poaceicola* (Fig. 8), separated into distinct sub-clades with 70% ML bootstrap support. This is the first report of phoma-like *Epicoccum* species in Thailand.

Epicoccum thailandicum Goonas., Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 10

Index Fungorum number: IF552996, *Facesoffungi number*: FoF 03215

Etymology – The specific epithet "*thailandicum*" refers to the country where the taxon was first collected.

Holotype – MFLU 16–2855

Saprobic on grass litter. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 100–150 µm diameter, 50–70 µm high ($\bar{x}$ = 127 × 60 µm, n = 10), pycnidial, solitary, in linear rows, immersed, visible as black elongated patches on host surface, subglobose with a flattened base. *Conidiomata wall* 8.5–16 µm wide, comprising outer thick-walled, dark brown to light brown cells of *textura angularis* to *textura prismatica* and inner hyaline cells of *textura angularis*, with outer cells at base gradually fusing with host tissues and indistinguishable. *Conidiophores* reduced to

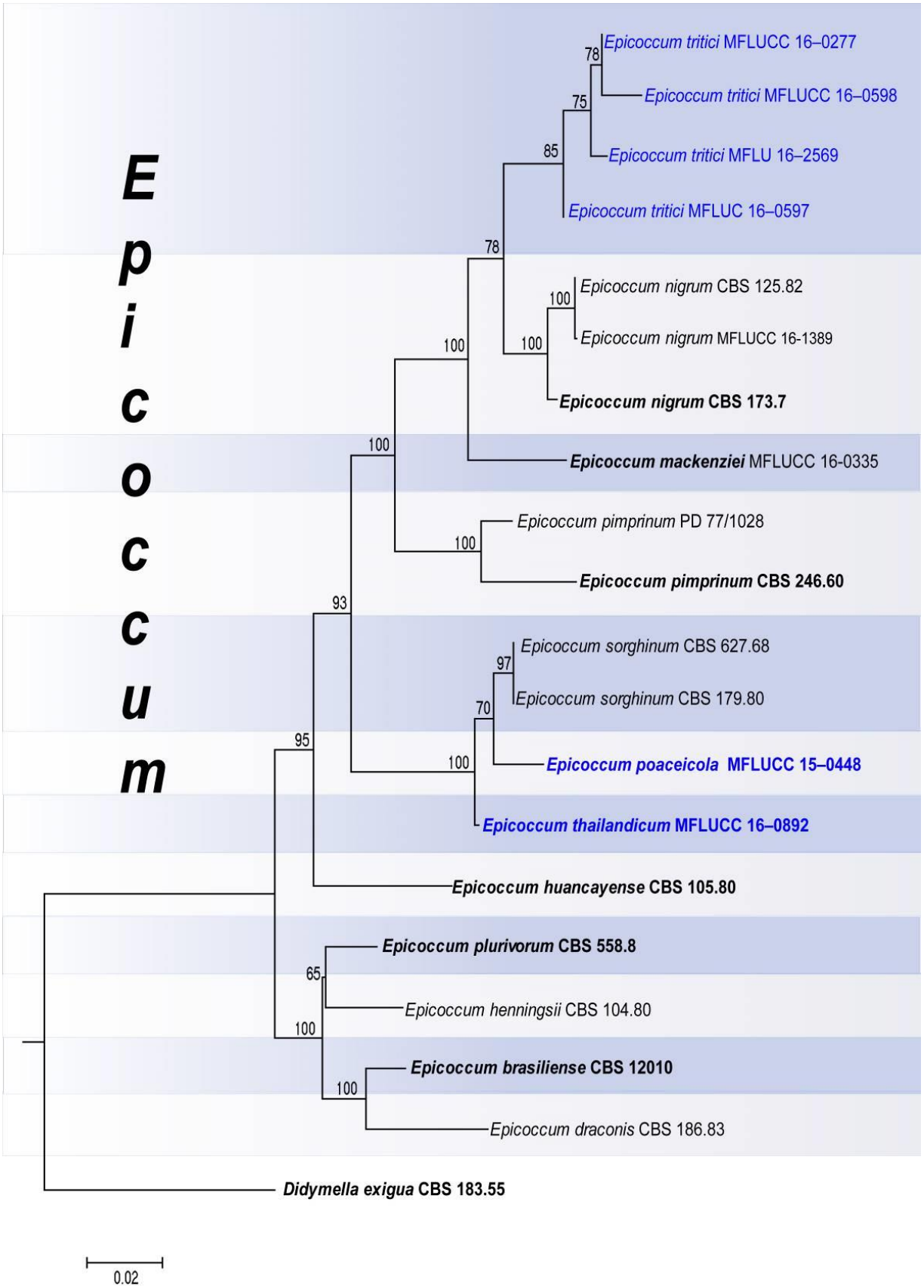

Fig. 8 – Phylogram resulting from maximum likelihood (RAxML) analysis of the combined LSU, ITS, RPB2 and β-tubulin sequences of 18 strains representing the genus *Epicoccum*. Maximum likelihood bootstrap support values equal or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Didymella exigua*.

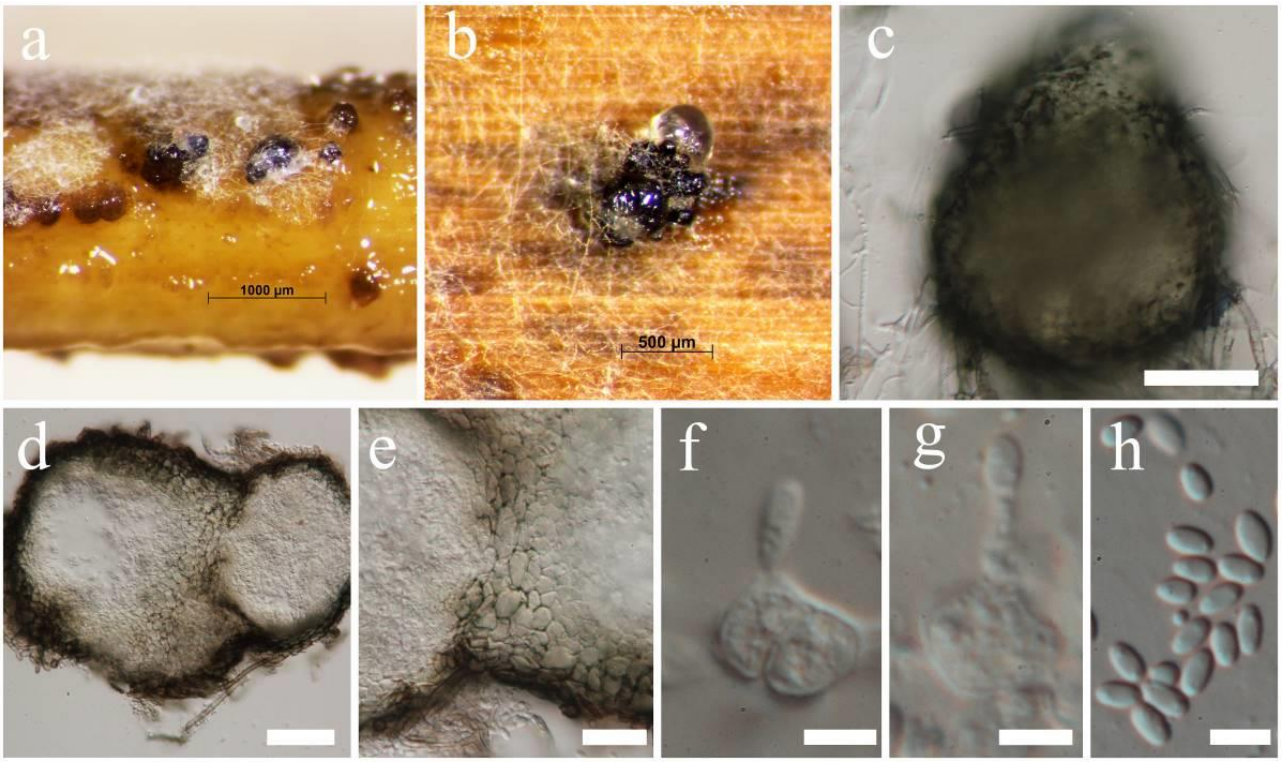

Fig. 9 – ***Epicoccum poaceicola*** (MFLU 16–2573, holotype). a. Appearance of conidiomata sporulating on a bamboo branch b. *Poaceae* host in culture. c. Squash mount of conidioma. d. Vertical section through conidioma. e. Conidiomatal wall. f, g. Conidia developing on conidiogenous cells. h. Conidia. Scale bars: c–d = 50 µm, e = 25 µm, f–h = 5 µm.

conidiogenous cells. *Conidiogenous cells* 3–4.5 × 2–3 µm ($\bar{x}$ = 3.5 × 2.3 µm, n = 10), holoblastic, hyaline, doliiform or obpyriform, smooth. *Conidia* 7.5–10 × 3–4.5 µm ($\bar{x}$ = 8.5 × 3.5 µm, n = 30), oblong, with rounded ends, hyaline, aseptate, guttulate, smooth-walled.

Culture characteristics — Conidia germinating on PDA within 12 h reaching a diameter of 51 mm after 7 d at 25 °C, circular, flat, surface smooth, with entire edge, pale orange at the center and greyish towards the edge, with white margin; reverse yellowish-grey.

Material examined — THAILAND, Chiang Mai Province, Mae Taeng, Mushroom Research Center, on stems of grass litter (*Poaceae*), 24 March 2016, Ishani D. Goonasekara IGm 30 (MFLU 16–2855 **holotype**) *ibid*. (HKAS 97391, **isotype**), ex-type living culture MFLUCC 16–0892 = KUMCC 17–0026.

Notes – *Epicoccum thailandicum* is morphologically similar to *E. sorghinum*, but distinct in conidial dimensions (*E. thailandicum* 7.5–10 × 3–4.5 µm and *E. sorghinum* 5 × 2 µm) (Saccardo 1878). In the phylogenetic analysis (Fig. 8) carried out in this study, *E. thailandicum* forms a strongly supported clade (100% BS) within the genus and therefore, we introduce a new species.

Epicoccum tritici Henn., Hedwigia 43: 146 (1904) Fig. 11

Facesoffungi number: FoF 03216

Saprobic on *Triticum aestivum* L. and *Zea mays* L. **Sexual morph**: Undetermined. **Asexual morph**: *Sporodochia* brownish to black, scattered or aggregated. *Stromata* 70–140 × 65–150 µm ($\bar{x}$ = 116 × 114 µm, n = 8), hemispherical to spherical, composed of brown to reddish-brown, pseudoparenchymatous cells. *Conidiophores* 6–15 × 3–6.5 µm ($\bar{x}$ = 9.6 × 4.8 µm, n = 15), ampulliform, short, pale brown, arranged as a palisade layer. *Conidiogenous cells* holoblastic. *Conidia* 10–19 × 9–22 µm ($\bar{x}$ = 14.2 × 14.8 µm, n = 50), initially yellowish-brown, becoming dark brown, irregularly multi-septate, globose to subglobose, top-shaped with a truncate base, thickly verrucose.

Culture characteristics — Conidia germinating on PDA within 18 h. Colonies growing on PDA, reaching a diameter of 36 mm after 4 d at 25 °C, flat to umbonate, surface smooth to velvety, with entire edge, pinkish white, dense, circular; reverse reddish to brownish, pigmented.

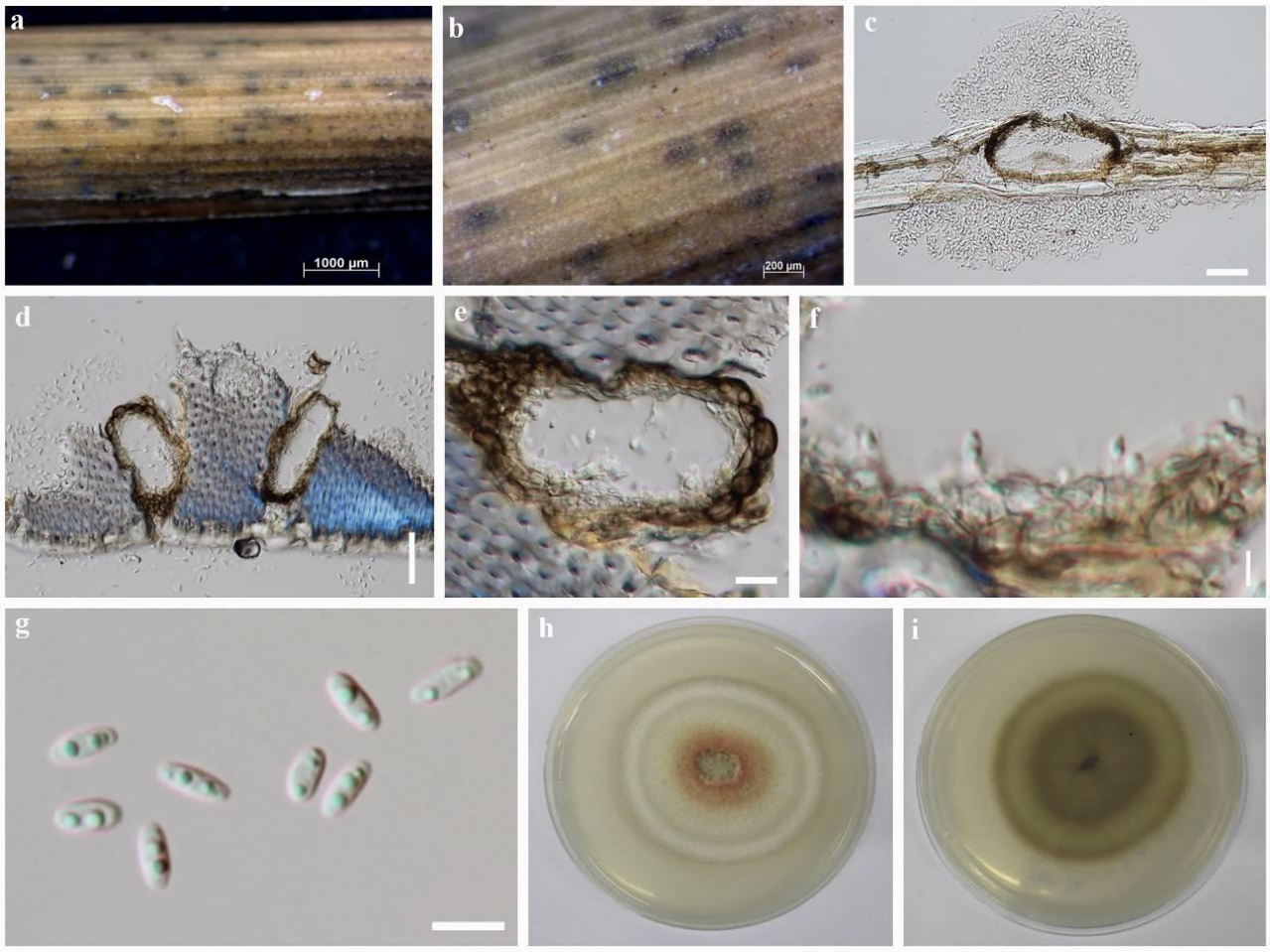

Fig. 10 – ***Epicoccum thailandicum*** (MFLU 16–2855, holotype). a, b. Appearance of conidiomata on host c, d. Section through conidiomata e. Vertical section through conidioma showing conidiomal wall. f. Conidia. arising from conidiogenous cells g. Conidia h. Colony from above i. Colony from below. Scale bars: c, d = 50 µm, e = 100 µm, f = 5 µm, g = 10 µm.

Material examined — CHINA, Guizhou Province, Guizhou Academy of Agricultural Sciences, on dead kernels of *Triticum aestivum* L. (*Poaceae*), 16 May 2015, K.M. Thambugala CN 004 (MFLU 16–2569, GZAAS 16–0023, **epitype designed here**), living culture MFLUCC 16–0276, GZCC 15–0033; *ibid.*, 16 May 2015, K.M. Thambugala CN 005 (MFLU 16–2570, GZAAS 16–0024), living culture MFLUCC 16–0277, GZCC 15–0034; *ibid.* 10 June 2015, K.M. Thambugala CN 014–2 (MFLU 16–2571, GZAAS 16–0029), living culture MFLUC 16–0597, GZCC 15–0039; *ibid.*, on dead leaves of *Zea mays* L. (*Poaceae*), 20 July 2015, K.M. Thambugala CN 018 (MFLU 16–2572, GZAAS 16–0033), living culture MFLUCC 16–0598, GZCC 15–0043

Notes – *Epicoccum tritici* was introduced by Hennings (1904) on *Triticum aestivum* L. (wheat) from Japan. During our research, we collected *E. tritici* in China on *Triticum aestivum* L. and *Zea mays* L. The morphology of the present collection fits with original description by Hennings (1904). We therefore designate an epitype (*sensu* Ariyawansa et al. 2014c) in order to stabilize the name.

Didymosphaeriaceae Munk, Dansk bot. Ark. 15(no. 2): 128 (1953)

The family *Didymosphaeriaceae* has been revised by Ariyawansa et al. (2014a) who accepted 16 genera. Members of the family are pathogenic or saprobic, in terrestrial or aquatic environments.

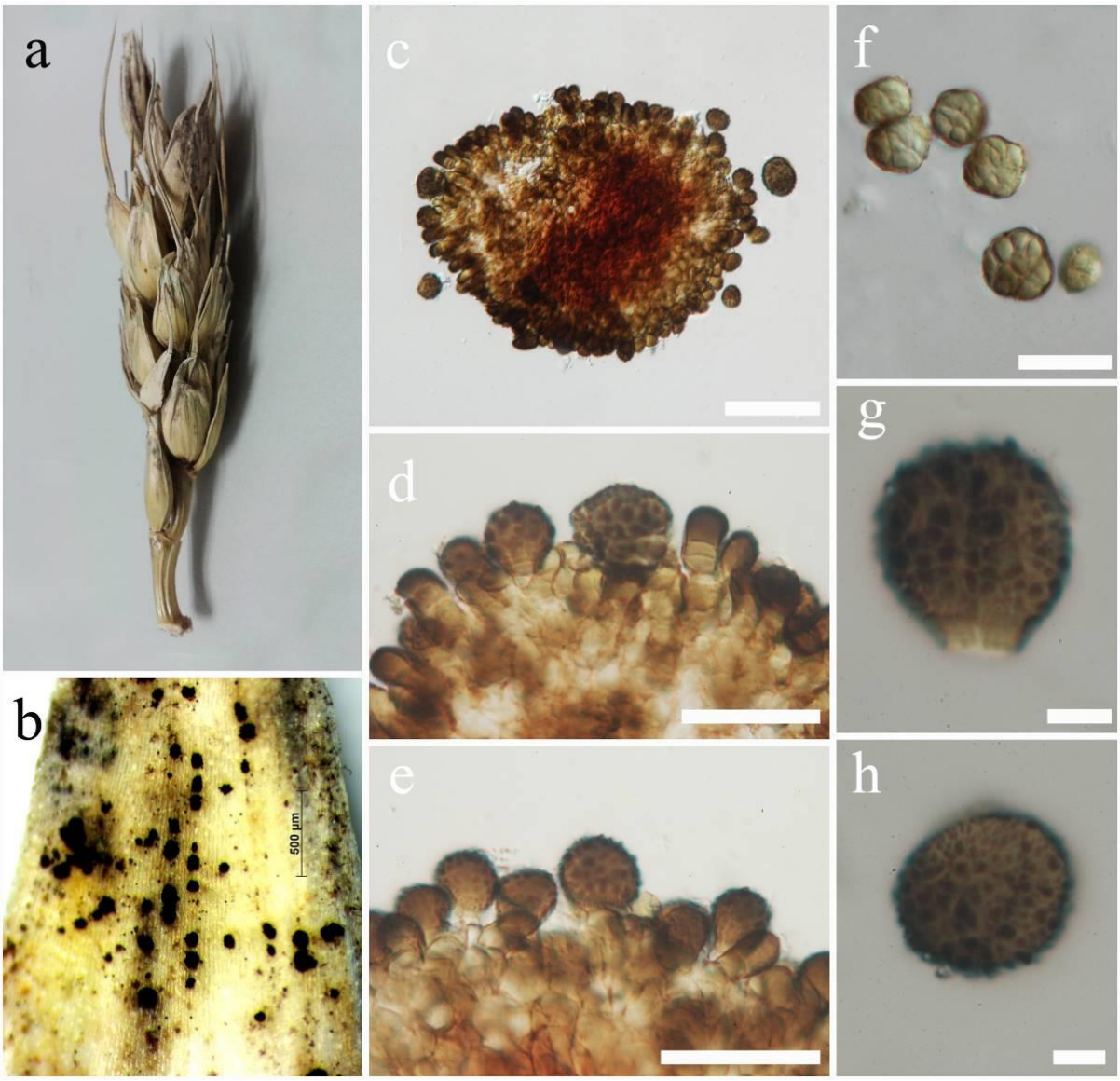

Fig. 11 – ***Epicoccum tritici*** (MFLU 16–2569, epitype). a. Habitat (kernel of *Triticum aestivum* L.). b. Appearance of sporodochia on host. c. Sporodochium. d, e. Conidiophores and developing conidia. f. Young conidia. g, h. Mature conidia. Scale bars: c = 50 µm, d, e = 25 µm, f = 20 µm, g, h = 5 µm.

Kalmusibambusa Phookamsak, Tennakoon, Thambugala & K.D. Hyde, ***gen. nov.***

Index Fungorum number: IF553159, *Facesoffungi number*: FoF 03217

Etymology – In reference to kalmusia-like genus and its Bamboo host.

Associated with living culms ofbamboo. **Sexual morph**: *Ascostromata* gregarious, clustered, immersed in clypeus, visible as raised, erumpent to superficial, elongated with a slit-like opening through host surface, multi-loculate, coriaceous, ostiolate. *Locules* arranged in rows, immersed in clypeus, globose to subglobose, glabrous, with minute papilla. *Peridium* thin- to thick-walled, of unequal thickness, composed of several layers of small, dark brown to black pseudoparenchymatous cells, arranged in a *textura angularis* to *textura prismatica*. *Hamathecium* composed of dense, broad cellular pseudoparaphyses, filamentous, septate, anastomosing at the apex, embedded in a gelatinous matrix. *Asci* 8-spored, bitunicate, fissitunicate, cylindrical, with short pedicellate, apically rounded with a well-developed, ocular chamber. *Ascospores* overlapping 1–2-seriate, brown to dark brown, ellipsoidal to fusiform with rounded to acute ends, 3-septate when mature, constricted at the septa, straight to curved, smooth-walled, surrounded by a wide mucilaginous sheath. **Asexual morph**: Undetermined.

Type species – ***Kalmusibambusa triseptata*** Phookamsak, Tennakoon, & K.D. Hyde

Notes — *Kalmusibambusa* is introduced as a monotypic genus to accommodate a bambusicolous species in *Didymosphaeriaceae* associated with other ascomycetes species causing dieback disease on bamboo culms. *Kalmusibambusa* is somewhat morphologically similar to *Kalmusia*, but is easily differentiated by its multi-loculate, coriaceous, elongated ascostromata, with a slit-like opening through host surface and cylindrical asci. Although, in the phylogenetic analysis (Fig. 12), *Kalmusibambusa triseptata* formed a poorly supported clade, it distinctly separated from *Kalmusia* and other neighboring genera (*Alloconiothyrium* Verkley and *Xenocamarosporium* Crous & M.J. Wingf). Therefore, based on morphological characters and phylogenetic placement we recognize *Kalmusibambusa* as a new genus in the family *Didymosphaeriaceae*.

Kalmusibambusa triseptata Phookamsak, Tennakoon, & K.D. Hyde, ***sp. nov.*** Fig. 13

Index Fungorum number: IF553160, *Facesoffungi number*: FoF 03218

Etymology – The specific epithet "triseptata" is based on the 3-septate ascospores

Holotype – MFLU 12–2473

Associated with living culms of bamboo. **Sexual morph**: *Ascostromata* 150–210 µm high, 1000–1500 µm diameter, gregarious, clustered, immersed in clypeus, visible as raised, erumpent to superficial, elongated with a slit-like opening through host surface, multi-loculate, coriaceous, ostiolate. *Locules* 100–220 µm high, 190–320 µm diameter, arranged in rows, immersed in clypeus, globose to subglobose, glabrous, with minute papilla. *Peridium* 12–20 µm wide, thin- to thick-walled, of unequal thickness, slightly thick at the sides, composed of several layers of small, dark brown to black pseudoparenchymatous cells, arranged in a *textura angularis* to *textura prismatica. Hamathecium* composed of dense, broad cellular pseudoparaphyses, 1.5–2.5 µm wide, filamentous, distinctly septate, anastomosing at the apex, embedded in a gelatinous matrix. *Asci* (78–)80–93(–95) × (6.5–)6.9–7.7(–8.1) µm ($\bar{x}$ = 86.5 × 7.3 µm, n = 30), 8-spored, bitunicate, fissitunicate, cylindrical, with short pedicellate, apically rounded, with a well-developed ocular chamber. *Ascospores* (12.5–)13.5–15.5(–16.1) × (3.1–)3.5–4.5(–4.9) µm ($\bar{x}$ = 14.5 × 4 µm, n = 30), overlapping 1–2-seriate, ellipsoidal to fusiform with rounded to acute ends, brown to dark brown, 1-septate when young, becoming (2–)3-septate when mature, constricted at the septa, straight to curved, smooth-walled, guttule, surrounded by a wide mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Colonies on PDA fast growing, reaching 75–80 mm diameter after 14 d at 20–25 °C, colonies medium dense, circular, flat, slightly rough surface with edge entire, well defined margin, glabrous to velvety with smooth aspects, colony from above: light brown to yellowish at the margin, grey to brownish at the centre; reverse, light brown to yellowish at the margin, grey to light brownish at the centre; mycelium white to grey; not producing pigmentation in PDA media agar.

Material examined — THAILAND, Chiang Rai Province, Muang District, Khun Korn Waterfall, on living culms of bamboo, 24 November 2012, R. Phookamsak RP0132 (MFLU 12–2473, **holotype**); *ibid*. (HKAS, **isotype**), ex-type living culture, MFLUCC 13–0232, KUMCC 16–0183

Neokalmusia Ariyaw. & K.D. Hyde, in Ariyawansa et al., Fungal Diversity 68: 92 (2014)

Neokalmusia was established to accommodate two bambusicolous taxa, *N. brevispora* and *N. scabrispora* previously referred to *Kalmusia* (Ariyawansa et al. 2014a). Dai et al. (2016) introduced, *N. didymospora* D.Q. Dai & K.D. Hyde associated with decaying bamboo in Thailand.

Neokalmusia arundinis Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 14

Index Fungorum number: IF553161, *Facesoffungi number*: FoF 03219

Etymology – Named after *Arundo*, the host genus from which it was collected.

Holotype – MFLU 16–2577

Fig. 12 – Phylogram resulting from maximum likelihood (ML) analysis of the combined LSU, ITS, SSU and EF1-α sequences of 77 strains representing the family *Didymosphaeriaceae*. Maximum likelihood bootstrap support values equal or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Periconia digitata*.

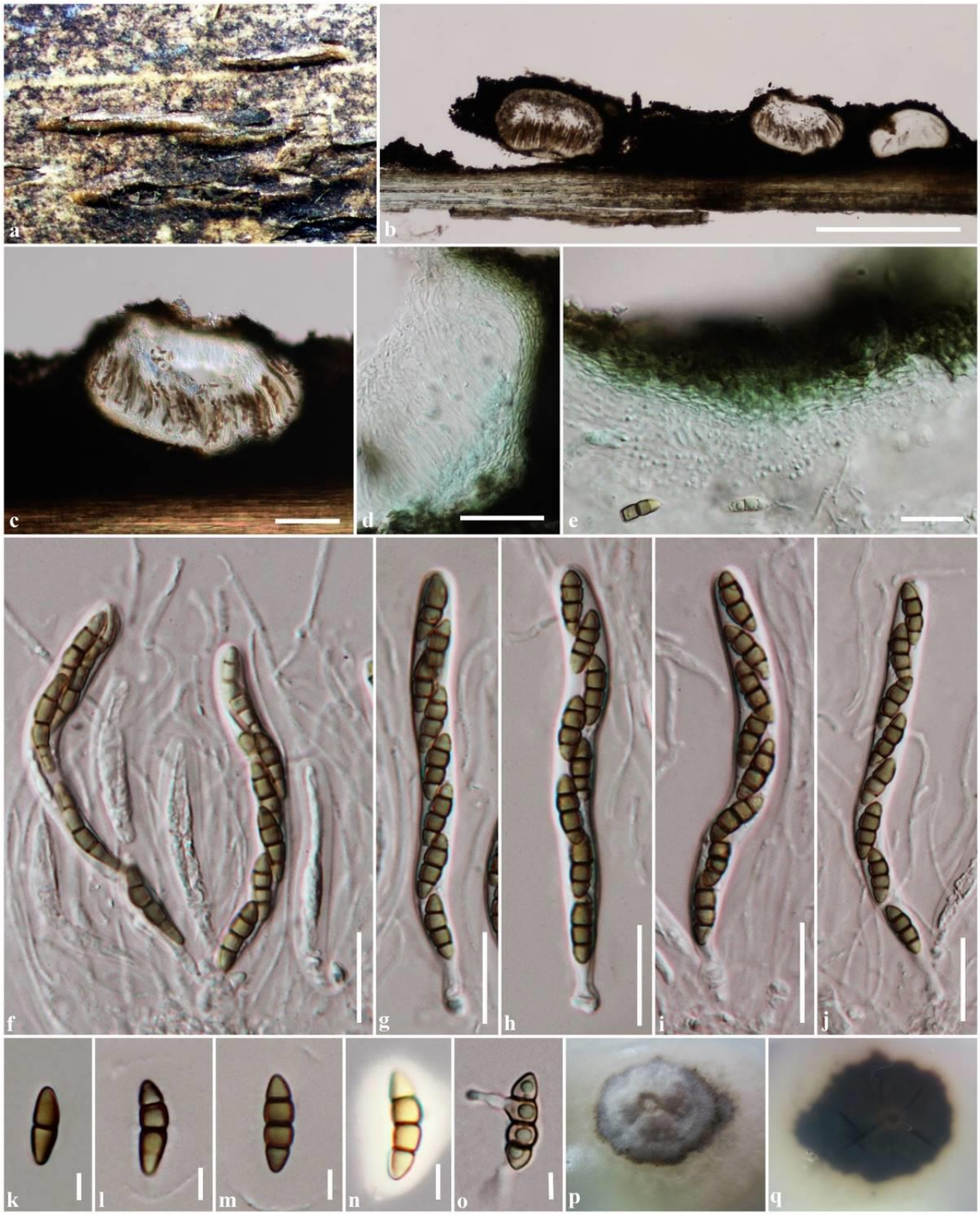

Fig. 13 – ***Kalmusibambusa triseptata*** (MFLU 12–2473, holotype). a. Ascostromata on host surface. b. Horizontal section through ascostroma. c Section through ascostroma. d, e. Section of peridium. f. Asci with pseudoparaphyses. g–j. Asci. k–m. Ascospores. n. Ascospore stained with Indian ink. o. Germinated ascospore. p. Colony from above. q. Colony from below. Scale bars: b = 50 µm, c = 100 µm, d = 50 µm, e–j = 20 µm, k–o = 5 µm.

Saprobic on dead stem of *Arundo pliniana* Turra. **Sexual morph**: *Ascomata* 275–350 × 225–275 µm ($\overline{x}$ = 315× 250 µm, n = 5), scattered, solitary or in small groups, semi-immersed,

surrounded by a small, blackened, clypeus-like structure, globose to subglobose, ostiolate. *Peridium* 15–25 μm wide, poorly developed, composed of few layers of thin-walled, brown to dark brown, cells of *textura angularis*, fusing at the outside with the host tissue. *Hamathecium* comprising 2–3 μm wide, numerous, cellular, pseudoparaphyses, embedded in a mucilaginous matrix. *Asci* 60–85 × (7.5–) 8.5–10.5 μm ($\bar{x}$ = 68 × 9.2 μm, n= 15), 8-spored, bitunicate, fissitunicate, cylindric-clavate, pedicellate, apically rounded with an indistinct ocular chamber. *Ascospores* 11.8–16.2 × 4–5.4 μm ($\bar{x}$ = 13.3 × 4.4 μm, n = 30), overlapping 1–2-seriate, fusiform, pale brown to brown, 1-septate, constricted at the septum, often enlarged near septum in the upper cell, smooth-walled, without a mucilaginous sheath. **Asexual morph**: undetermined.

Culture characteristics — Ascospores germinating on PDA within 18 h and germ tubes produced from both cells. Colonies growing on PDA, reaching a diameter of 13 mm after 7 d at 25 °C, flat to slightly raised, surface smooth to velvety, with entire to slightly irregular margin, white to grey olivaceous, white near the margin, dense, circular to filamentous; reverse black to greenish olivaceous.

Material examined — ITALY, Province of Forlì-Cesena [FC], Fiumana di Predappio, on dead aerial stem of *Arundo pliniana* Turra (*Poaceae*), 25 March 2014, Erio Camporesi IT 1584 (MFLU 16–2577, **holotype**); *ibid*. (GZAAS 16–0122, **isotype**), ex-type living culture MFLUCC 15–0463, ICMP 21431; *ibid*., 19 December 2013, Erio Camporesi IT 1584–2 (16–2578, **paratype**), living culture MFLUCC 14–0222

Notes — *Neokalmusia arundinis* is morphologically similar to *Montagnula* species. However, the ascomatal characters are quite different (Wanasinghe et al. 2016) and phylogenetically *Montagnula* and *Neokalmusia* are distinct.

Neokalmusia thailandica Phukhamsakda & K.D. Hyde, ***sp. nov*.** Fig. 15

Index Fungorum number: IF552987, *Facesoffungi number*: FoF 03220

Etymology – The epithet “thailandica” refers to the country where the taxon was collected.

Holotype – MFLU 16–2787

Saprobic on dead and dry stem of *Bambusoideae*. **Sexual morph**: *Ascomata* 169–224 μm high × 115–208 μm diameter ($\bar{x}$ = 197 × 180 μm, n = 5), solitary, scattered, gregarious, immersed, under clypeus, depress globose to sub-globose, coriaceous, uni-loculate, brown to dark brown, shiny, roughened, ostiolate. *Ostiole* apex well-developed, 69–74 μm high × 56–89 μm diameter, brown to dark brown, cylindrical, ostiolar canal filled with periphysoids. *Peridium* 8–11 μm wide, composed of 3–5 layers, outer layers composed of irregular, somewhat flattened, dark brown to brown cells, inner layers composed of light brown to hyaline, wider cells of *textura angularis*. *Hamathecium* of dense, 1.6–3.5 μm wide ($\bar{x}$ = 2 μm, n = 30), transversely septate, branched, filamentous pseudoparaphyses, embedded in a mucilage. *Asci* 70–93 × 7–11 μm ($\bar{x}$ = 85 × 10 μm, n = 20), 6–8-spored, bitunicate, fissitunicate, clavate or broad cylindrical, with bulbous pedicel, apically rounded. *Ascospores* 15–20 × 5–7 μm ($\bar{x}$ = 18 × 6 μm, n = 40), partiallyoverlapping 2-seriate, broad fusiform, narrow towards the end, initially hyaline and 1-septate, becoming 3-septate and reddish-brown to brown at maturity, slightly constricted at the septa, constricted at the second septa, finely verrucose, with a thin mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Colonies on MEA, reaching 40 mm diameter after 2 weeks at 25° C, surface white, flattened, dense, circular, slightly contain aerial mycelium, entire margins; reverse gray at the center, radiating cream outward, flattened, margin rough.

Material examined — THAILAND, Sukhothai Province, on a dead branches of *Bambusoideae* (*Poaceae*), 28 September 2015, C. Phukhamsakda S802 (MFLU 16–2787, **holotype**), ex-type living culture, MFLUCC 16–0405, ICMP 21564; *ibid*. (GZAAS 16–0154, **isotype**); Uttaradit Province, 25 September 2015, C. Phukhamsakda S201 (MFLU 17–0213 **paratype**), ex-paratype living culture, MFLUCC 16–0399.

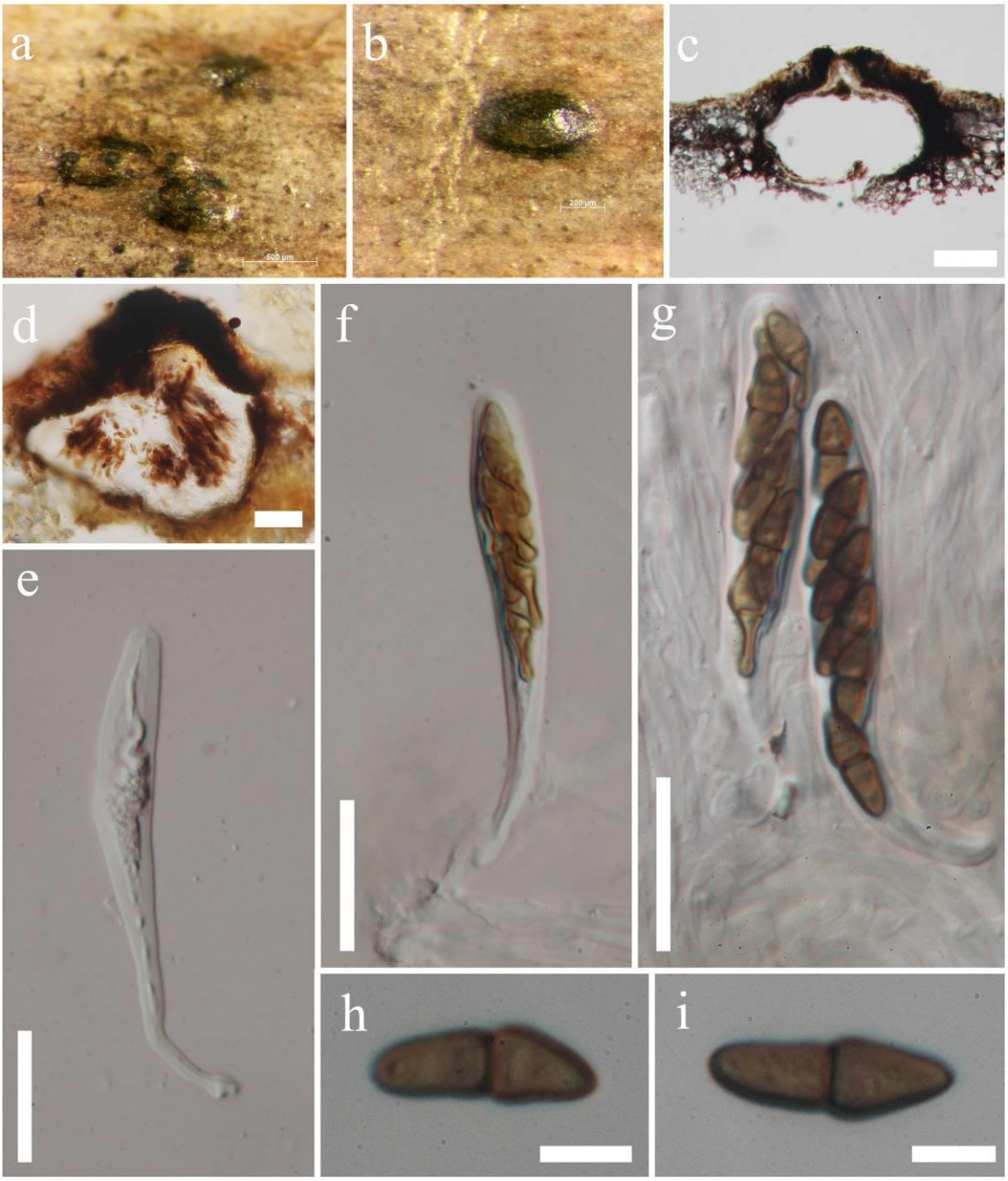

Fig. 14 – ***Neokalmusia arundinis*** (MFLU 16–2787, holotype). a, b. Appearance of ascomata on the host surface. c, d. Vertical sections through ascomata. e. Immature ascus f, g. Mature asci (note pseudoparaphyses in g). h, i. Ascospores. Scale bars: c = 100 µm, d = 50 µm, e–g = 20 µm, h–i = 5 µm.

Notes — Other than *Neokalmusia thailandica*, only one species, *N. brevispora* (Nagas. & Y. Otani) Kaz. Tanaka et al. has been reported before with 3-septate ascospores. *Neokalmusia brevispora* primarily differs from *N. thailandica* in having multi-loculate, larger ascostromata, 4–8-spored asci and somewhat larger ascospores.

Paraphaeosphaeria O.E. Erikss., Ark. Bot. 6: 405 (1967)

Eriksson (1967) introduced the genus *Paraphaeosphaeria* as a segregate from *Leptosphaeria* Ces. & De Not. The immersed to semi-immersed ascomata, bitunicate asci with a short pedicel and multi septate, broadly elliptical, yellowish-brown ascospores are unique morphological traits of the sexual morph (Wong et al. 2000, Ariyawansa et al. 2014a).

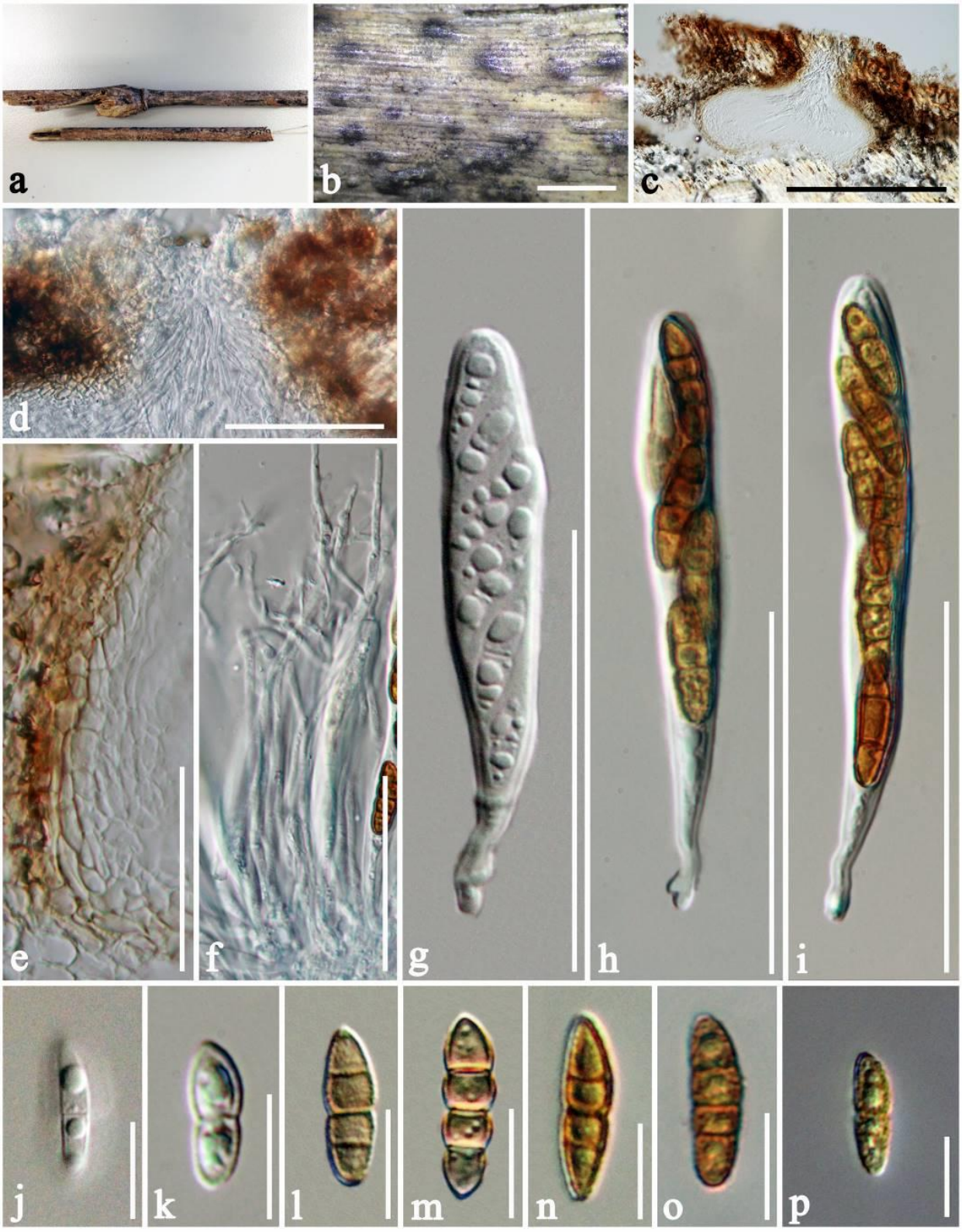

Fig. 15 – ***Neokalmusia thailandica*** (MFLU 16–2787, holotype). a. Habitat. b. Appearance of ascomata on the host surface. c. Section of ascoma. d. Ostiole with periphyses. e. Section of partial peridium. f. Pseudoparaphyses. g–i. Developing state of asci with ocular chamber. j–o. Development state of ascospores p. Ascospores stained with Indian ink to show sheath. Scale bar: b = 500 µm, c = 200 µm, e–i = 50 µm, j–p = 10 µm.

Paraphaeosphaeria produces coniothyrium-like asexual morphs characterized by eustromatic or pycnidial conidiomata, phialidic, or annelidic conidiogenous cells and aseptate or 1-septate conidia Verkley et al. 2014). Recent studies confirmed the placement of *Paraphaeosphaeria* in *Didymosphaeriaceae* (Ariyawansa et al. 2014a, Verkley et al. 2014).

Paraphaeosphaeria graminicola Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 17

Index Fungorum number: IF553162, *Facesoffungi number*: FoF 03221

Etymology – The specific epithet "graminicola" was given after the host family Gramineae (*Poaceae*) from which the fungus was collected.

Holotype – MFLU 16–2576

Saprobic on grasses. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* up to 1 mm wide on PDA, pycnidial, solitary, gregarious, or in groups, scattered, immersed to erumpent, uni- to multi-loculate, subglobose to irregular. *Locules* (60–)80–220 × 60–200 µm ($\bar{x}$ = 104× 114 µm, n = 10), globose to subglobose, ostiolate. *Conidiomatal wall* 10–20 µm wide, comprising several layers of lightly pigmented to brown, thick-walled, cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 4–6.4(–7) × 4.6–8 µm ($\bar{x}$ = 5.4 × 6.3 µm, n = 25), holoblastic, hyaline, smooth, ampulliform to doliiform, lining the conidiomatal cavity. *Conidia* 2.8–5 × 1.8–2.5 µm ($\bar{x}$ = 4 × 2.2 µm, n = 60), ellipsoidal to cylindrical, initially hyaline, becoming pale brown, thin-walled, smooth, aseptate, with 1–2 small guttules.

Culture characteristics — Conidia germinating on PDA within 18 h. Colonies growing on PDA, reaching a diameter of 60 mm after 7 d at 25 °C, flat, surface smooth, with entire edge, white to pale pinkish, moderately dense, circular; reverse white.

Material examined — THAILAND, Chiang Rai Province, Doi Mae Salong, on dead leaves of *Poaceae* sp., 17 July 2014, K.M. Thambugala KM 019–2 (MFLU 16–2576, **holotype**); *ibid*. (GZAAS 16–0121, **isotype**), ex-type living culture MFLUCC 15–0450, ICMP 21421

Notes – *Paraphaeosphaeria* species are found on a wide range of substrates and are widely distributed in Europe (Verkley et al. 2014). This is the first record of *Paraphaeosphaeria* species on *Poaceae* in Thailand. It is difficult to distinguish asexual morphs of *Paraphaeosphaeria* using only morphology. In the present phylogeny, *P. graminicola* formed a strongly supported sub-clade (100% BS) which is sister to *P. arecacearum* Verkley et al (Fig. 16).

Spegazzinia Sacc., Spegazzinia: [1] (1879)

The hyphomycetous genus *Spegazzinia* was introduced by Saccardo (1880) and currently 26 species epithets are listed in Index Fungorum (2017). The genus was classified in *Apiosporaceae*, Sordariomycetes (Hyde et al. 1998) based on its morphological traits. However, the placement of the genus in *Didymosphaeriaceae* was shown by Tanaka et al. (2015) based on molecular evidence of *S. deightonii* (S. Hughes) Subram. and *S. tessarthra (*Berk. & M.A. Curtis) Sacc. However, only coelomycetous asexual morphs have been reported for the family *Didymosphaeriaceae*. Therefore, other *Spegazzinia* species need to be recollected and sequenced to establish their phylogenetic position.

Spegazzinia neosundara Thambugala& K.D. Hyde, ***sp. nov.*** Fig. 18

Index Fungorum number: IF553163, *Facesoffungi number*: FoF 03222

Etymology – The species epithet, neo (Lat., new), refers to the similarity to *Spegazzinia sundara*

Holotype – MFLU 16–2575

Saprobic on dead leaves of *Cortaderia* sp. **Sexual morph**: Undetermined. **Asexual morph**: *Sporodochia* dark, dense, dry, powdery, velvety, 1–2 mm diameter *Conidiophores* micronematous. *Conidiogenous cells* basauxic, ampulate 4–5 µm wide × 4.2–6 µm high ($\bar{x}$ = 4.5 × 5 µm, n = 10), verrucose, producing an erect, verruculose unbranched filament up to (20–)35–70 × 1.5–2.5 µm ($\bar{x}$ = 50 × 2 µm, n = 35), pale, or golden brown. *Conidia* holoblastic, two types, disc-shaped and stellate-shaped, brown to dark brown, 4-celled, crossed-septate. Disc-shaped conidia 9.5–12.2 ×

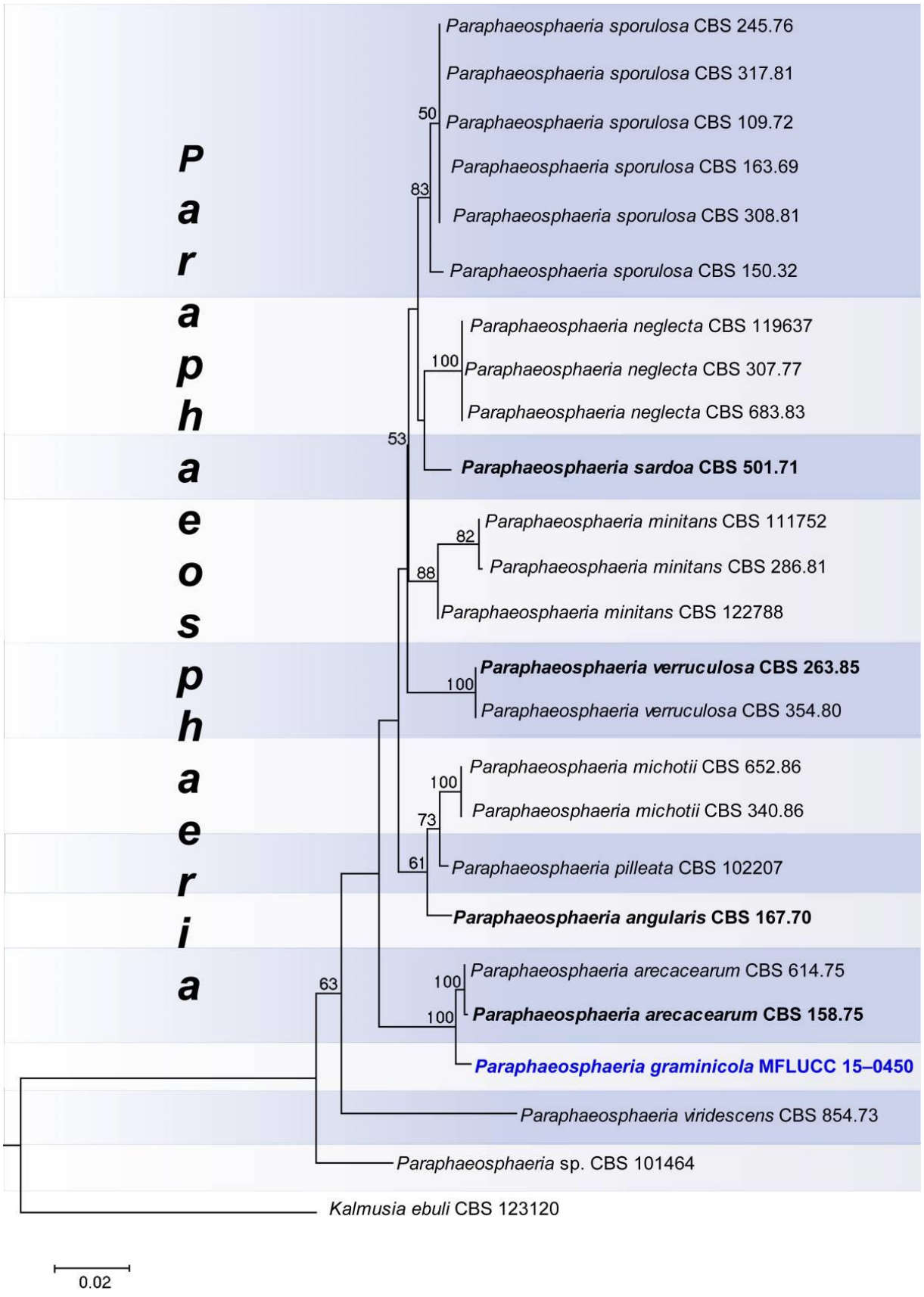

Fig. 16 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU and ITS sequence data of 24 strains representing the genus *Paraphaeosphaeria*, *Didymosphaeriaceae*. Maximum likelihood bootstrap values equal or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Kalmusia ebuli*.

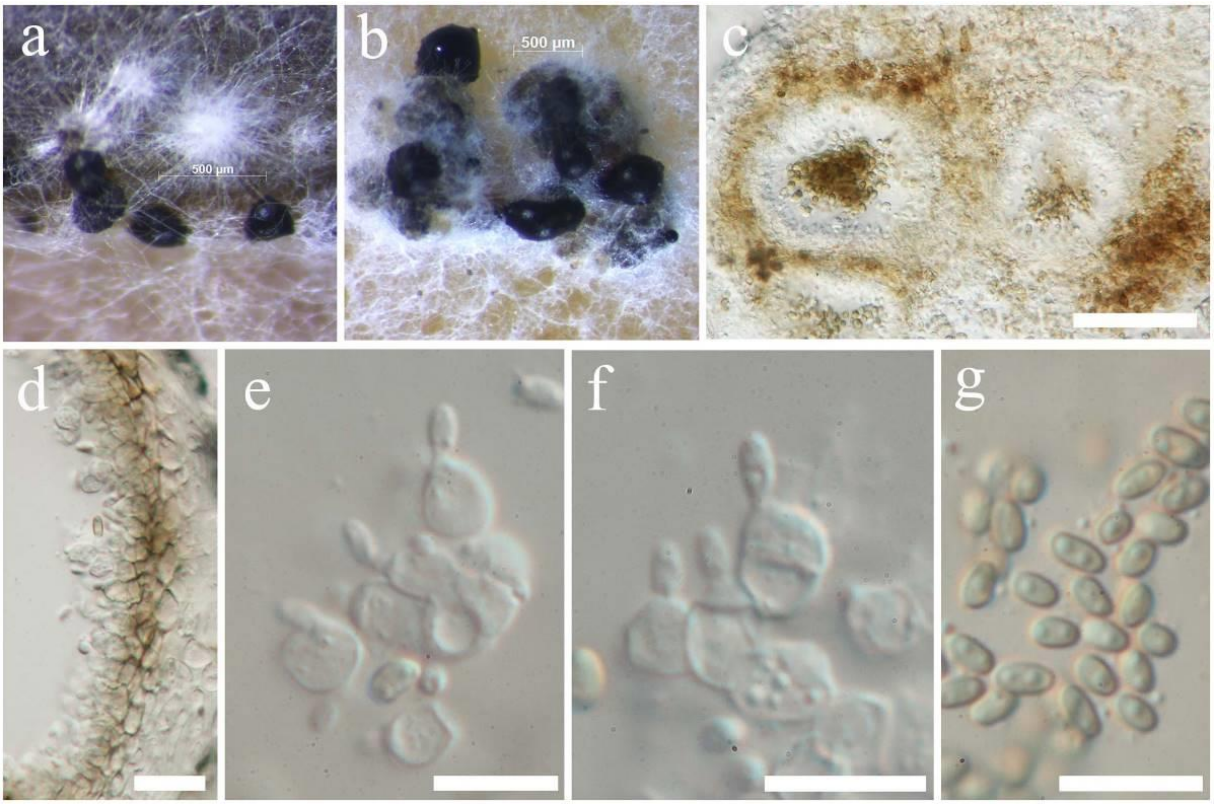

Fig. 17 – ***Paraphaeosphaeria graminicola*** (MFLU 16–2576, holotype). Appearance of conidiomata sporulating a. on *Poaceae* host. b. on PDA. c. Vertical section through conidioma showing locules. d. Conidiomatal wall. e, f Conidiogenous cells and developing conidia. g. conidia. Scale bars: c = 50 µm, d = 15 µm, e–g = 10 µm.

10.2–14 µm ($\bar{x}$ = 11 × 12 µm, n = 40), long, ovoid, deeply constricted at septa, smooth, flat from side view. Stellate-shaped conidia 10.8–17.6 × 11.4–19 µm ($\bar{x}$ = 13.9 × 14.8 µm, n = 40), ovoid to variedly shaped, conspicuously spinulate, deeply constricted at the septa, with spines measuring up to 2–8 µm long.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced from one or several septa. Colonies growing on PDA, reaching a diameter of 20 mm after 10 d at25 °C, flat, surface smooth, with entire edge, white to pale greenish-olivaceous, moderately dense, circular; reverse white to greenish olivaceous.

Material examined — THAILAND, Chiang Rai, Mae Fah Luang University, on dead leaves of *Cortaderia* sp. (*Poaceae*), 21 December 2014, K.M. Thambugala KM 034 (MFLU 16–2575, **holotype**), *ibid.* (GZAAS 16–0120, **isotype**), ex-type living culture MFLUCC 15–0456; ICMP 21565

Notes – *Spegazzinia neosundara* is morphologically similar to *S. sundara* Subram. and *S. tessarthra*, but mainly differs in conidial dimensions (Table 2). In the present phylogenetic analysis, the genus *Spegazzinia* forms a basal clade in *Didymosphaeriaceae* and *S. neosundara* distinctly separates from *S. tessarthra* and other *Spegazzinia* species. Unfortunately, no sequence data are available for *S. sundara*, but considering morphological differences we recognize *S. noesundara* as a new species.

Massarinaceae Munk, Friesia 5: 305 (1956)

In addition to *Massarina*, the type of *Massarinaceae*, several genera have been assigned to the family based on molecular phylogenetic studies. Currently *Byssothecium*, *Helminthosporium*, *Massarina*, *Pseudodidymosphaeria*, *Pseudosplanchnonema*, *Stagonospora* and *Suttonomyces* are accepted in the family (Tanaka et al. 2015, Thambugala et al. 2015b, Wijayawardene et al. 2016).

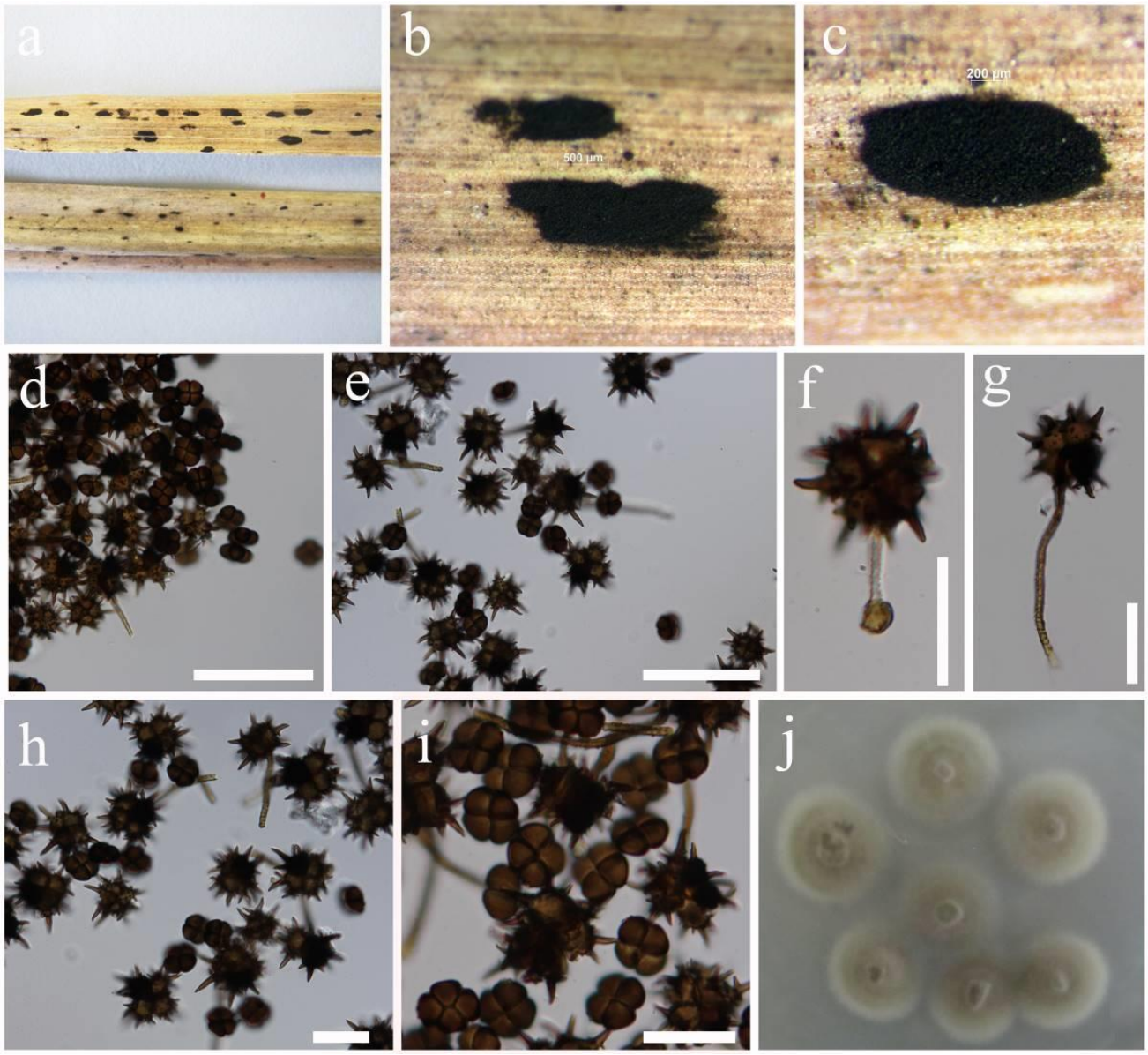

Fig. 18 – ***Spegazzinia neosundara*** (MFLU 16–2575, holotype). a–c. Fungal colonies on host surface. d, e, h, i. Conidia. f, g. Conidiogenous cells, developing unbranched filament and conidia (note conidiogenous mother cell in f). j. Colonies on PDA. Scale Bars: d, e = 100 µm, f–i = 20 µm.

Stagonospora (Sacc.) Sacc., Syll. Fung. (Abellini) 3: 445. 1884. nom. Cons

Stagonospora is a species rich genus in the family *Massarinaceae* and commonly associated with grasses (Quaedvlieg et al. 2013, Tanaka et al. 2015, Hyde et al. 2016). Presently more than 500 epithets are listed in Index Fungorum (2017) for the genus, but there have been few studies confirming species placement with molecular data (Quaedvlieg et al. 2013, Tanaka et al. 2015).

Stagonospora imperaticola Phukhamsakda, Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 20

Index Fungorum number: IF552986, *Facesoffungi number*: FoF 03223

Etymology – Named after the host genus, *Imperata*, from which it was collected.

Holotype – MFLU 16–2788

Habitat parasitic on living leaves of *Imperata cylindrica* (L.) P. Beauv. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 120–131 µm high × 132–212 µm wide diameter ($\bar{x}$ = 125 × 172 µm, n = 10), pycnidial, solitary, scattered, uniloculate, erumpent, globose, base flat with host tissue, rise up from host, dark brown to black, ostiolate. *Ostiole* central, circular, single. *Conidiomatal wall* 14–32 µm, up to 37 µm at the apex, thick-walled, 7–9 layers, comprising of brown cells, of *textura angularis*, sometimes *textura prismatica*, inner layer comprising hyaline

Table 2 – Synopsis of *Spegazzinia neosundara*, *S. sundara* and *S. tessarthra*.

Species	Stellate-shaped conidia (µm)	Disc-shaped conidia (µm)	Spines (µm)	Distribution	Host recorded	Reference
S. sundara	10–30 × 10–15	16–25 × 7–10	10–12	India	On dead bamboo	Manoharachary & Kunwar (2010)
S. tessarthra	10–18	12–17 × 7–9	Up to 10	India, Cuba, Venezuela, Japan	On *Zea mays*, balsa wood	Berkeley & Curtis (1868), Saccardo (1886), Manoharachary & Kunwar (2010), Tanaka et al. (2015)
S. neosundara	10.8–17.6 × 11.4–19	9.5–12.2 × 10.2–14	2–8	Thailand	*Cortaderia* sp.	This study

gelatinous layer. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 2–7 × 4–8 µm, ($\bar{x}$ = 5.9 × 4.5 µm, n = 20), holoblastic, solitary, discrete, oblong, hyaline, formed from the inner layer of conidiomatal wall. *Conidia* 27–40 × 8–14 µm ($\bar{x}$ = 34.2 × 11.7 µm, n = 50), oblong, obovoid, narrowly rounded at both ends, with 1−2 transverse septa, hyaline, with two small swellings at apex.

Culture characteristics — Conidia geminated on PDA within 18 h, germ tubes developed from the end of conidia. Colonies on PDA reach 40 mm diameter after 4 weeks. Culture were incubated at 25℃, initially white, becoming grey after 1 week, fluffy, filiform, raised with concave edge, with aerial mycelium; reverse white at first, after 2 weeks then become black radiating gray.

Material examined — THAILAND, Chiang Rai Province, on living leaves of *Imperata cylindrica* (L.) P.Beauv. (*Poaceae*), 18 December 2014, C. Phukhamsakda CP004 (MFLU 16–2788, **holotype**); *ibid.* (GZAAS 16–0153, **isotype**), ex-type living culture, MFLUCC 15–0026, ICMP 21563

Notes — *Stagonospora imperaticola* is phylogenetically close to *S. tainanensis* W.H. Hsieh. It formed a sister clade to *S. tainanensis* (MAFF 243860) with 76 % BS support. *Stagonospora tainanensis* differs from *S. imperaticola* mainly in having 3-septate conidia. *Stagonospora imperaticola* was found associated with *Imperata cylindrical* (L.) P. Beauv. and causes ring spots on host tissues. *S. tainanensis* was found on *Saccharum* species (Hsieh 1979, Tanaka et al. 2015).

Stagonospora multiseptata Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 21

Index Fungorum number: IF553164, *Facesoffungi number*: FoF 03224

Etymology – In reference to the multi-septate conidia.

Holotype – MFLU 16–2582

Saprobic on leaves and stems of grasses. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* up to 1 mm wide on PDA, pycnidial, solitary, scattered, immersed to erumpent, uni- to multi-loculate, subglobose to irregular. *Locules* (60–)100–330 × (70–)100–350 µm ($\bar{x}$ = 180 × 184 µm, n = 12), subglobose, broadly conical, ostiolate. *Conidiomatal wall* 25–75 µm wide, comprising several layers; inner layer composed of dark brown, thick-walled, flattened cells of *textura angularis*; outer layer of hyaline, thin-walled, wide cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 9–21 × 3–5.5 µm ($\bar{x}$ = 14 × 3.8 µm, n = 20), holoblastic, discrete, subcylindrical, hyaline, smooth, formed from the inner wall cells of the pycnidium. *Conidia* 37–55 × 7.4–10.8 µm ($\bar{x}$ = 46.8 × 9 µm, n = 35), cylindrical or fusoid-ellipsoidal, hyaline, aseptate when immature, becoming (3–)4-septate at maturity, not constricted at the septa, rounded at both ends, straight or slightly curved, smooth, often guttulate.

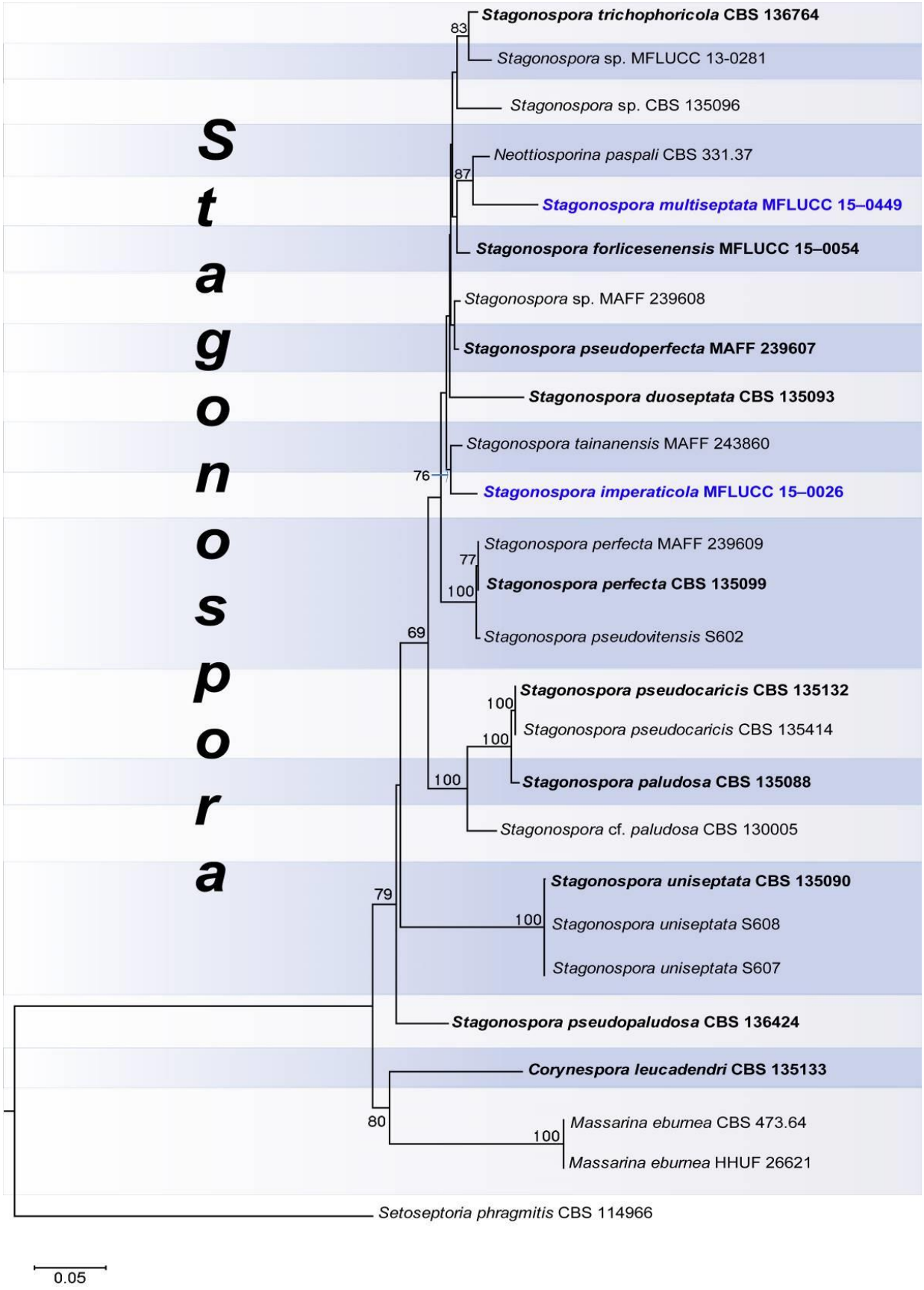

Fig. 19 – Phylogram resulting from maximum likelihood (ML) analysis of a combined LSU, ITS, β-tubulin and RPB2 dataset of *Stagonospora* in *Massarinaceae*. Bootstrap support values equal or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Setoseptoria phragmitis*.

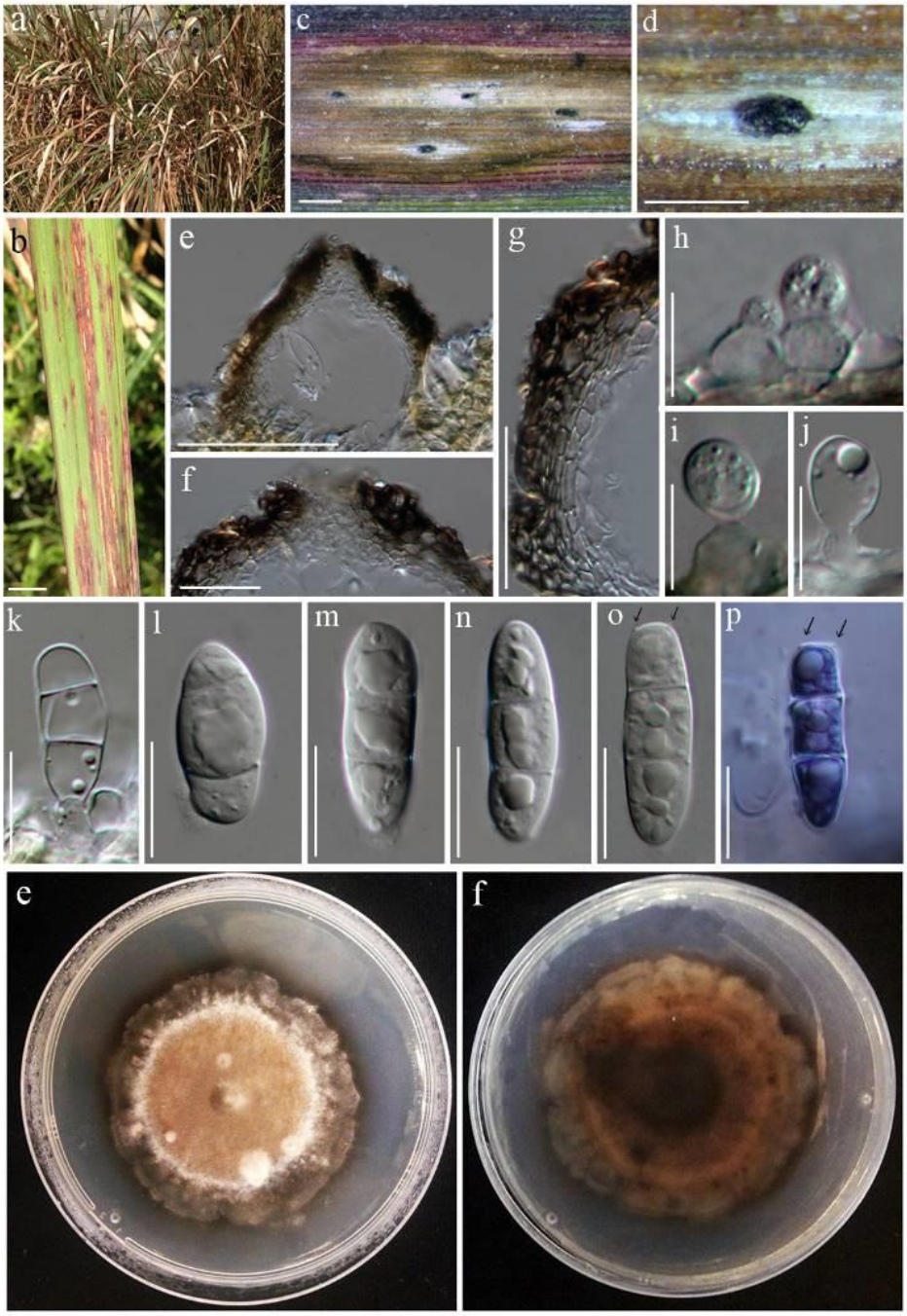

Fig. 20 – ***Stagonospora imperaticola*** (MFLU 16–2788, holotype). a. Habitat b. Leaves with character of ring spots disease. c, d. Close up of conidiomata erumpent through the host surface. e. Vertical section of conidioma. f. Ostiole. g. Conidiomatal wall. h–k. Conidiogenous cell with developing conidia. l–o. Conidia p. Conidia stained in Indian ink (note small swellings in o and p). Scale bar: b = 500 µm, c–d = 200 µm, e = 100 µm, f, g = 50 µm, h–j = 10 µm, k–p = 20 µm.

Culture characteristics — Conidia germinating on PDA within 24 h. Colonies growing on PDA, reaching a diameter of 48 mm after 10 d at 25 °C, umbonate, surface velvety, with entire to slightly undulate edge, white to grey, white near the margin, dense, circular to slightly irregular; reverse black to grey olivaceous.

Material examined — THAILAND, Chiang Rai, Mae Fah Luang University, on dead leaves of *Poaceae* sp., 17 July 2014, K.M. Thambugala KM 019–1 (MFLU 16–2582, **holotype**); *ibid.* (GZAAS 16–0124, **isotype**), ex-type living culture MFLUCC 15–0449, ICMP 21562

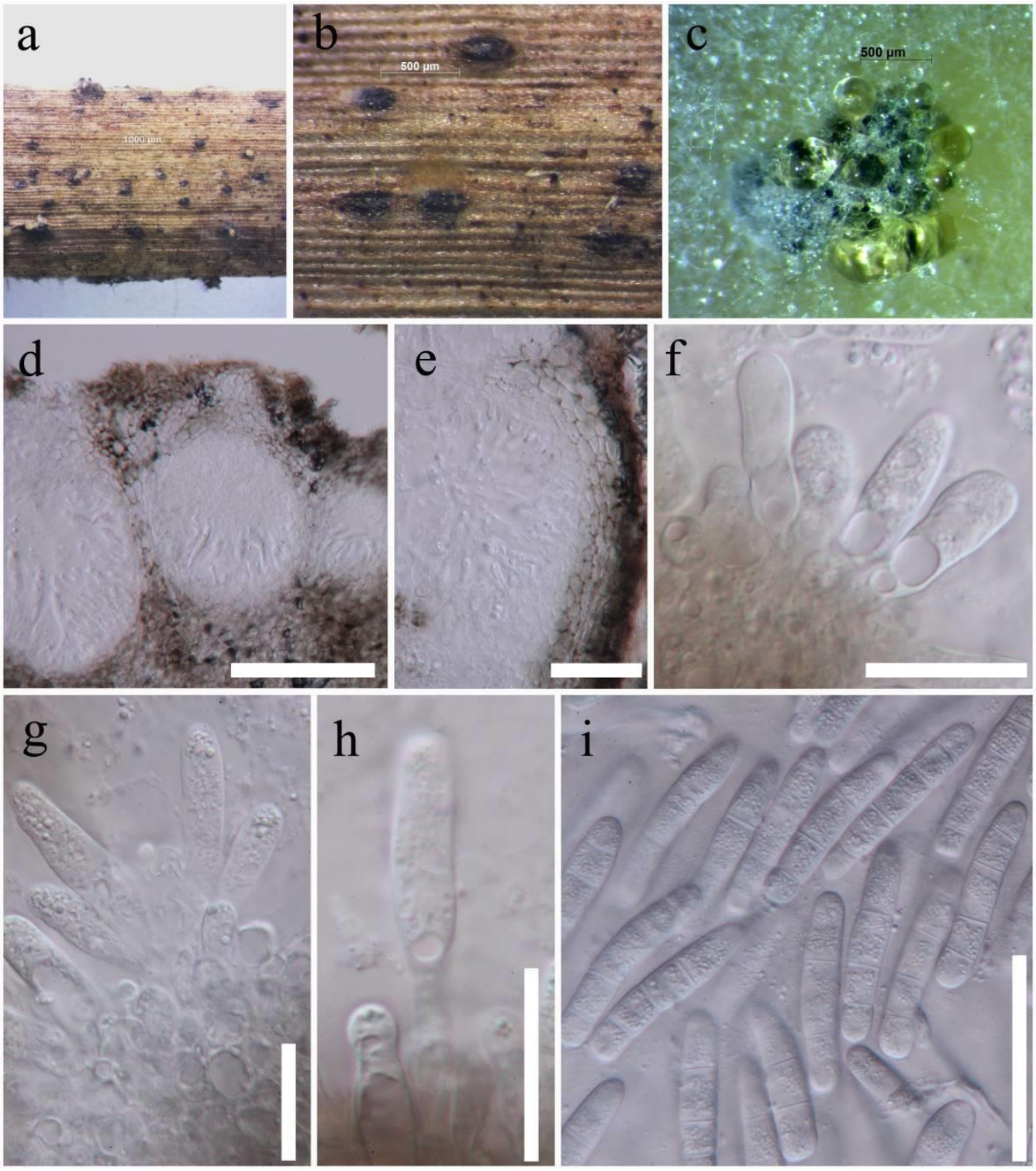

Fig. 21 – ***Stagonospora multiseptata*** (MFLU 16–2582, holotype). Appearance of conidiomata. a, b. On host surface c. On PDA d. Vertical section through conidioma showing locules. e. Conidiomatal wall. f–h. Different stages of conidiogenesis. i. Conidia. Scale bars: d = 100 µm, e, i = 50 µm, f, g–h = 20 µm.

Notes — Multiloculate conidiomata and (2–)3–4-septate, cylindrical or fusoid-ellipsoidal conidia are unique to *S. multiseptata* and in the present phylogenetic analysis it forms a sister clade to *Neottiosporina paspali* (CBS 331.37) with 87 % BS support (Fig. 19). Therefore, we introduce *S. multiseptata* as a new species.

Mycosphaerellaceae Lindau, in Engler & Prantl, Nat. Pflanzenfam., Teil. I (Leipzig) 1(1): 421 (1897)

The family Mycosphaerellaceae contains numerous genera and the family comprises species that are biotrophic and necrotrophic plant pathogens, as well as saprobes (Crous et al. 2009, Hyde et al. 2013). Hawksworth et al. (1995) placed Mycosphaerellaceae in Dothideales, while recent studies excluded the family from Dothideales (Thambugala et al. 2014b) and placed it in Capnodiales (Kirk et al. 2008, Crous et al. 2009, Hyde et al. 2013).

Neoramichloridium Phookamsak, Thambugala & K.D. Hyde, ***gen. nov.***

Index Fungorum number: IF553183, *Facesoffungi number*: FoF 03210

Etymology – The generic epithet, neo (Lat., new), refers to the similarity to *Ramichloridium*.

Leaf spots on bamboo, amphigenous, small to large, elongated to irregular, pale brown, with or without a definite margin. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiophores* aggregated, in loose fascicles, erect, flexuous, subcylindrical, brown to pale brown, septate. *Conidiogenous cells* integrated, terminal, polyblastic, hyaline to pale brown denticulate, subcylindrical; conidiogenous loci sympodial, forming a short rachis with darkened, thickened, refractive tips. *Conidia* single, hyaline to subhyaline, obovoid to clavate, base truncate, with unthickened, non-pigmented hilum, smooth-walled.

Type species – ***Neoramichloridium bambusicola*** Thambugala, Phookamsak & K.D. Hyde

Notes — *Neoramichloridium* is introduced here as a novel genus based on morphology and phylogeny. In the present phylogenetic analysis based on LSU and ITS sequence data, *Neoramichloridium bambusicola* (MFLUCC 15–0455) forms a strongly supported clade (96% BS) separate from other genera of *Mycosphaerellaceae* (Fig. 22). Based on morphology. *Neoramichloridium* differs from *Zasmidium* in having aggregated, flexuous, conidiophores and hyaline to subhyaline, obovoid to clavate, aseptate, singly conidia (Arzanlou et al. 2007, Crous et al. 2009). *Neoramichloridium* differs from *Periconiella* based on its aggregated, unbranched conidiophores, whereas *Periconiella* is distinct from *Neoramichloridium*, *Ramichloridium sensu lato* and *Zasmidium* in having conidiophores prominently branched in the upper part and conidial scars darkened, thickened (Arzanlou et al. 2007). *Neoramichloridium* resembles *Ramichloridium* in having unbranched conidiophores and aseptate conidia, but differs in having aggregated conidiophores with unthickened, non-pigmented hilum (Arzanlou et al. 2007, Crous et al. 2009). *Ramichloridium sensu stricto* belongs to the family *Dissoconiaceae*, whereas *Neoramichloridium* belongs to *Mycosphaerellaceae.*

Neoramichloridium bambusicola Thambugala, Phookamsak & K.D. Hyde, ***sp. nov.*** Fig. 23

Index Fungorum number: IF553184, *Facesoffungi number*: FoF 03225

Etymology – The specific epithet *bambusicola* was given after the host bamboo on which the fungus was collected.

Holotype – MFLU 16–2278

Leaf spots amphigenous, small to large, elongated to irregular, pale brown, with or without a definite margin. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiophores* 35–60 × 1.7–3.2 µm ($\bar{x}$ = 44 ×2.4 µm, n = 15), aggregated, in loose fascicles, erect, flexuous, subcylindrical, brown to pale brown, septate. *Conidiogenous cells* integrated, terminal, polyblastic, hyaline to pale brown denticulate, subcylindrical; conidiogenous loci sympodial, forming a short rachis with darkened, thickened, refractive tips. *Conidia* 3.5–8(–11) × 1.7–2.7 µm ($\bar{x}$ = 5.1 × 2.1 µm, n = 50), single, hyaline to subhyaline, obovoid to clavate, base truncate, with unthickened, non-pigmented hilum, smooth-walled.

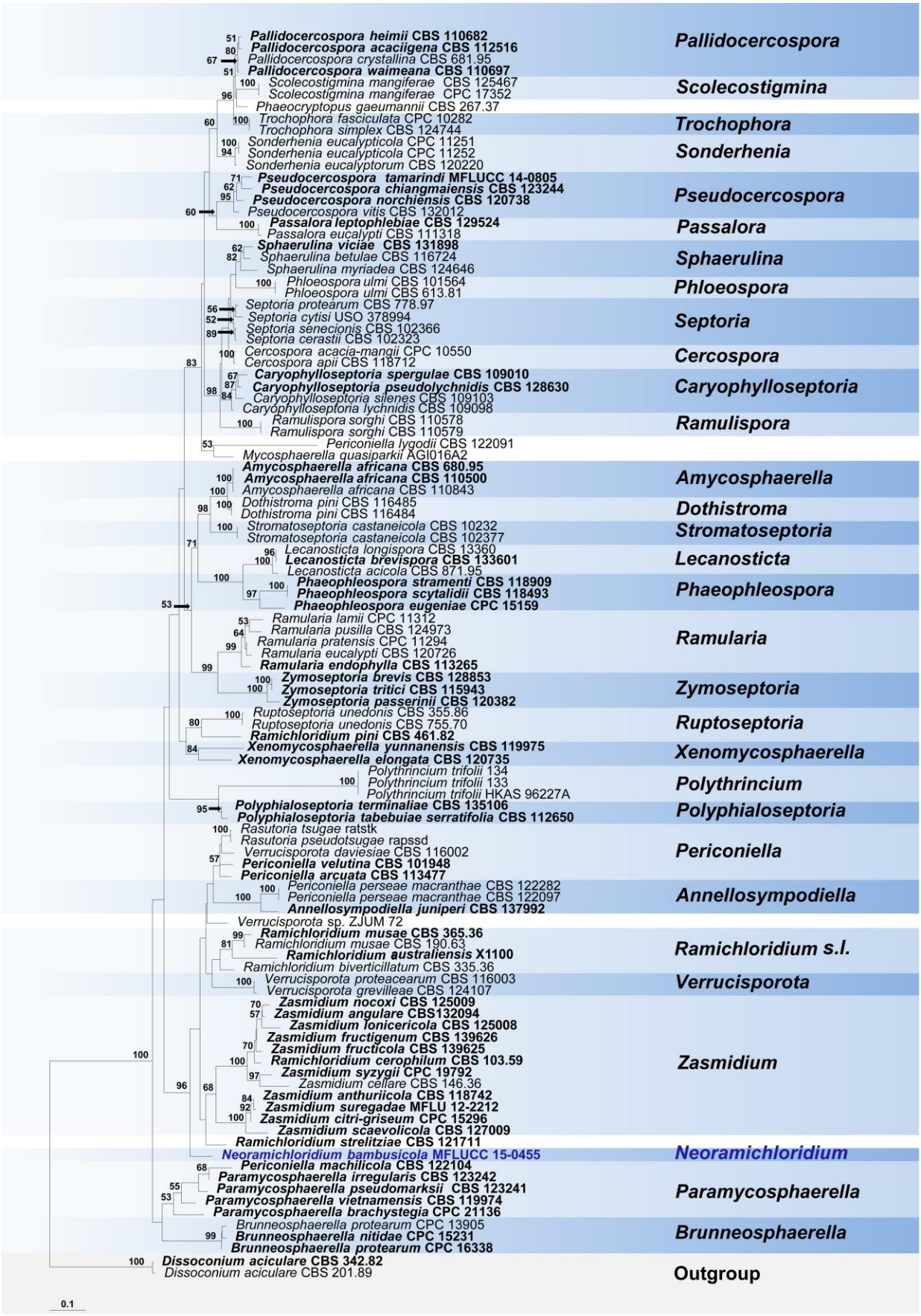

Fig. 22 – Phylogram resulting from maximum likelihood (ML) analysis of a combined LSU and ITS dataset of *Mycosphaerellaceae*. Bootstrap support values equal or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Dissoconium aciculare*.

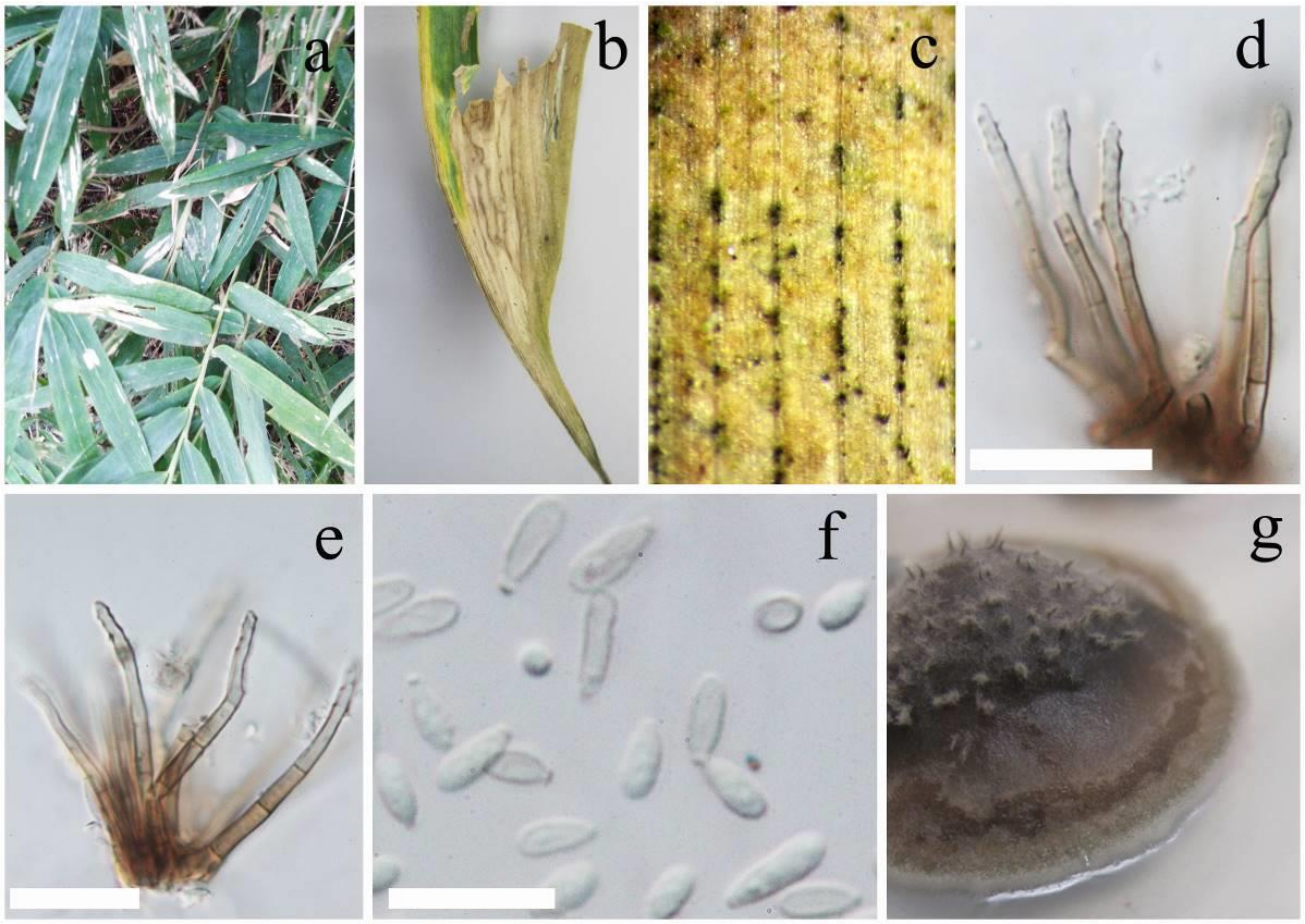

Fig. 23 – ***Neoramichloridium bambusicola*** (MFLU 16–2278, holotype). a, b. Habitat. c. Appearance of *Sporodochia* on host. d, e. Conidiophores. f. Conidia. Scale bars: d, e = 20 µm, f = 10 µm.

Culture characteristics — Conidia germinating on PDA within 24 h. Colonies growing on PDA, reaching a diameter of 15 mm after 14 d at 25 °C, umbonate, surface velvety to rough, with slightly undulate to lobate edge, brown, pale brown near the margin, dense, slightly irregular; reverse grey to black.

Material examined — THAILAND, Chiang Rai Province, Mae Fah Luang University, on leaves of *Bambusa* sp. (*Poaceae*), 12 December 2014, K.M. Thambugala KM 033 (MFLU 16–2278, **holotype**); *ibid.* (GZAAS 16–0155, **isotype**), ex-type living culture, MFLUCC 15–0455, ICMP 21407

Periconiaceae (Sacc.) Nann., Repertorio sistematico dei miceti dell'uomo e degli animali 4: 482 (1934)

= *Periconieae* Sacc., Syll. Fung. 4: 235. 1886.

The taxonomic placement of the family *Periconiaceae* was shown by Tanaka et al. (2015) in the suborder Massarineae as a sister taxon of the family *Massarinaceae*. *Bambusistroma*, *Flavomyces*, *Noosia* and *Periconia* were accepted in this family.

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

The genus *Periconia* was introduced by Tode (1791) and known as hyphomycetes with macronematous conidiophores and 1-celled, pigmented conidia. Only two sexual morph records (*P. igniaria* E.W. Mason & M.B. Ellis and *P. prolific* Anastasiou) have been reported so far (Tanaka et al. 2015). Currently there are 187 epithets listed in Index Fungorum (2017).

Periconia cortaderiae Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 25

Index Fungorum number: IF553165, *Facesoffungi number*: FoF 03226

Etymology – Named after the host genus from which it was collected, *Cortaderia*.

Holotype – MFLU 16–2579

Saprobic on *Cortaderia* sp. **Sexual morph**: Undetermined. **Asexual morph**: Colony effuse, powdery, gregarious, black. *Mycelium* composed of cottony, branched, hyphae forming dark clusters with conidia scattered on the host surface. *Conidiophores* 400–800 × 4–9.4 µm ($\bar{x}$ = 600 × 7 µm, n = 20), macronematous, mononematous, single or rarely 2–3 together on stromata, erect, or bent, thick-walled, brown to dark brown, septate, smooth. *Conidiogenous cells* 4–4.5(–6) µm × 5.7–9.5 µm ($\bar{x}$ = 4.7 × 7.2 µm, n = 6), monoblastic, discrete on stipe. *Conidia* 4–6.6 × 4.1–7.1 µm($\bar{x}$ = 5.2 × 5.8 µm, n = 65), catenate, globose, one-celled, hyaline to pale brown when immature, becoming brown to dark brown, verruculose.

Culture characteristics — Conidia germinating on PDA within 18 h. Colonies growing on PDA, reaching a diameter of 15 mm after 5 d at 25 °C, flat, surface smooth, with entire edge, white to grey olivaceous, pale white near the margin, moderately dense, circular; reverse white to greenish olivaceous.

Material examined — THAILAND, Chiang Rai, Mae Fah Luang University, on dead stems and leaves of *Cortaderia* sp. (*Poaceae*), 21 December 2014, K.M. Thambugala KM 035 (MFLU 16–2579, **holotype**); *ibid*. (GZAAS 16–0123, **isotype**), ex-type living culture MFLUCC 15–0457, ICMP 21414; *ibid.*, 7 September 2014, K.M. Thambugala KM 023 (MFLU 16–2580, **paratype**), living culture MFLUCC 15–0451; *ibid.*, 21 December 2014, K.M. Thambugala KM 029 (MFLU 16–2581, **paratype**), living culture MFLUCC 15–0453, ICMP 21429

Notes — *Periconia cortaderiae* is described here as a new species and it shares close morphological characters with *P. byssoides*. However, *P. cortaderiae* differs from *P. byssoides* mainly in having smaller conidia (Prasher & Verma 2015). In the present phylogenetic analysis, *P. cortaderiae* grouped separately from the strains of *P. byssoides* close to *P. homothallica* (Fig. 24), which is the only known sexual morph (Tanaka et al. 2015).

Phaeosphaeriaceae M.E. Barr, Mycologia 71(5): 948 (1979)

Members of the family *Phaeosphaeriaceae* are commonly found on a large range of species of *Poaceae* (Quaedvlieg et al. 2013, Phookamsak et al. 2014a). In the present study, we introduce a new genus, 15 new species and three new combinations in the family. *Allophaeosphaeria muriformia* is re-described with an updated account.

Allophaeosphaeria Ariyawansa et al., in Liu et al., Fungal Diversity 72(1): 137 (2015)

The genus *Allophaeosphaeria* was described by Liu et al. (2015) and included *A. dactylidis* and *A. muriformia*. *Allophaeosphaeria clematidis* Wanasinghe et al., *A. cytisi* Wanasinghe et al. and *A. subcylindrospora* Li et al. were subsequently added to the genus (Ariyawansa et al. 2015a, Li et al. 2016). In the phylogenetic analysis generated in this study, species of *Allophaeosphaeria* scattered in the family and does not form a well-resolved clade.

Allophaeosphaeria muriformia Ariyawansa, Camporesi & K.D. Hyde, in Liu et al., Fungal Diversity 72(1): 137 (2015) Fig. 27

Saprobic on dead stems and leaves of *Poaceae*. **Sexual morph**: *Ascomata* 220– 375 µm diameter × 180–340 µm high ($\bar{x}$ = 300 × 275 µm), solitary, scattered, superficial, globose to subglobose, ostiolate. *Ostiole* papillate, black, smooth, with neck and without periphyses. *Peridium* 40–70 µm wide, comprising 2-layers, outer layer composed of heavily pigmented thick-walled cells, innermost layer of broad, hyaline compressed rows of cells of *textura angularis*. *Hamathecium* comprising 2–3 µm wide, filiform, septate, pseudoparaphyses, embedded in a hyaline gelatinous matrix. *Asci* (140–)160–250 × 36–46(–52) µm ($\bar{x}$ = 188 × 44 µm, n = 20), 8-spored, bitunicate, fissitunicate, elongate cylindrical to slightly clavate, with a minute pedicel, thick-walled and rounded at the apex, with an ocular chamber. *Ascospores* (37–)40–50 × 14–19 µm

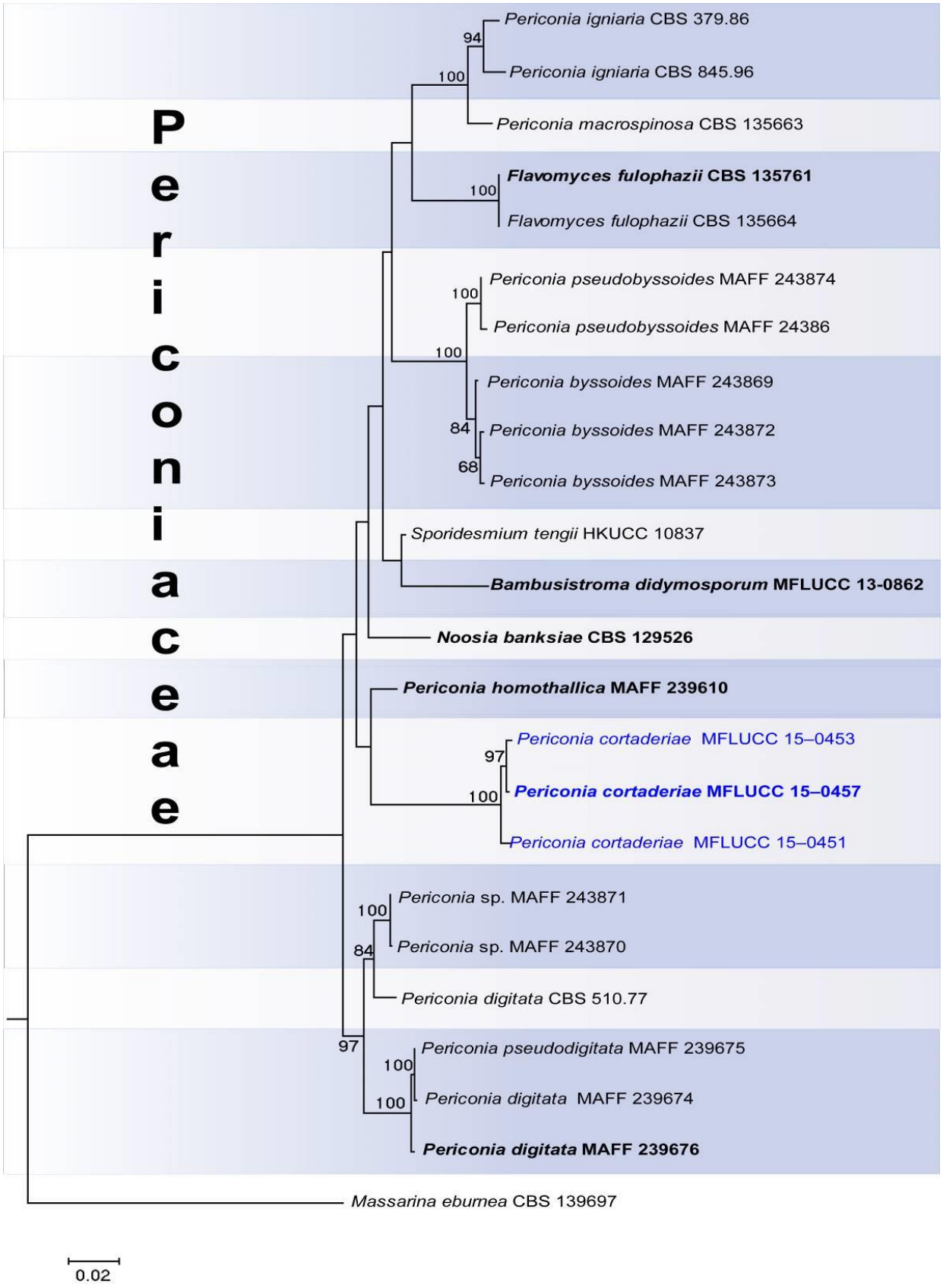

Fig. 24 – Maximum likelihood tree from analysis of a combined LSU, ITS, and EF1-α dataset of *Periconiaceae*. Bootstrap support values equal to or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Massarina eburnea*.

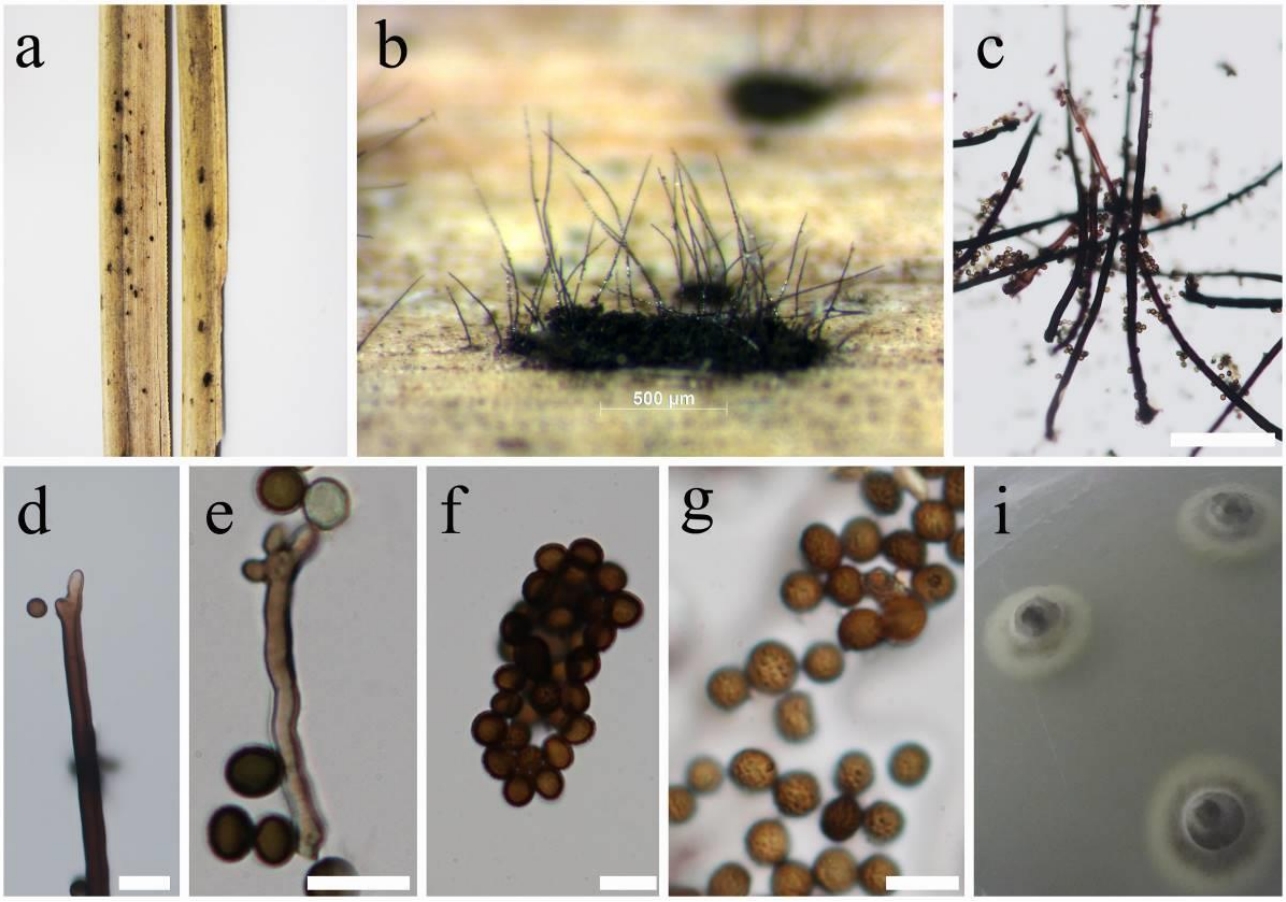

Fig. 25 – *Periconia cortaderiae* (MFLU 16–2579, holotype). a, b. Colonies on host surface. b–e. Conidiophores. f–g Conidia. i. Colonies on PDA. Scale bars: c = 100 µm, d = 15 µm, e–g = 10 µm.

($\bar{x}$ = 43 × 16 µm, n = 30), overlapping 2–3-seriate, hyaline, oblong to narrowly oblong, straight to slightly curved, 3-septate or sometimes muriform with 1–2 vertical septa, constricted at each septa, pale brown when mature, smooth-walled, surrounded by a wide mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 18 h and germ tubes produced from one or all cells. Colonies on PDA reaching a diameter of 25 mm after 7 d at 25 °C, flat, surface smooth to velvety, with entire to slightly undulate edge, olivaceous brown to grey, white near the margin, fairly dense, circular; reverse white to olivaceous-black.

Material examined — ITALY, Province of Forlì-Cesena [FC], Ravaldino in Monte – Forlì, on dead aerial stems and leaves of *Lolium* sp. (*Poaceae*), 22 December 2012, Erio Camporesi IT 104 (MFLU 16–2563), living culture MFLUCC 13–0277; *ibid.*, IT 104–2 (MFLU 16–2564).

Notes – *Allophaeosphaeria muriformia* was introduced by Liu et al. (2015) and is the type species of the genus *Allophaeosphaeria*. The host of the holotype was not mentioned (Liu et al. 2015). In this study, we re-collected this species on *Lolium* sp. (*Poaceae*). We observed pseudoparaphyses, which had not been reported before. Therefore, we re-describe the species and note a slight difference in ascospore dimensions between our collection and those of the holotype. However, in the present phylogenetic analysis (Fig. 26) our strain clustered with the ex-type strain (MFLUCC 13–0349) of *A. muriformia*. Therefore, we consider the new collection as a new record of the species.

Galiicola Tibpromma, Camporesi & K.D. Hyde, in Ariyawansa et al., Fungal Diversity: 75(1): 105 (2015)

The genus *Galliicola* was introduced in the family *Phaeosphaeriaceae* to accommodate a bitunicate ascomycete saprobic on a *Galium* species (Ariyawansa et al. 2015a).

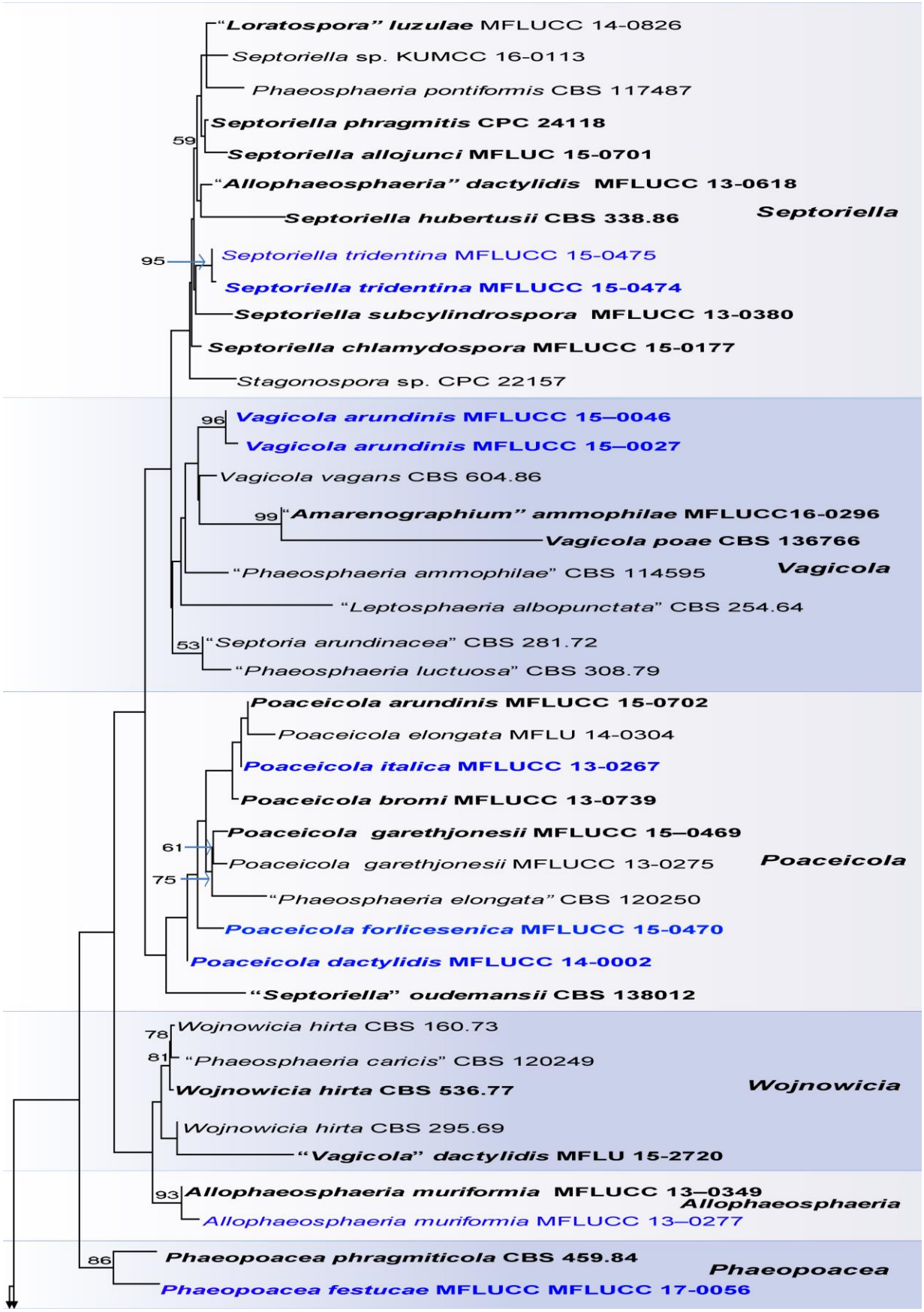

Fig. 26 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU, SSU, ITS and RPB2 sequence data of 162 strains representing *Phaeosphaeriaceae*. Maximum likelihood bootstrap values equal to or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Didymella exigua* (CBS 183.55).

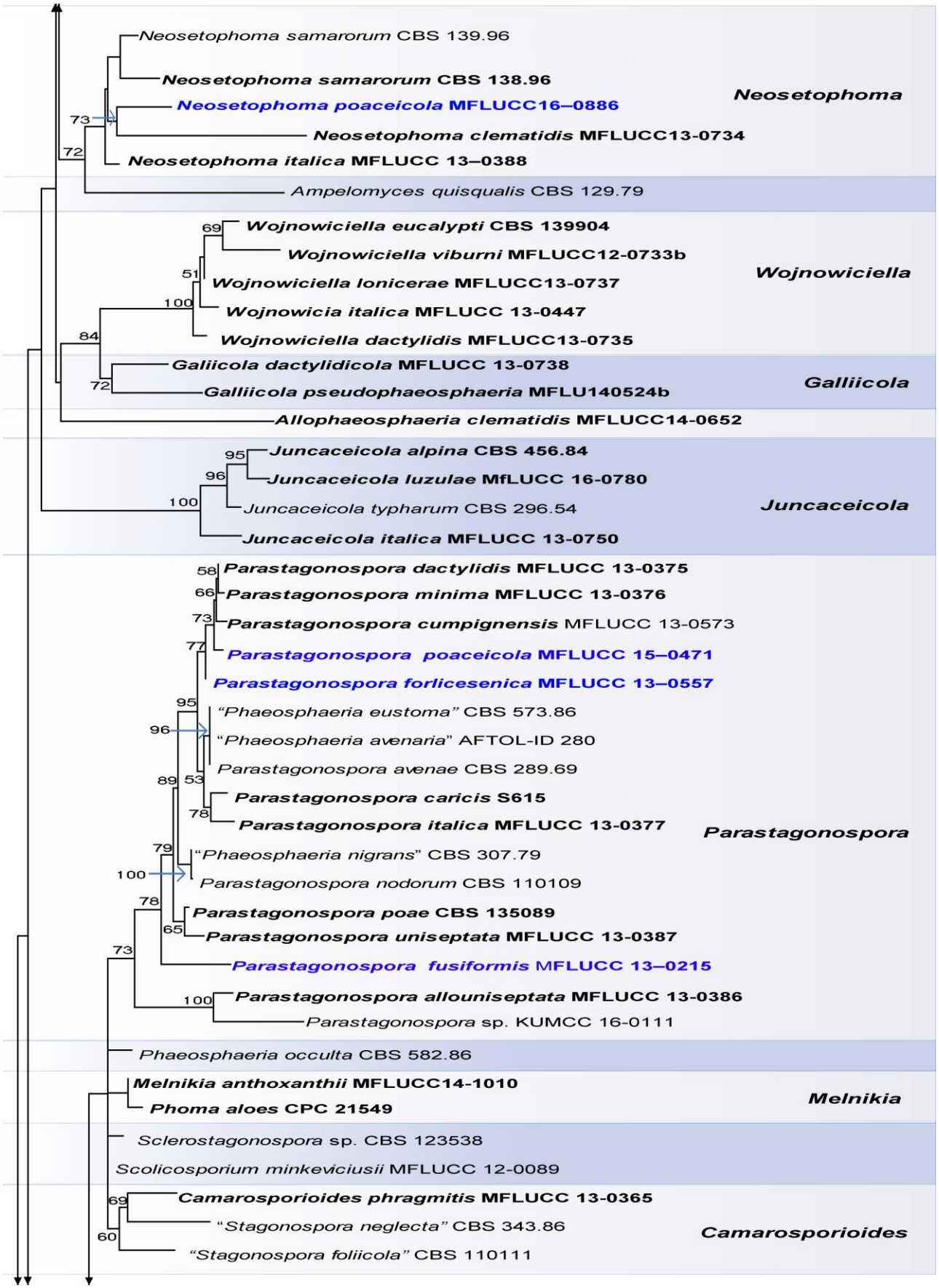

Fig. 26 – continued.

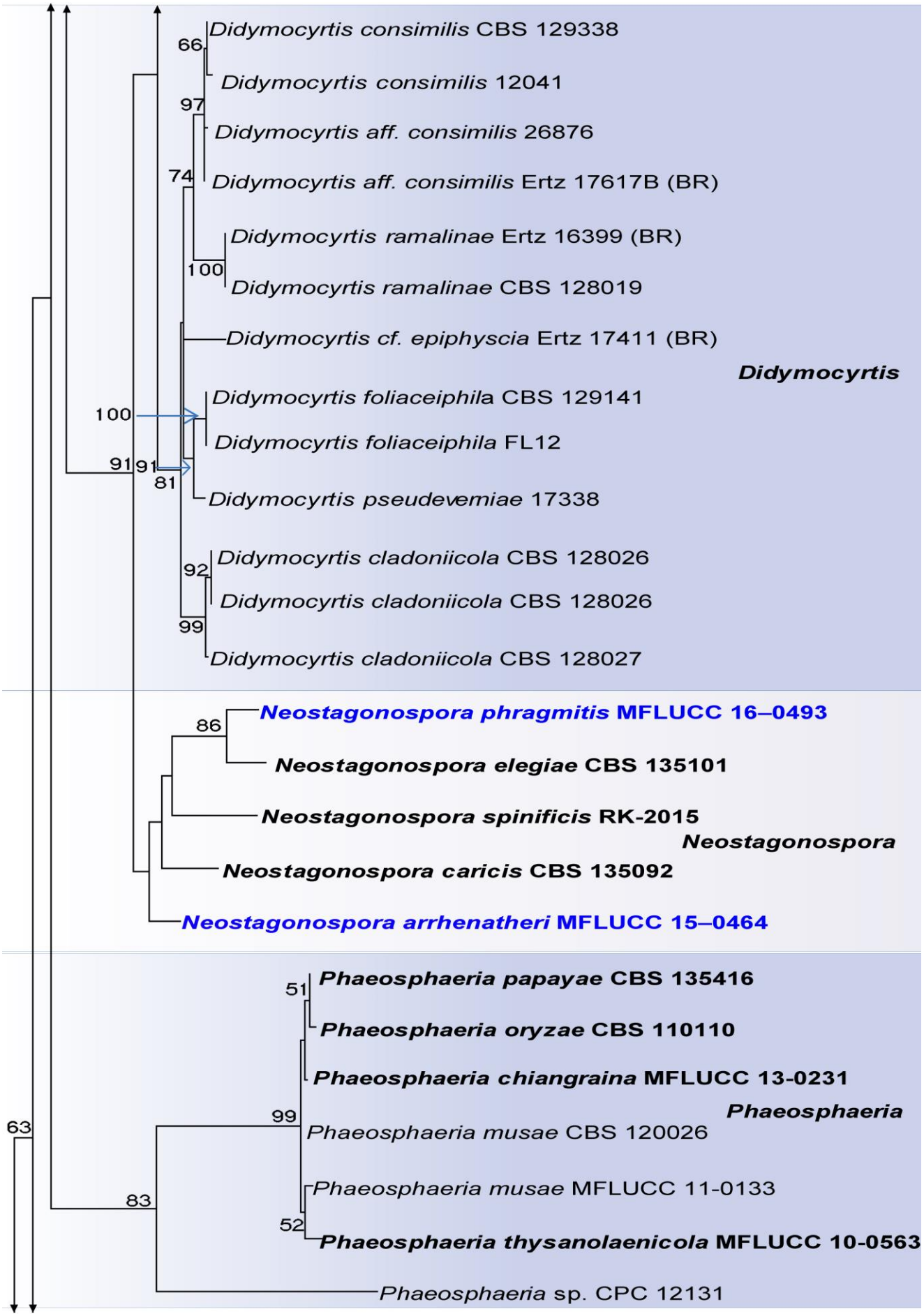

Fig. 26 – continued.

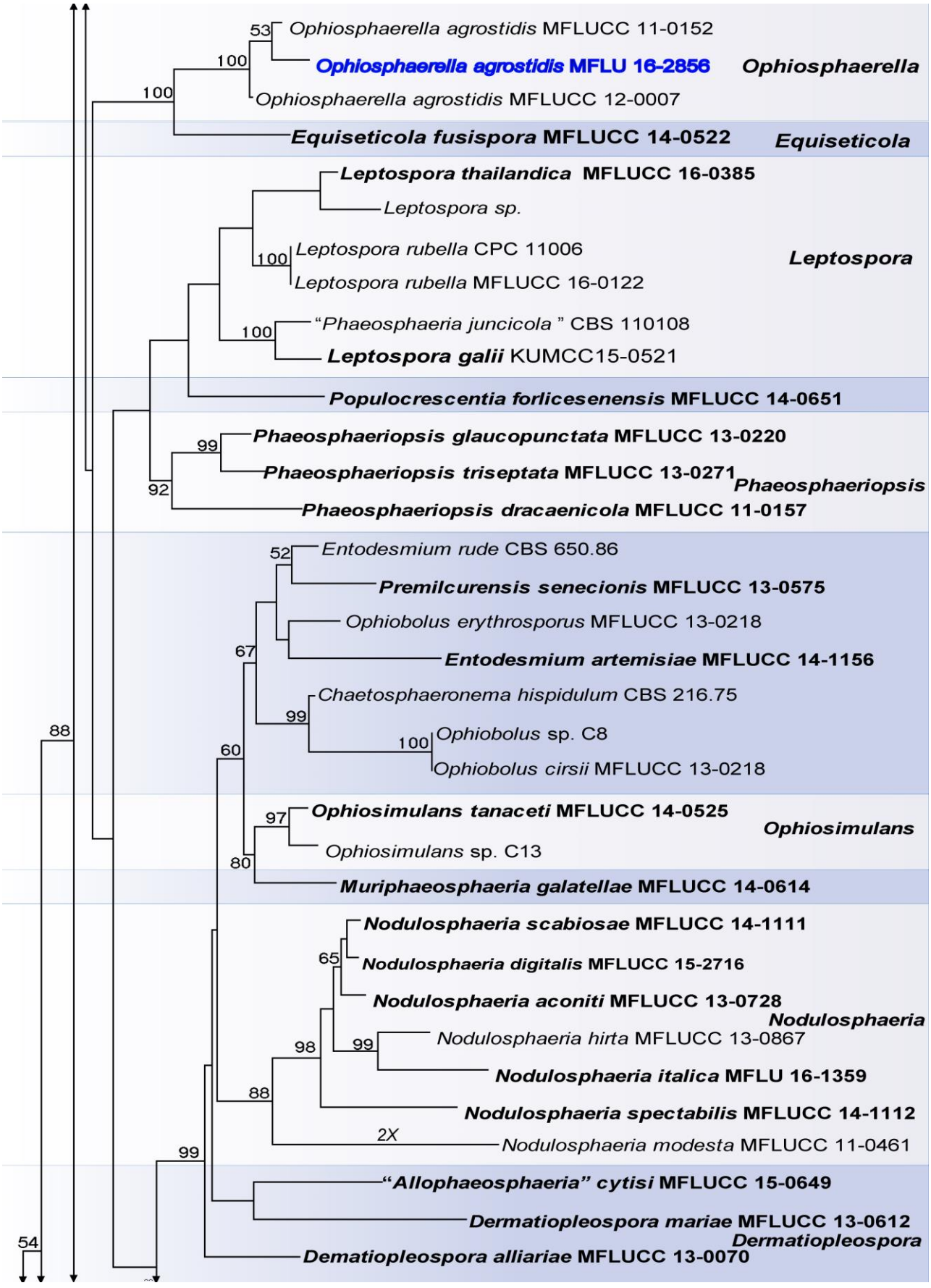

Fig. 26 – continued.

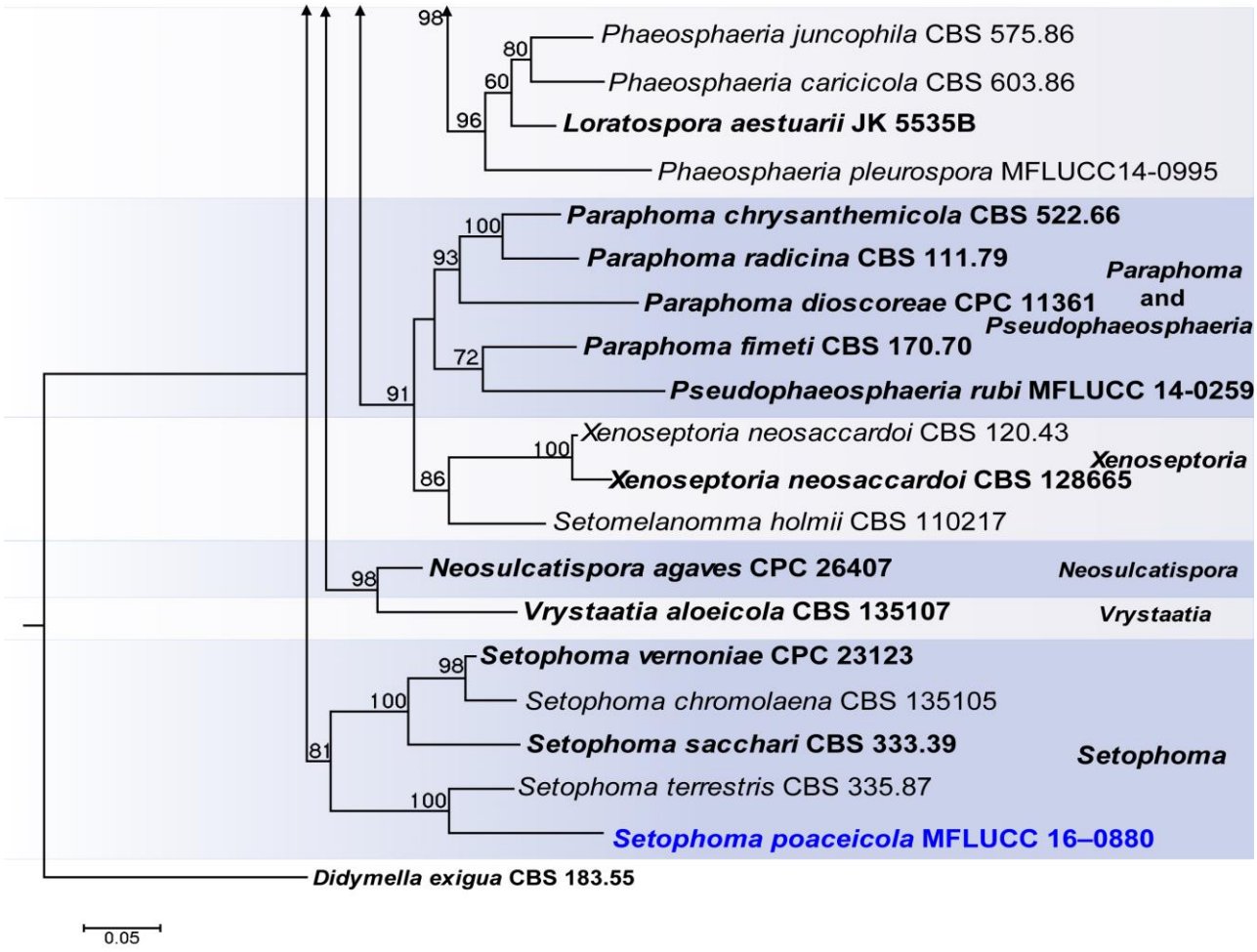

Fig. 26 – continued.

Galiicola dactylidicola (Wijayaw., Camporesi & K.D. Hyde) Thambugala, & K.D. Hyde, ***comb. nov***.

Index Fungorum number: IF552973, *Facesoffungi number*: FoF 03193

Basionym: *Wojnowicia dactylidicola* Wijayaw., Camporesi & K.D. Hyde, in Liu et al., Fungal Diversity: 72(1): 142 (2015)

Notes – *Wojnowicia dactylidicola* was introduced by Liu et al. (2015), however recent phylogenetic studies showed the ex-type strain of *W. dactylidicola* (MFLUCC 13–0738) clustered outside of the genus (Crous et al. 2015). In the present phylogenetic analysis, *W. dactylidicola* forms a sister clade to *Galiicola pseudophaeosphaeria* (MFLUCC 14-0524). Unfortunately, no asexual morph has been reported for *G. pseudophaeosphaeria* (Ariyawansa et al. 2015a). However, we transfer *W. dactylidicola* to the genus *Galiicola* based on phylogeny.

Neosetophoma Gruyter, Aveskamp & Verkley, in de Gruyter, Woudenberg, Aveskamp, Verkley, Groenewald & Crous, Mycologia 102(5): 1075 (2010)

De Gruyter et al. (2010) erected the genus to accommodate *Phoma samararum* Desm. and subsequently Liu et al. (2015) added another two new asexual species *N. clematidis* Wijayawardene et al. and *N. italica* W.J. Li et al.

Neosetophoma poaceicola Goonas., Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 28

Index Fungorum number: IF552974, *Facesoffungi number*: FoF 03194

Etymology – in reference to holotype occurring on grasses (*Poaceae*).

Holotype – MFLU 16–2852

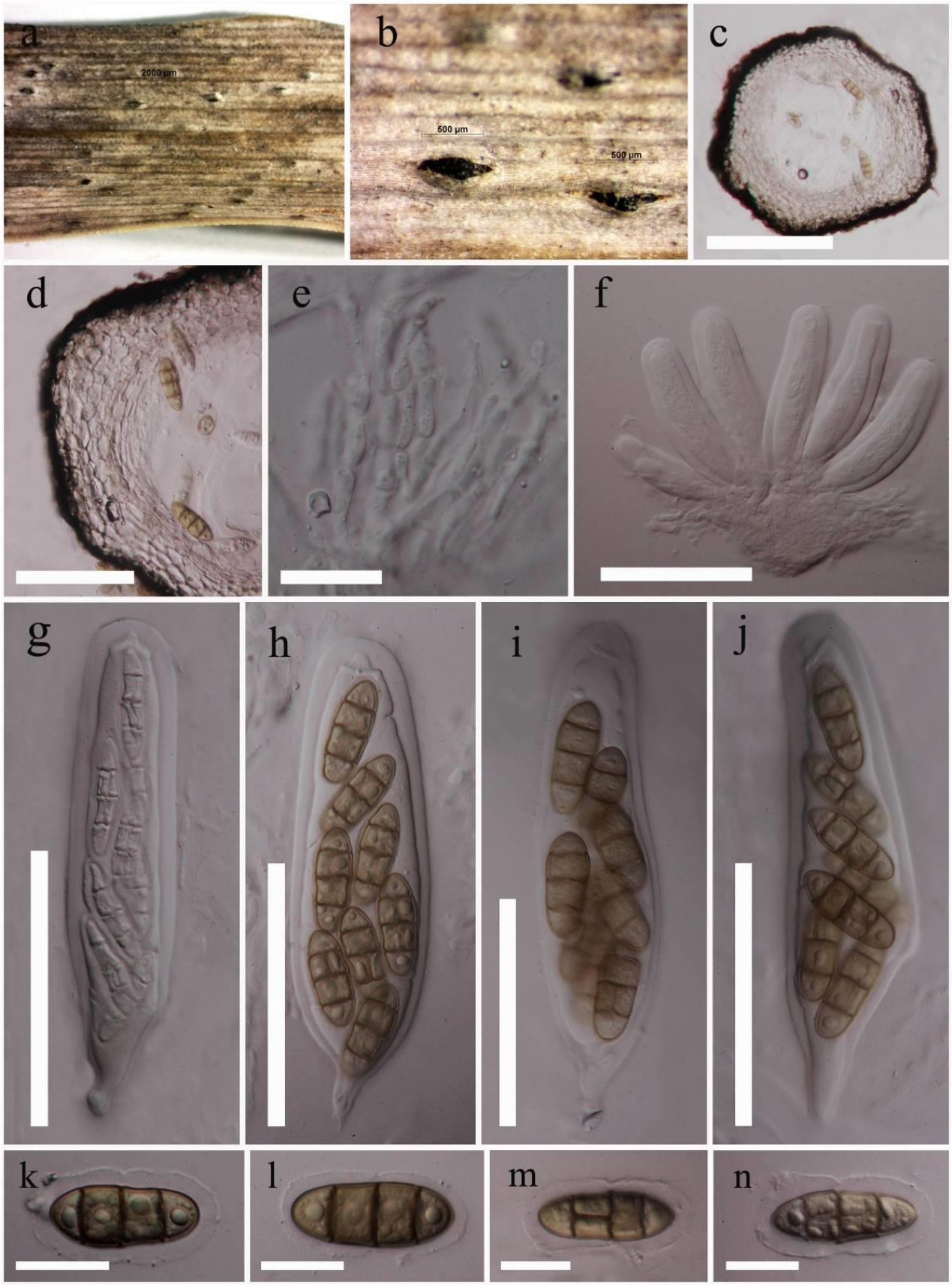

Fig. 27 – ***Allophaeosphaeria muriformia*** (MFLU 16–2563). a, b. Appearance of ascomata on host surface. c. Vertical section through ascoma. d. Peridium. e. Pseudoparaphyses. f–g. Immature asci. h–j. Mature asci. k–n. Ascospores. Scale bars: c = 200 µm, d = 100 µm, e = 25 µm, f–j = 100 µm, k–n = 20 µm.

Saprobic on dead grass, as raised, black, shiny globular structures on host surface. **Sexual morph**: *Ascomata* 130–145 µm high, 135–160 µm diameter, solitary, gregarious, immersed under epidermis, becoming erumpent through host surface, globose to subglobose glabrous short ostiolate. *Peridium* 8.5–14.5 µm wide, thick-walled, of equal thickness, composed of several layers of dark brown to brown, pseudoparenchymatous cells of *textura angularis*. *Hamathecium* of dense 0.9–1.8 µm wide, filamentous, indistinct, septate, cellular pseudoparaphyses, slightly constricted at the septa, embedded in a hyaline gelatinous matrix. *Asci* 55–82 × 7–9 µm ($\bar{x}$ = 70.5 × 8.4 µm, n = 20), 8-spored, bitunicate, fissitunicate, cylindric-clavate with short rounded pedicel, apically rounded. *Ascospores* 18.5–22.5 × 3.5–5 µm ($\bar{x}$ = 20.5 × 4.5 µm, n = 20), overlapping 1–2-seriate, hyaline, fusiform, with acute ends, occasionally 1-septate, cell near the septum slightly larger, smooth-walled, guttulate. **Asexual morph**: Undetermined.

Culture characteristics — Conidia germinating on PDA within 12 h reaching a diameter of 20 mm after 7 d at 25 °C, circular, floccose, flat with even margin, initially pale yellow becoming greenish-grey; reverse yellowish-grey.

Material examined — THAILAND, Chiang Mai Province, Mae Taeng, Mushroom Research Center, on grass litter, 18 March 2016, Ishani D. Goonasekara IGm 22 (MFLU 16–2852, **holotype**); *ibid*. (HKAS 97388, **isotype**), ex-type living culture MFLUCC 16–0886, KUMCC 17–0023

Notes – *Neosetophoma* was introduced as an asexual genus and four species have been recorded (Liu et al. 2015, Index Fungorum 2017). In this paper, we introduce a new species and this species represents the first record of the sexual morph of the genus.

Neostagonospora Quaedvl., Verkley & Crous, Stud. Mycol. 75: 364 (2013)

Neostagonospora was introduced by Quaedvlieg et al. (2013) in *Phaeosphaeriaceae* to accommodate two new species, *N. caricis* Quaedvlieg et al. and *N. elegiae* Quaedvlieg et al. Subsequently, Yang et al. (2016) included another new species *N. spinificis* Kirschner et al. Those species were found on *Carex acutiformis* (*Cyperaceae*), *Elegia cuspidate* (*Restionaceae*) and *Spinifex littoreus* (*Poaceae*) (Quaedvlieg et al. 2013, Yang et al. 2016). In the present study, we describe two new species from Italy and Russia on *Arrhenatherum elatius* (*Poaceae*) and *Phragmites australis* (*Poaceae*).

Neostagonospora arrhenatheri Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 29

Index Fungorum number: IF552096, *Facesoffungi number*: FoF 03195

Etymology – Named after the host genus from which it was collected, *Arrhenatherum*.

Holotype – MFLU 16–2566

Saprobic on dead stem of *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 100–270 µm diameter × 160–270 µm high ($\bar{x}$ = 170 × 210 µm, n = 8), pycnidial, solitary or scattered, erumpent to superficial, black, globose to subglobose, ostiolate. *Conidiomatal wall* 18–40 µm wide, comprising several layers of thick-walled, black to hyaline, cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 4–6.4 × 5.2–6.8 µm ($\bar{x}$ = 5 × 6 µm, n = 15), lining the conidiomatal cavity, holoblastic, hyaline, ampulliform. *Conidia* 7.7–12.8 × 3–5 µm ($\bar{x}$ = 9.4 × 3.8 µm, n = 60), ovoid, with a broadly to narrowly rounded ends, initially hyaline and aseptate, becoming pale brown and 1-septate, slightly constricted septum, smooth-walled.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced frequently from the upper cell. Colonies on PDA, reaching a diameter of 38 mm after 40 d at 25 °C, circular, flat, surface smooth to velvety, with entire to slightly curled edge, pinkish white, moderately dense, filamentous; reverse pale pink, with white edge.

Material examined — ITALY, Province of Forlì-Cesena [FC], Passo delle Forche - Galeata, on dead aerial stem of *Arrhenatherum elatius* (L.) P. Beauv. ex J. Presl & C.Presl (*Poaceae*), 2 April 2014, Erio Camporesi IT 1794–1 (MFLU 16–2566, **holotype**); *ibid*. (GZAAS 16–0116, **isotype**), ex-type living culture MFLUCC 15–0464, ICMP 21422

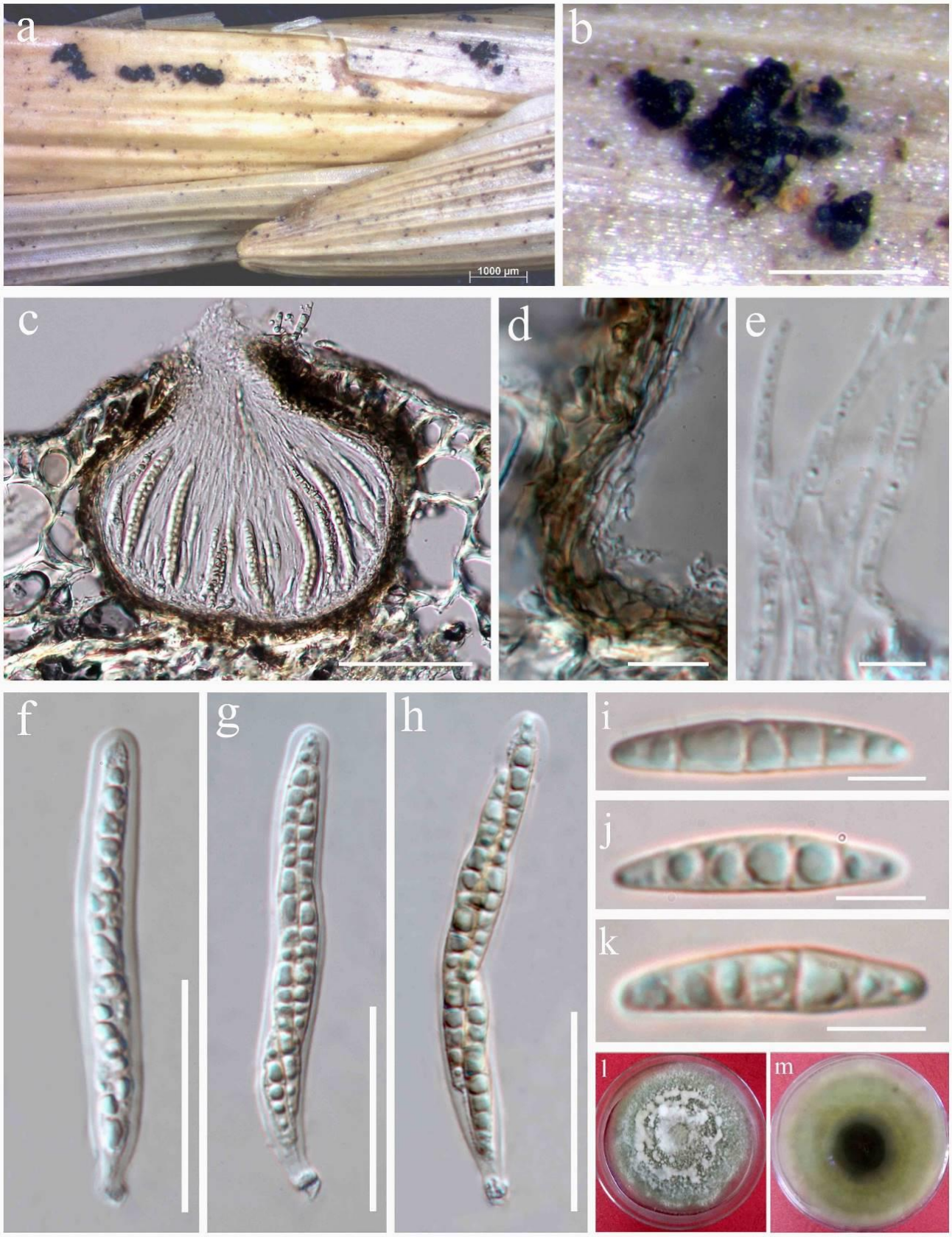

Fig. 28– ***Neosetophoma poaceicola*** (MFLU 16–2852, holotype) a. Appearance of ascomata on host. b. Close up of ascoma c. Vertical section through ascoma. d. Peridium. e. Pseudoparaphyses. f–h. Asci. i–k. Ascospores. l, m. Culture characteristics (from above and reverse). Scale bars: b = 500 µm, c = 100 µm, d = 20 µm, e, i–k = 10 µm, f–h = 50 µm.

Notes – *Neostagonospora arrhenatheri* differs from other *Neostagonospora* species that have 1-septate conidia (*N. caricis* and *N. spinificis*) in that conidia are ovoid, pigmented and smaller.

Neostagonospora phragmitis Thambugala, Bulgakov & K.D. Hyde, ***sp. nov.*** Fig. 30

Index Fungorum number: IF552208, *Facesoffungi number*: FoF 03196

Etymology – Named after the host genus from which it was collected, *Phragmites*.

Holotype – MFLU 16–2565

Saprobic on stems and leaves of *Phragmites australis* (Cav.) Trin. ex Steud. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 120–200 µm diameter × 100–200 µm high ($\bar{x}$ = 155 × 140 µm, n = 6), solitary or scattered in small groups, immersed, slightly erumpent through the host tissue at maturity, black, globose to subglobose, ostiolate. *Conidiomatal wall* 10–24 µm wide, wider at the apex, comprising few layers of thick-walled, dark brown to lightly pigmented, cells of *textura angularis*, outer layers somewhat flattened, fusing and indistinguishable from the host tissues. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 2–2.8 × 2.1–4.7 µm ($\bar{x}$ = 2.3 × 3.4 µm, n = 10), lining the conidiomatal cavity, holoblastic, hyaline, subcylindrical to ampulliform. *Conidia* 12–15.8 × 4.3–5.8 µm ($\bar{x}$ = 13.6 × 5.2 µm, n = 40), ovoid, with a broadly to narrowly rounded ends, initially hyaline to lightly pigmented and aseptate, becoming pale brown and 3-septate, slightly constricted at septa, smooth-walled.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced from one or several cells. Colonies on PDA reaching a diameter of 16 mm after 7 d at 25 °C, circular, flat, surface smooth to velvety, with entire edge, white or somewhat pale pink, dense, circular to filamentous; reverse white to pale pink.

Material examined — RUSSIA, Rostov region, Krasnosulinsky District, Donskoye forestry, Gremuchaya Balka (Thunderous gully), on dead stems and leaves of *Phragmites australis* (Cav.) Trin. ex Steud. (*Poaceae*), 28 June 2015, Timur Bulgakov T 535 (MFLU 16–2565, **holotype**); *ibid.* (GZAAS 16–0115, **isotype**), ex-type living culture MFLUCC 16–0493, ICMP 21424.

Notes – *Neostagonospora phragmitis* differs from other *Neostagonospora* species in its 3-septate conidia. This species is also supported phylogenetically in *Neostagonospora* clade (Fig. 26) with high ML bootstrap value (86 %).

Ophiosphaerella Speg., Anal. Mus. nac. B. Aires, Ser. 3 12: 401 (1909)

Ophiosphaerella was introduced by Spegazzini (1909) and is typified by *Op. graminicola*. Most species of this genus are found as pathogens or saprobes worldwide on *Poaceae* and *Cyperaceae* (Phookamsak et al. 2014a).

Ophiosphaerella agrostidis Dern., M.P.S. Câmara, N.R. O'Neill, Berkum & M.E. Palm Fig. 31

Facesoffungi number: FoF00258

Saprobic on stems of grasses. **Sexual morph**: *See* Phookamsak et al. (2014a). **Asexual morph**: *Conidiomata* 50–60 µm diameter 65–80 µm high ($\bar{x}$ = 58.5 × 75.5 µm, *n* = 6), solitary or scattered, immersed to semi-immersed, appearing as black, slightly raised lesions on host surface, globose to subglobose, ostiolate, papillate. *Ostioles* 30–33 µm high, 14–18 µm diameter ($\bar{x}$ = 31 × 16 µm, *n* = 6). *Conidiomatal walls* 6.5–11 µm wide, comprising several layers of outer, flattened, dark brown cells of *textura prismatica* and inner, hyaline cells of *textura angularis* to *textura globulosa*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 2–3.5 × 1.5–3 µm ($\bar{x}$ = 3 × 2.5 µm, *n* = 8), lining the conidiomatal cavity, holoblastic, hyaline, doliiform to ampulliform. *Conidia* 2.5–3.5 × 1.2–2 µm ($\bar{x}$ = 3 × 1.5 µm, *n* = 45), pale brown, oblong, aseptate, guttulate, smooth-walled.

Culture characteristics — Conidia germinating on PDA within 12 hours reaching a diameter of 18 mm after 7 days at 25 °C, circular, flat, surface smooth to velvety, with edge entire, grey with a lighter margin; reverse pale yellow.

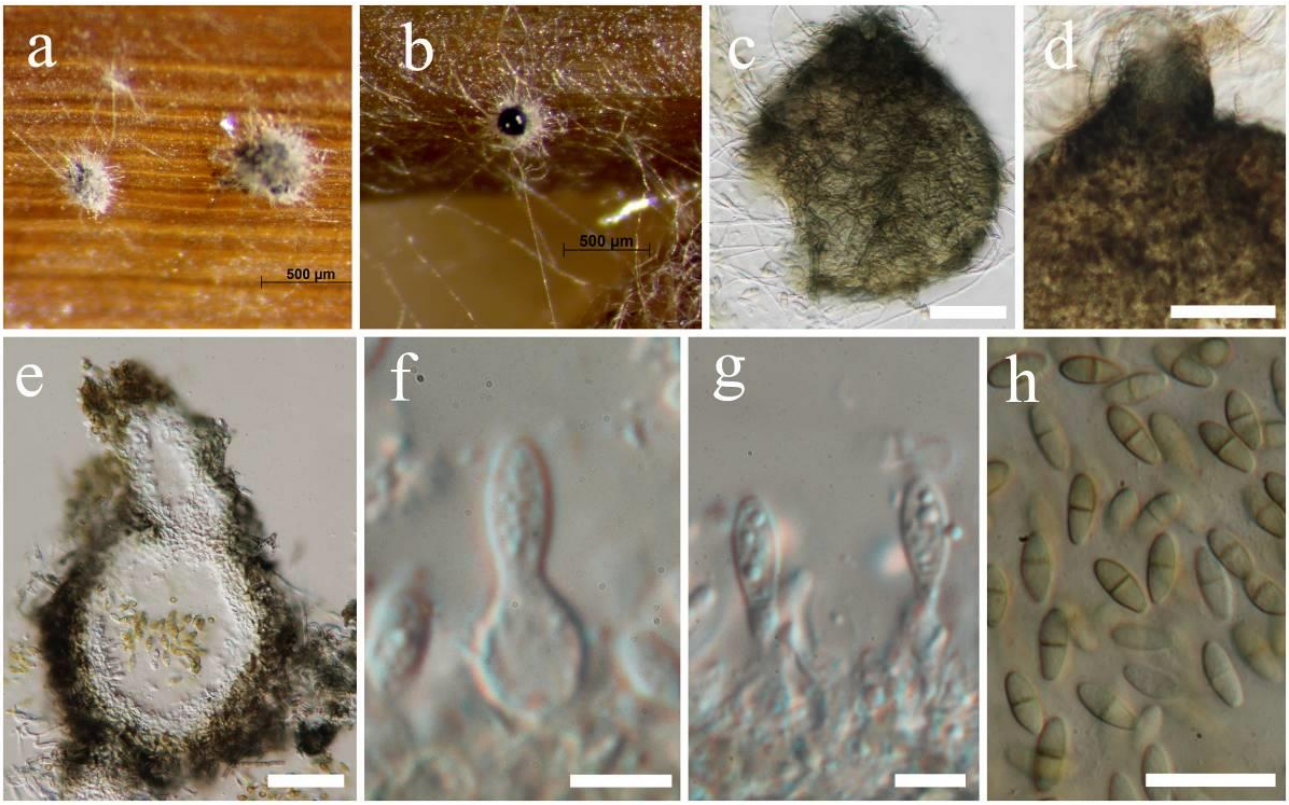

Fig. 29 – ***Neostagonospora arrhenatheri*** (MFLU 16–2566, holotype). a, b. Appearance of conidiomata sporulating on *Poaceae* host in culture. c. Squash mount of conidioma. d. Ostiole. e. Vertical section through conidioma f, g. Developing conidia on conidiogenous cells. h. Mature and immature conidia. Scale bars: c-e = 50 µm, f, g = 5 µm, h = 20 µm.

Material examined — THAILAND, Chiang Mai Province, Mae Taeng, Mushroom Research Center, on stems of grass (*Poaceae*), 24 March 2016, Ishani D. Goonasekara IGm 35 (MFLU 16–2856), living culture MFLUCC 16–0895, KUMCC 17–0027.

Notes – A paraphaeosphaeria-like asexual morph was collected in Thailand on grass litter and the phylogenetic analysis (Fig. 26) shows this strain (MFLUCC 16–0895) to group with two strains of *Ophiosphaerella agrostidis* (MFLUCC 11–0152 & MFLUCC 12–0007). Therefore, based on phylogeny we assigned this specimen as the asexual morph of *Op. agrostidis* and no asexual morph had been reported before for the species. *Scolecosporiella* species has been recorded as the asexual morph of *Op. herpotricha*. However, there are no phylogenic evidence to confirm this (Phookamsak et al. 2014a).

Parastagonospora Quaedvl., Verkley & Crous, Stud. Mycol. 75: 362 (2013)

Parastagonospora was introduced by Quaedvlieg et al. (2013) to accommodate several serious cereal pathogens that were previously placed in either *Septoria*/*Stagonospora*, or *Leptosphaeria*/*Phaeosphaeria*. The genus is characterized by immersed ascomata with slightly papillate ostiole, bitunicate, shortly stipitate asci, fusoid, subhyaline to pale brown, septate ascospores and coelomycetous asexual morph with hyaline, cylindrical, granular to multi-guttulate, transversely euseptate conidia (Quaedvlieg et al. 2013, Li et al. 2015).

Parastagonospora forlicesenica Chen Y, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 32

Index Fungorum number: IF552975, *Facesoffungi number*: FoF 03197

Etymology – Referring to the province Forlì-Cesena, where the species was encountered.

Holotype – MFLU 13–0100

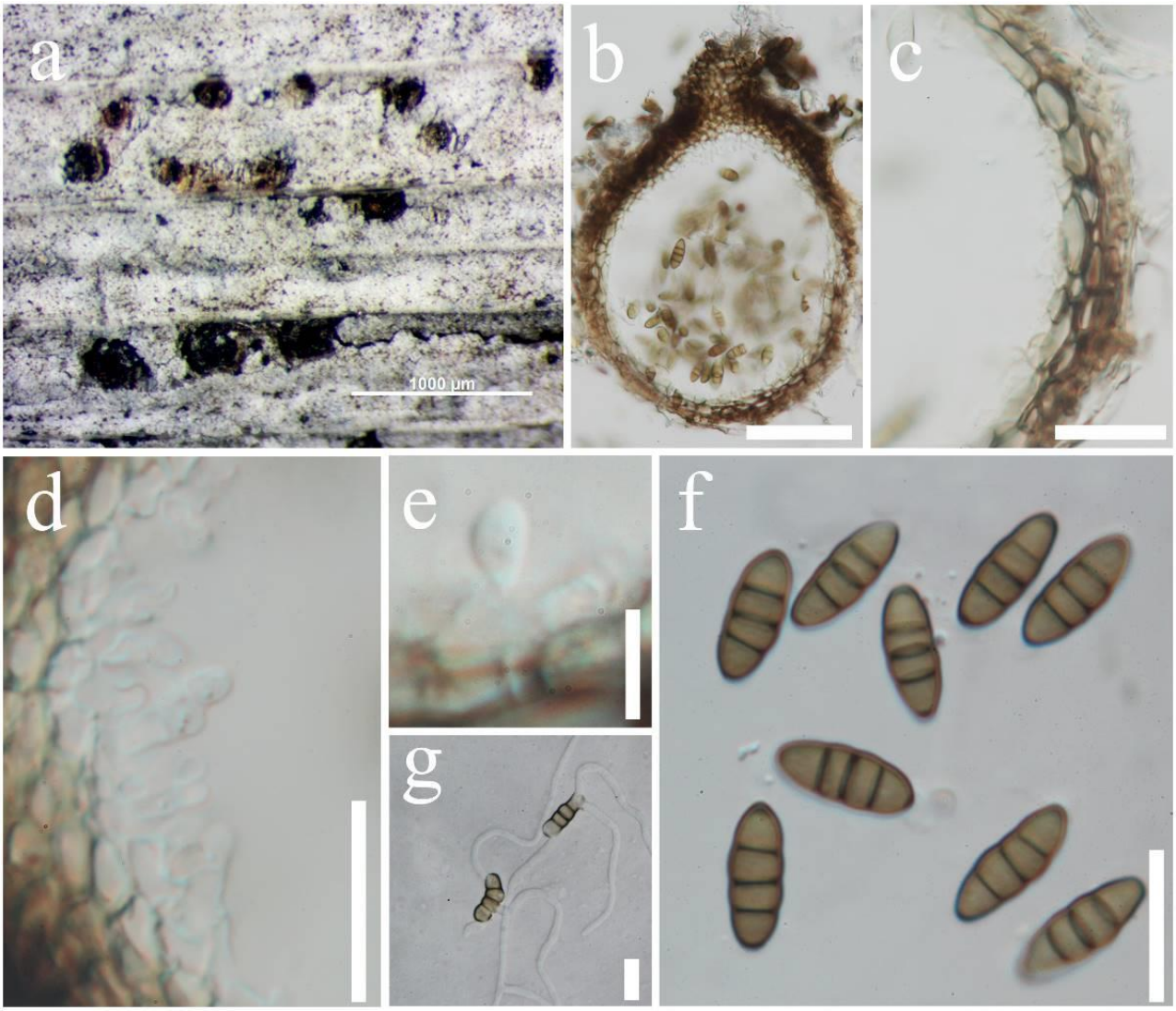

Fig. 30 – ***Neostagonospora phragmitis*** (MFLU 16–2565, holotype). a. Appearance of conidiomata on host. b. Vertical section through conidioma. c. Conidiomatal wall. d, e. Developing conidia on conidiogenous cells. f. Mature dark brown conidia. g. Germination conidia. Scale bars: b = 50 µm, c = 20 µm, d, g, h = 15 µm, e = 5 µm.

Saprobic on *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 81–251 µm high × 100–231 µm diameter ($\bar{x}$ = 184 ×166 µm, n = 10), solitary to aggregated, immersed to slightly erumpent, dark brown to black, globose to subglobose, ostiolate. *Peridium* 10–17 µm wide, composed of several layers of thick-walled, lightly pigmented to dark brown, cells of *textura angularis*, fusing and indistinguishable from the host tissues. *Hamathecium* composed 2-2.5 µm wide ($\bar{x}$ = 2.25 µm), filamentous, branched, septate, cellular pseudoparaphyses situated between and above asci. *Asci* 57–110 × 8–11 µm ($\bar{x}$ = 79 × 9 µm, n = 10), 8-spored, bitunicate, fissitunicate, cylindric-clavate, short pedicellate, apically rounded with an ocular chamber. *Ascospores* 20–27 × 4–7 µm ($\bar{x}$ = 24 × 6 µm, n = 10) overlapping 1–2-seriate, fusiform, slightly curved, 3-septate, constricted at the septa, pale brown, wide in the middle, narrow at both ends, smooth-walled, guttulate. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h. Colonies growing on PDA, reaching a diameter of 25 mm after 35 d at 25 °C, flat, surface smooth to velvety, with entire edge, pinkish white, moderately dense, circular to undulate; reverse reddish to brownish.

Material examined — ITALY, Province of Forlì-Cesena [FC], Monte Fumaiolo, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 5 June 2013, Erio Camporesi IT 1281 (MFLU 13–

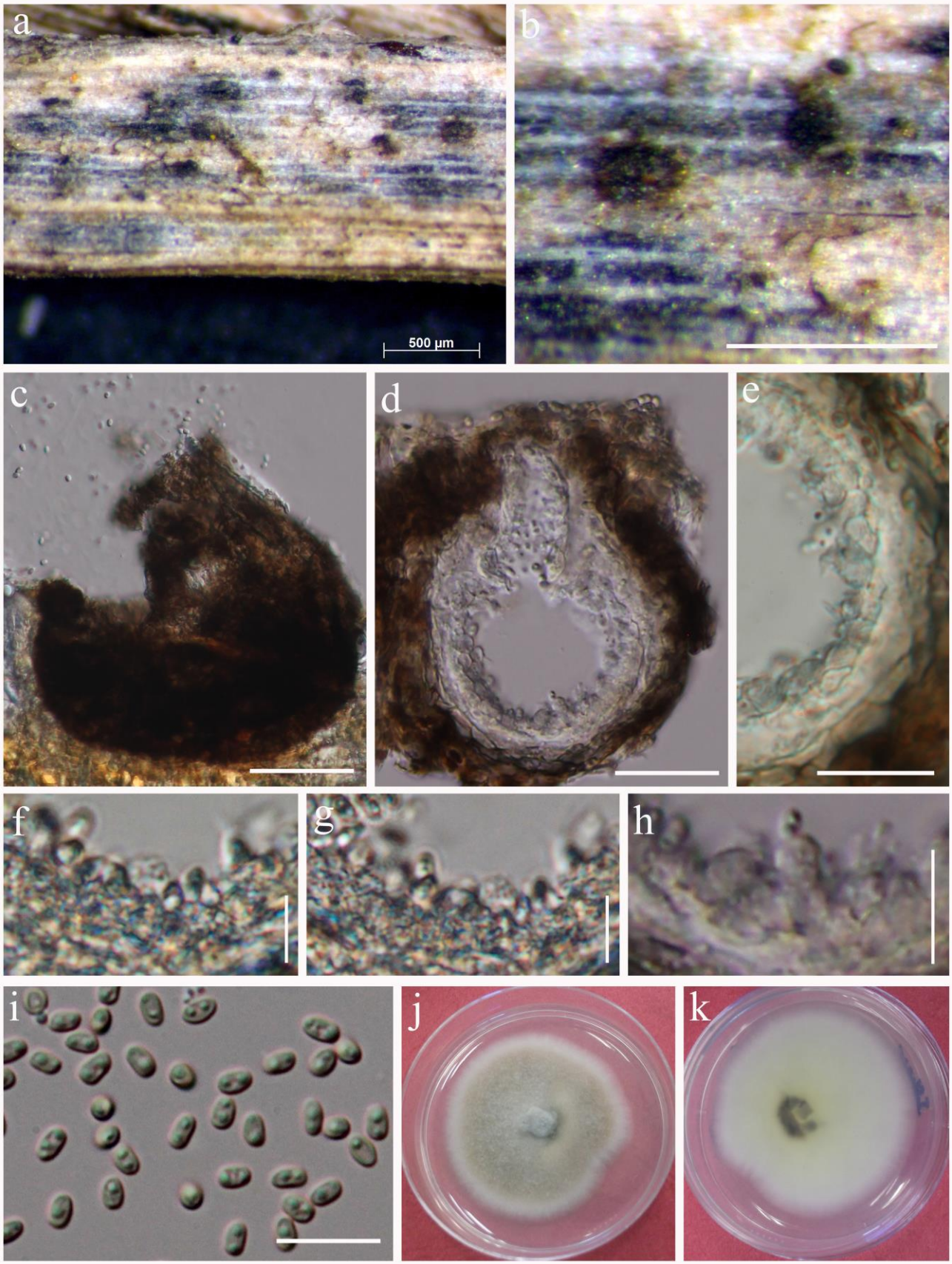

Fig. 31 – ***Ophiosphaerella agrostidis*** (MFLU 16–2856, asexual morph). **a**. Appearance of conidiomata on host surface. **b**. Close up of conidiomata. **c**. Squash mount of conidioma **d**. Section through conidioma. **e**. Conidiomatal wall. **f–h**. Conidiogenous cells. **i**. Conidia. **j**, **k**. Colony characteristics (from above and reverse). Scale bars: b = 200 µm, c–e = 25 µm, f–h = 5 µm, i = 10 µm.

0100, **holotype**); *ibid*. (GZAAS, **isotype**), ex-type living culture MFLUCC 13–0557, MFLUCC 15–0461

Notes – This new species is morphologically similar to *P. cumpignensis* in having immersed ascomata, cylindrical, short pedicellate, asci, fusiform, 3-septate ascospores (Li et al. 2016). However, these two species can be distinguished by the aggregated, smaller ascomata and yellowish ascospores in *P. forlicesenica*.

Parastagonospora fusiformis Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 33

Index Fungorum number: IF552976, *Facesoffungi number*: FoF 03198

Etymology – Referring to the fusiform ascospores.

Holotype – MFLU 15–0450

Saprobic on dead stems of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 200–300 µm diameter × 185–290 µm high ($\bar{x}$ = 240 × 222 µm, n = 6), solitary to aggregated, immersed, becoming erumpent, visible as slightly raised, black dots on the host surface, uniloculate, globose to subglobose, black, ostiolate. *Peridium* 15–25(−30) µm wide, composed of 4–5 layers of thin-walled, lightly pigmented to dark brown, cells of *textura angularis*, fusing and indistinguishable from the host tissues. *Hamathecium* composed of 2–3 µm wide, filiform, septate, branched cellular pseudoparaphyses situated between and above asci. *Asci* (60–)70–110 × 14–18 µm ($\bar{x}$ = 86 × 15.6 µm, n = 15), 8-spored, bitunicate, fissitunicate, broadly cylindrical, short pedicellate, apically rounded with indistinct ocular chamber. *Ascospores* 28–32(−34) × 6–8 µm ($\bar{x}$ = 30.8 × 7.2 µm, n = 25), overlapping 2-seriate, narrowly fusiform, lightly pigmented to pale brown, 1-septate, constricted at the septum, slightly curved, smooth-walled, with a thin mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Conidia germinating on PDA within 18–24 h and germ tubes produced from one or both ends. Colonies on PDA, reaching a diameter of 50 mm after 5 d at 25 °C, circular, flat, surface smooth, with entire edge, white, moderately dense, circular to filamentous; reverse white.

Material examined — ITALY, Province of Forlì-Cesena [FC], Campigna - Santa Sofia, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 14 July 2012, Erio Camporesi IT 554 (MFLU 15–0450, **holotype**); *ibid*. (GZAAS 16–0135, **isotype**), ex-type living culture MFLUCC 13–0215.

Notes – *Parastagonospora fusiformis* differs from all other reported sexual morphs of *Parastagonospora* mainly in having 1-septate ascospores surrounded by a mucilaginous sheath (Quaedvlieg et al. 2013, Li et al. 2016). The phylogenetic analysis carried out based on combined LSU, SSU, RPB2 and ITS sequences, shows *P. fusiformis* groups in the *Parastagonospora* clade in *Phaeosphaeriaceae* with 78% bootstrap support (Fig. 26).

Parastagonospora poaceicola Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 34

Index Fungorum number: IF552977, *Facesoffungi number*: FoF 03199

Etymology – in reference to holotype occurring on grasses (*Poaceae*)

Holotype – MFLU 15–2628

Saprobic on dead stems of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 150–260 µm diameter × 120–200 µm high ($\bar{x}$ = 200 × 145 µm, n = 8), solitary or aggregated, semi-immersed to erumpent, elongate, uniloculate, subglobose or obpyriform, coriaceous, black, ostiolate. *Peridium* 20–30 µm wide, composed of 3–5 layers of thin-walled, lightly pigmented to dark brown, somewhat flattened cells of *textura angularis*. *Hamathecium* composed of 1.5–2.5 µm wide, cellular, septate, branched, cellular pseudoparaphyses, situated between and above asci. *Asci* 45–76 × 10–14 µm ($\bar{x}$ = 61 × 11.5 µm, n = 15), 8-spored, bitunicate, fissitunicate, cylindrical, straight or somewhat curved, short pedicellate, apically rounded with an ocular chamber. *Ascospores* 20–25 × 4–6 µm ($\bar{x}$ = 22.3 × 4.6 µm, n = 25), overlapping 2-seriate, phragmosporous, narrowly fusiform, lightly pigmented to pale brown, 3-septate, constricted or not at the middle septum, slightly curved, smooth-walled, with a very narrow mucilaginous sheath. **Asexual morph**: Undetermined.

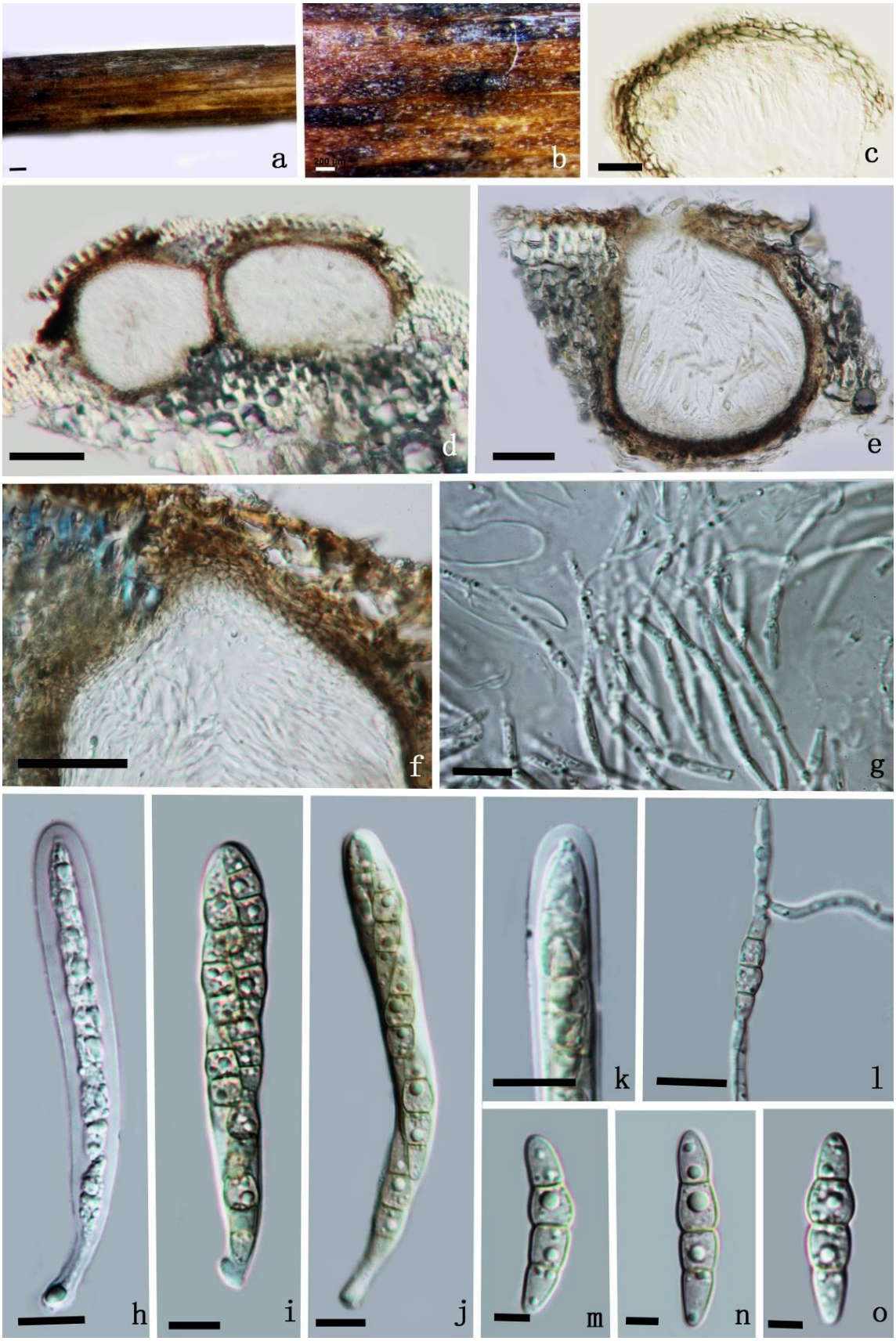

Fig. 32 – ***Parastagonospora forlicesenica*** (MFLU 13–0100, holotype). a, b. Appearance of ascomata on the host surface. c. Peridium. d, e. Vertical sections through ascomata. f. Ostiole. g. Pseudoparaphyses. h–j Immature and mature asci. k. Apex of ascus. l. Germinating ascospore. m–o. Ascospores. Scale bars: a = 500 µm, b = 200 µm, c, l = 20 µm, d–f = 50 µm, g, h–k = 10 µm, m–o = 5 µm.

Culture characteristics — Ascospores germinating on PDA within 24 h and germ tubes produced from one or several cells. Colonies on PDA, reaching a diameter of 32 mm after 7 d at 25°C, circular, flat, surface smooth to velvety, with entire to slightly undulate edge, white, moderately dense, circular; reverse olivaceous to pale brown.

Material examined — ITALY, Province of Forlì-Cesena [FC], near Camposonaldo - Santa Sofia, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 6 May 2014, Erio Camporesi IT 1855 (MFLU 15–2628, **holotype**); *ibid*. (GZAAS 16–0134, **isotype**), ex-type living culture MFLUCC 15–0471, ICMP 21415.

Notes – *Parastagonospora poaceicola* represents a new species that occurs on *Dactylis glomerata* L. and this species resembles *P. cumpignensis* and *P. forlicesenica* in having 3-septate ascospores, but *P. poaceicola* has distinct morphological characters such as semi-immersed to erumpent, elongate ascomata and smaller ascospores.

Phaeopoacea Thambugala, Dissanayake & K.D. Hyde, ***gen. nov.***

Index Fungorum number: IF552978, *Facesoffungi number*: FoF 03200

Etymology – In reference to a genus in *Phaeosphaeriaceae* and its *Poaceae* hosts.

Saprobic on grasses. **Sexual morph**: *Ascomata* scattered, immersed, subepidermal, globose, glabrous, ostiolate. *Ostiole* central, terete, papillate, short, undifferentiated. *Peridium* composed of 4 layers of brown cells of *textura angularis*. *Hamathecium* comprising numerous, thread-like, septate pseudoparaphyses. *Asci* bitunicate, 8-spored, broadly cylindrical, short pedicellate. *Ascospores* overlapping 1–2-seriate, narrowly fusiform, straight or slightly curved, 5-septate, first septum slightly constricted, not constricted at other septa, with a vertical septum in the mid cells, third cell from apex enlarged towards base, yellowish-brown, smooth-walled, with a uniform thin sheath (Sexual morph description follows *Phaeosphaeria phragmiticola* Leuchtm. in Shoemaker & Babcock 1989). **Asexual morph**: *Conidiomata* pycnidial, solitary, or scattered, sometimes in linear rows, immersed, becoming slightly erumpent, dark brown to black, globose to subglobose, ostiolate. *Conidiomatal wall* comprising few layers of light to dark brown cells of *textura angularis*, hyaline at conidiogenous region. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* hyaline, smooth, holoblastic forming conidia at terminal ends. *Conidia* pale brown to dark brown, oblong to subcylindrical, with rounded ends, 1–4-septate, guttulate, smooth-walled, with or without mucoid caps at the ends.

Type species – ***Phaeopoacea festucae*** Dissanayake, & K.D. Hyde, ***sp. nov.***

Notes – *Phaeopoacea* is introduced here as a new genus to accommodate one new species, *P. festucae* and accommodate *Phaeosphaeria phragmiticola* (*Phaeopoacea phragmiticola*). The species occur on grasses and the sexual morph has only been reported for *Phaeopoacea phragmiticola*. The asexual morph of *P. festucae* and *P. phragmiticola* differs in having 3–4 septate conidia with mucoid caps at the ends. In our phylogenetic analysis, this new genus clearly separates from *Septoriella* (Fig. 26).

Phaeopoacea festucae Dissanayake, & K.D. Hyde, ***sp. nov.*** Fig. 35

Index Fungorum number: IF552979, *Facesoffungi number*: FoF 03201

Etymology – Named after *Festuca*, the host genus from which it was collected.

Holotype – MFLU 17–0121

Saprobic on *Festuca pratensis* L. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 149–252 µm diameter × 91–125 µm high ($\bar{x}$ = 216 × 98 µm, n = 5), pycnidial, solitary, or scattered, sometimes in linear rows, immersed, becoming slightly erumpent, dark brown to black, globose to subglobose, ostiolate. *Conidiomatal wall* 15–35 µm wide, comprising few layers of light to dark brown cells of *textura angularis*, hyaline at conidiogenous region. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 3.4–5.3 × 3.2– 4.4 µm ($\bar{x}$ = 4.2 × 3.9 µm, n = 10), hyaline, smooth, holoblastic forming conidia at terminal ends. *Conidia* 7.2–9.7 × 3.5–4.3 µm ($\bar{x}$ = 8.1 × 3.8 µm, n = 30), pale brown to dark brown, oblong to sub-cylindrical, with rounded ends, 1-septate, guttulate, smooth-walled.

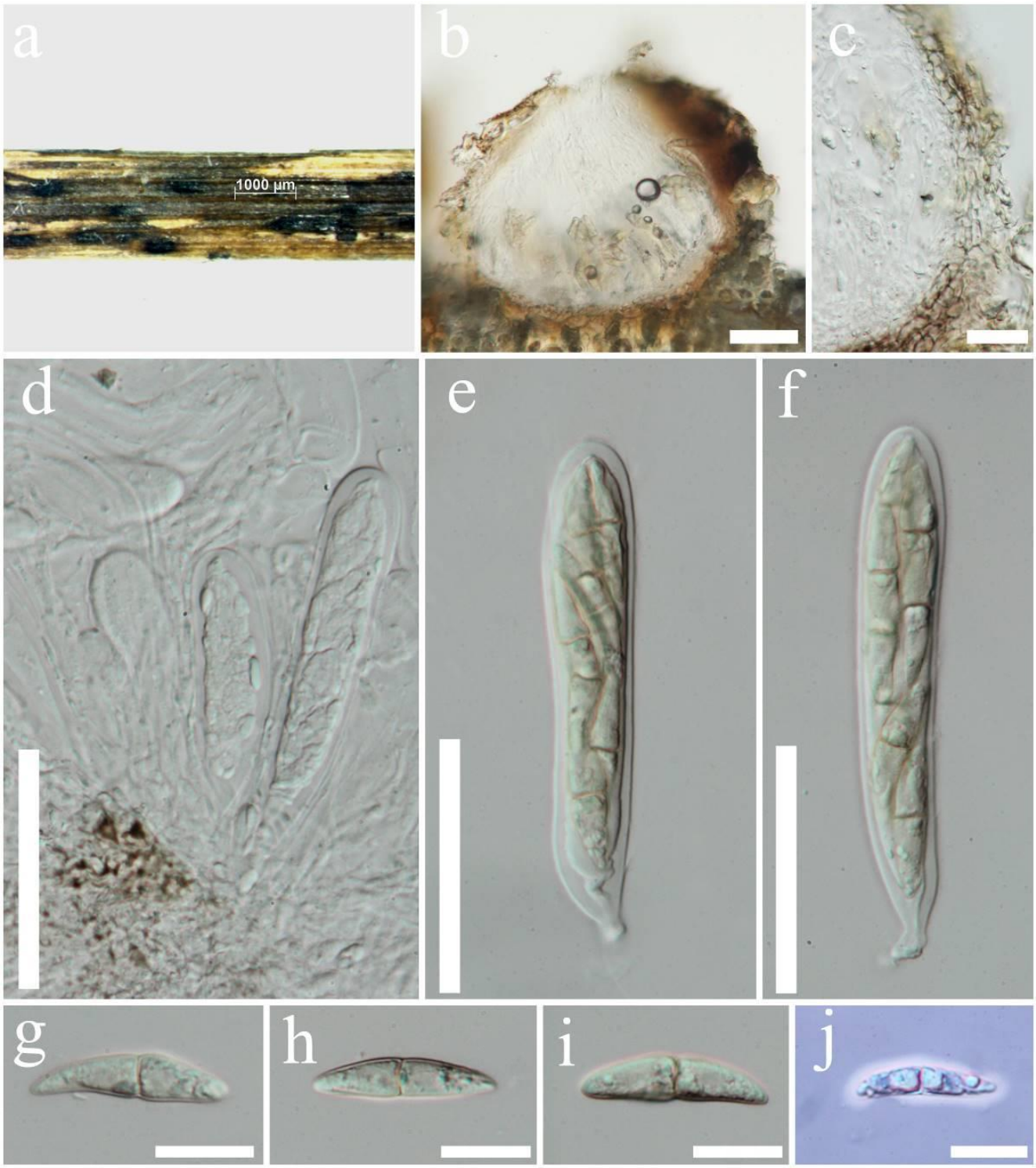

Fig. 33 – ***Parastagonospora fusiformis*** (MFLU 15–0450, holotype). a. Appearance of ascomata on the host surface. b. Vertical section through ascoma. c. Peridium. d. Pseudoparaphyses and immature asci. e, f. Mature asci. g–i. Ascospores mounted in water. j. Ascospore stained in Indian ink. Scale bars: c, d–f = 50 µm, c = 25 µm, g–j = 15 µm.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced frequently from both ends. Colonies on PDA, cover entire plate after 24 d at 25 °C, olivaceous gray, circular, fluffy, moderately dense, with white edge; reverse pale yellowish gray, with white edge.

Material examined — ITALY, Province of Forlì-Cesena [FC], near Santa Sofia, on dead aerial stem of *Festuca pratensis* (*Poaceae*), 16 July 2013, Erio Camporesi IT 1384 (MFLU 17–0121, **holotype**); *ibid*. (GZAAS, **isotype**), ex-type living culture MFLUCC 17–0056

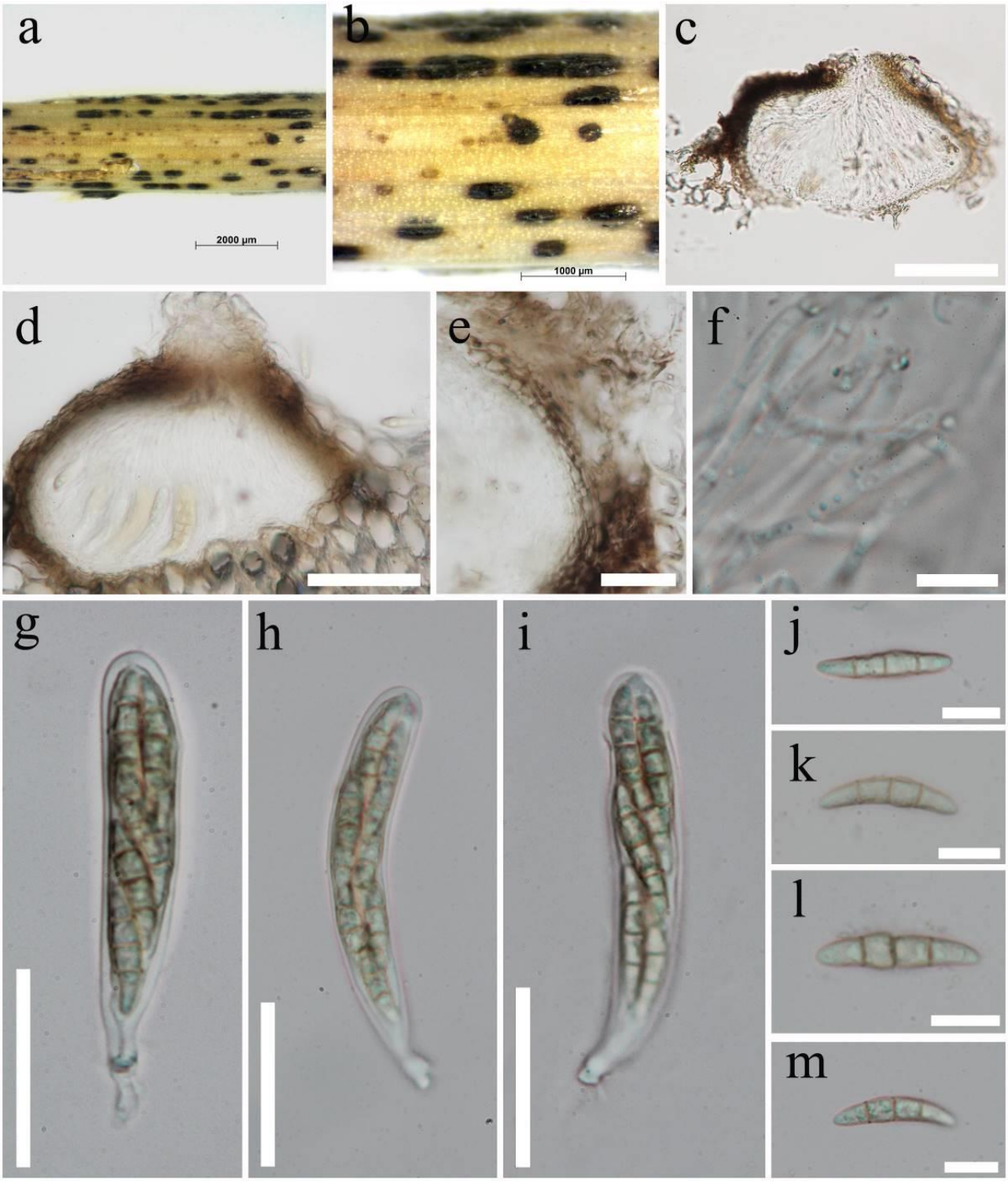

Fig. 34 – ***Parastagonospora poaceicola*** (MFLU 15–2628, holotype). a, b. Appearance of ascomata on the host surface. c, d. Vertical section through ascoma. e. Peridium f. Pseudoparaphyses. g–i. Asci. j–m. Ascospores. Scale bars: c = 100 µm, d = 50 µm, e, g–i = 30 µm, f, j–m = 10 µm.

Phaeopoacea phragmiticola (Leuchtm) Thambugala & K.D. Hyde, ***comb. nov.***

Basionym: *Phaeosphaeria phragmiticola* Leuchtm., Sydowia 37: 138 (1984)

Index Fungorum number: IF552980, *Facesoffungi number*: FoF 03202

Notes – *Phaeosphaeria phragmiticola* was introduced by Leuchtmann (1984) and later Crous et al. (2015) transferred it to the genus *Septoriella* based on phylogeny. However, Li et al. (2015) suggests that this species should be excluded from the genus based on their phylogenetic analysis. In the present phylogenetic analysis, the ex-isotype culture of *P. phragmiticola* (CBS 459.84)

grouped as a sister clade to *Phaeopoacea festucae*. Therefore, we agree with the suggestion by Li et al. (2015) and transfer *Phaeosphaeria phragmiticola* to the new genus *Phaeopoacea*.

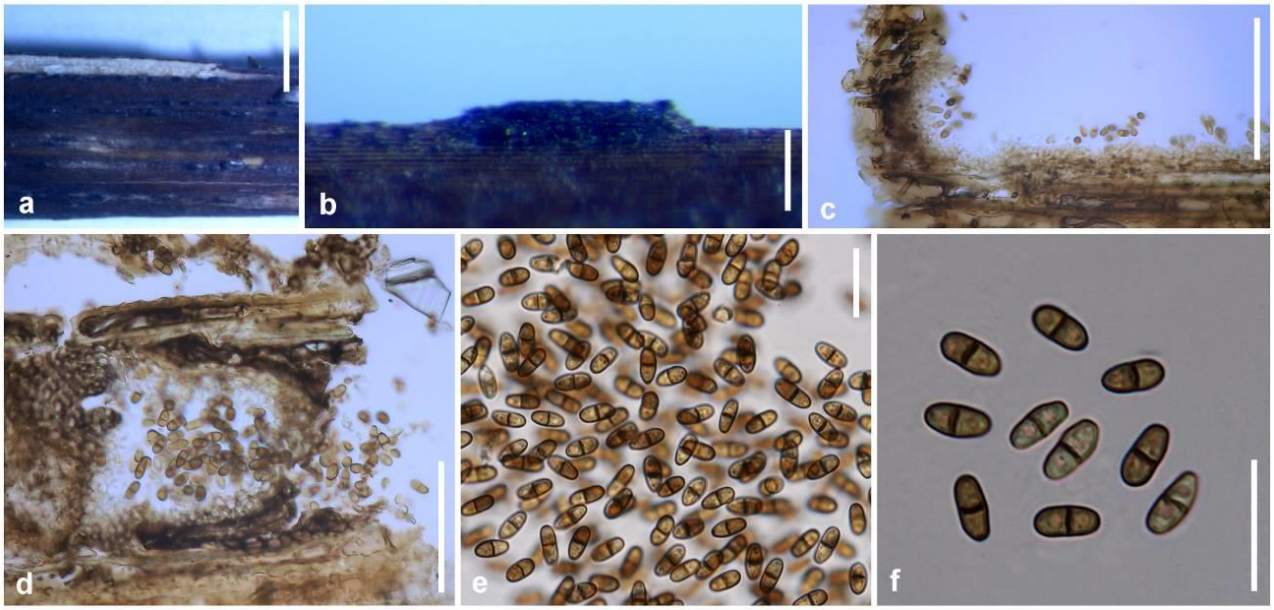

Fig. 35 – ***Phaeopoacea festucae*** (MFLU 17–0121, holotype). a, b. Conidiomata on host substrate. c. Peridium. d. Vertical section through conidioma. e, f. One septate brown conidia. Scale bars: b-d = 100 µm, e, f = 20 µm.

Poaceicola W.J. Li, Camporesi, D.J. Bhat & K.D. Hyde, Mycosphere 6 (6): 696 (2015)

The members of this genus are widely distributed on grasses (*Poaceae*) and currently seven species are recognized in the genus including four new species described here. Li et al. (2015) introduced this genus to accommodate *Phaeosphaeria elongata* (Wehm.) Shoemaker & C.E. Babc. and two other new species.

Poaceicola dactylidis Tibpromma, Camporesi & K.D. Hyde, ***sp. nov***. Fig. 36

Index Fungorum number: IF552981, *Facesoffungi number*: FoF 03203

Etymology – Named after *Dactylis*, the host genus from which it was collected.

Holotype – MFLU 14–0660

Saprobic on *Dactylis* sp. **Sexual morph**: *Ascomata* 129–201 µm high × 78–172 µm diameter ($\bar{x}$ = 162 × 127 µm, n = 4), superficial with base immersed in host tissue, solitary, scattered, black, obpyriform, thick-walled, with a long neck, ostiolate. *Peridium* 10–45 µm wide, a single layered composed of thick-walled, light brown to dark brown cells of *textura angularis*. *Hamathecium* comprising 1–1.6 µm wide, numerous, cellular, branched, septate pseudoparaphyses. *Asci* 47–54 µm × 6–8 µm ($\bar{x}$ = 50 × 7 µm, n = 15), 8-spored, bitunicate, cylindrical, narrowly rounded at the apex, pedicellate. *Ascospores* 14–19 µm × 3–4 µm ($\bar{x}$ = 16 × 3 µm, n = 15), fusiform, partially overlapping 1–3-seriate, usually 7-septate, narrowly fusoid with rounded ends, the cells above central septum often broader than the lower ones, yellowish, guttulate, smooth-walled, with a broad mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on MEA within 24 h and producing germ tubes from one or several cells. Colonies growing on MEA, reaching a diameter of 40 mm after 14 days at 25 °C, flat to slightly raised, surface velvety, with entire edge, iron-grey to white, dense, circular; reverse dark grey to black.

Material examined — ITALY, Province of Trento [TN], Malga di Dimaro - Val di Sole, on dead aerial stem of *Dactylis* sp. (*Poaceae*), 14 August 2012, Erio Camporesi IT 701 (MFLU 14–0660 **holotype**), *ibid*. (HKAS94541 **isotype**), ex-type culture MFLUCC 14–0002, ICMP

Notes – *Poaceicola dactylidis*, a new species found on *Dactylis* sp., is described here. Although it morphologically resembles *P. forlicesenica*, and both species occur on *Dactylidis* species, *P. dactylidis* has superficial ascomata with a long neck and smaller ascospores (Table 3).

Poaceicola forlicesenica Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 37

Index Fungorum number: IF552982, *Facesoffungi number*: FoF 03204

Etymology – Referring to the province Forlì-Cesena, where the species was encountered.

Holotype – MFLU 15–2627

Saprobic on dead stem of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 200–260 µm diameter × 240–300 µm high ($\bar{x}$ = 230 × 270 µm, n = 5), immersed, papilla slightly erumpent through the host surface, solitary or aggregated in small groups, scattered, globose to subglobose, coriaceous, dark brown to black, covered by brown, septate hyphae, ostiolate. *Ostiole* central, papillate, ostiolar canal filled with hyaline to lightly pigmented cells. *Peridium* 20–35 µm wide, wider at the apex, comprising few layers of thick-walled, dark brown to lightly pigmented cells of *textura angularis*, inner layers' hyaline, somewhat flattened cells. *Hamathecium* comprising 1–2 µm wide, cellular, aseptate, guttulate, pseudoparaphyses extending above asci. *Asci* 90–115 × 12–14 µm ($\bar{x}$ = 104 × 13 µm, n = 20), 8-spored, bitunicate, fissitunicate, cylindrical to cylindric-clavate, strait or slightly curved, short pedicellate, apically rounded, with an ocular chamber. *Ascospores* 26–31 × 4.2–5.4 µm ($\bar{x}$ = 28.2 × 4.7 µm, n = 30), overlapping 1–2-seriate, pale yellowish brown, cylindric-fusiform, (6–)7-septate, tapering towards the rounded ends, slightly enlarged at the third cell from the apex, straight to slightly curved, slightly constricted at the septa, guttulate, smooth-walled, with a mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and producing germ tubes from one or several cells. Colonies growing on PDA, reaching a diameter of 42 mm after 7 d at 25 °C, flat to pulvinate, surface velvety, with entire edge, white to iron-grey, dense, circular; reverse olivaceous brown to black.

Material examined — ITALY, Province of Forlì-Cesena [FC], San Paolo in Alpe - Santa Sofia, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 3 May 2014, Erio Camporesi IT 1852 (MFLU 15–2627, **holotype**); *ibid*. (GAAS 16–0133, **isotype**), ex-type living culture MFLUCC 15–0470, ICMP 21411

Notes –Molecular analysis and morphological features indicate that the new species belongs to *Poaceicola* (Fig. 26, table 3). Although, *P. forlicesenica* has similar number of septa with *P. dactylidis*, ascospore sizes are significantly different (table 3). Ascomata of *P. forlicesenica* are immersed, while ascomata of *P. dactylidis* are nearly superficial.

Poaceicola garethjonesii Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 38

Index Fungorum number: IF552983, *Facesoffungi number*: FoF 03205

Etymology – In honour of E.B. Gareth Jones, a great mycologist, recognizing his invaluable contribution to mycology.

Holotype – MFLU 15–2626

Saprobic on dead stem of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 200–270 µm diameter × 175–300 µm high ($\bar{x}$ = 244 × 255 µm, n = 6), immersed, papilla slightly erumpent through the host surface, solitary or aggregated in small groups, scattered, globose to subglobose, coriaceous, dark brown to black, covered by dark brown, vegetative hyphae, ostiolate. *Ostiole* central, papillate, ostiolar canal filled with hyaline cells. *Peridium* 12–25 µm wide, wider at the apex, comprising few layers of thick-walled, dark brown to lightly pigmented cells of *textura angularis*, outer layers fusing and indistinguishable from the host tissues. *Hamathecium* comprising 2–3 µm wide, cellular, guttulate, pseudoparaphyses extending above asci. *Asci* 95–122 × 10–12 µm ($\bar{x}$ = 110 × 11 µm, n = 21), 8-spored, bitunicate, fissitunicate, cylindrical to cylindric-clavate, strait

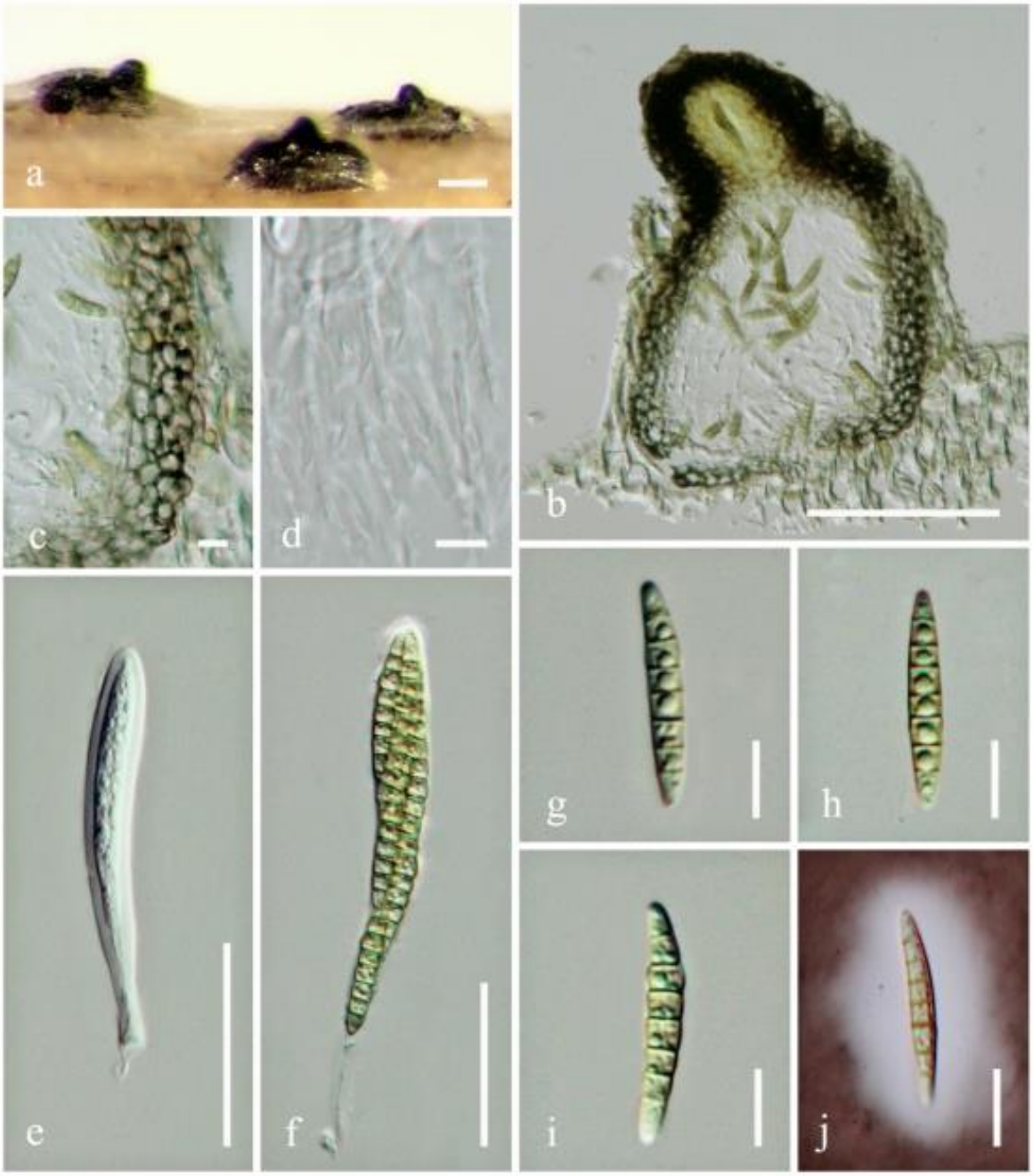

Fig. 36 – ***Poaceicola dactylidis*** (MFLU 14–0660, holotype). a. Appearance of ascomata on host surface. b. Vertical section through ascoma. c. Section of peridium. d. Pseudoparaphyses. e–f. Asci. g–j. Ascospores. Scale bars: a = 100 µm, b = 50 µm, c, e–f = 20 µm, d, g–j = 5 µm.

or slightly curved, short pedicellate, apically rounded, with an ocular chamber. *Ascospores* 27–32 × 4–4.8 µm ($\bar{x}$ = 30 × 4.5 µm, n = 35), overlapping 1–2-seriate, yellowish brown, cylindric-fusiform, (7–)8(–9)-septate, tapering towards the rounded ends, slightly enlarged at the third cell from the apex, straight to slightly curved, slightly constricted at the septa, guttulate, smooth-walled, with a mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and producing germ tubes from several cells. Colonies growing slowly on PDA, reaching a diameter of 54 mm after 14 d at 25 °C, flat, surface smooth to velvety, with entire edge, iron-grey to white, dense, circular; reverse brown or olivaceous to black.

Material examined — ITALY, Province of Forlì-Cesena [FC], near San Paolo in Alpe - Santa Sofia, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 3 May 2014, Erio Camporesi IT 1850–2 (MFLU 15–2626, **holotype**); *ibid.* (GZAAS 16–0136, **isotype**), ex-type living culture

MFLUCC 15–0469, ICMP 21408; *ibid.*, Passo delle Forche – Galeata, dead leaves of *Dactylis glomerata* L. (*Poaceae*), 18 November 2012, Erio Camporesi IT 910 (MFLU 16–2604, **paratype**), ex-paratype living culture MFLUCC 13–0275

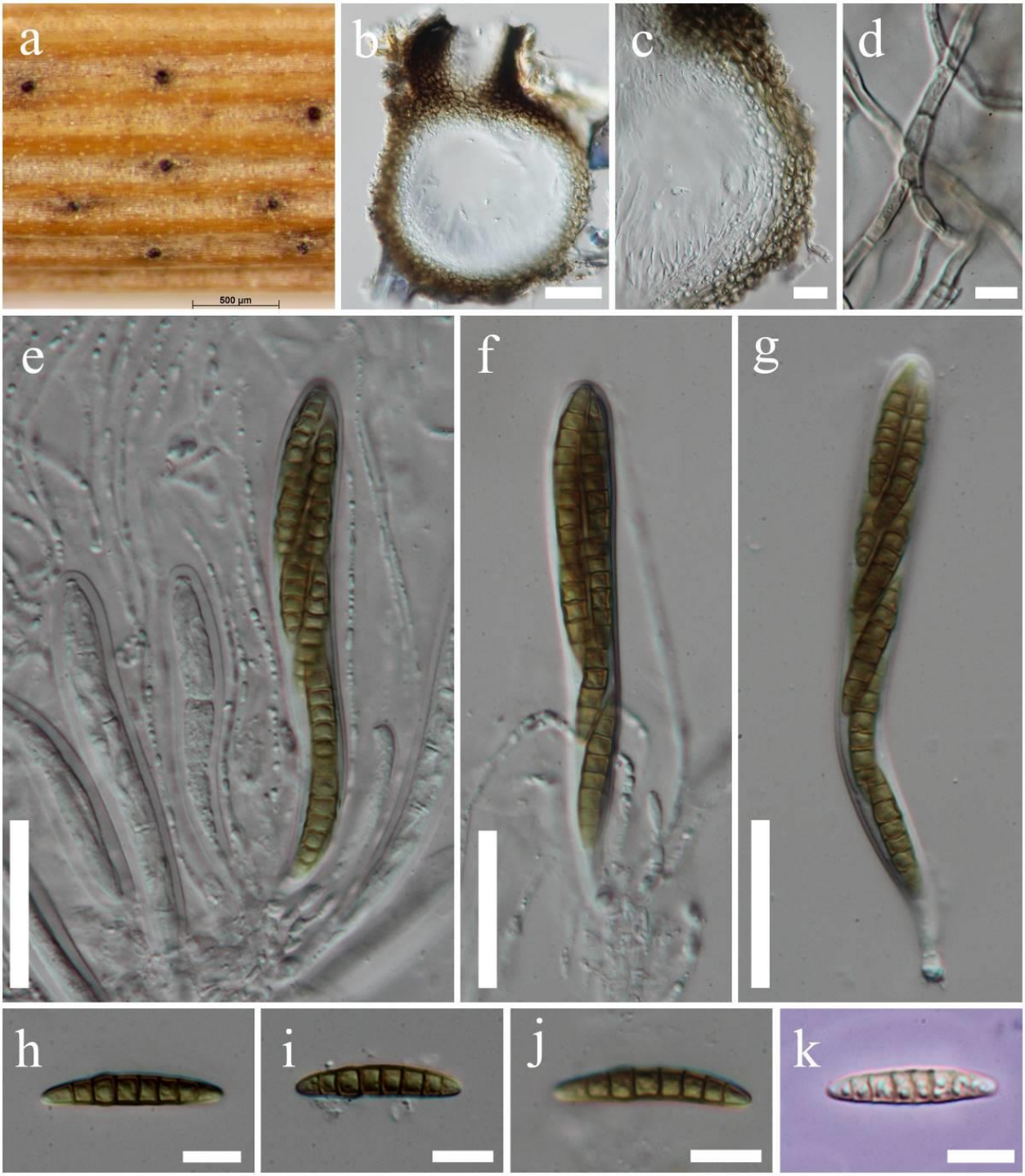

Fig. 37 – ***Poaceicola forlicesenica*** (MFLU 15–2627, holotype). a. Appearance of ascomata on the host surface. b. Vertical section through ascomata. c. Peridium d. Brown, septate vegetative hyphae. e–g. Asci. h–k. Ascospores. Scale bars: b, e–g = 50 µm, c = 20 µm, d, h–k = 10 µm.

Notes – *Poaceicola garethjonesii* is morphologically similar to *Poaceicola arundinis* W.J. Li et al., but it differs in having immersed ascomata with a thinner peridium and mucilaginous sheath (Hyde et al. 2016). In our phylogenetic analysis (Fig. 26), *P. garethjonesii* forms a sister clade to "*Phaeosphaeria elongata*" (CBS 120250) with moderate support (75 % ML).

Poaceicola italica Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 39

Index Fungorum number: IF552984, *Facesoffungi number*: FoF 03206

Etymology – Named after the country (Italy), where the holotype was collected.

Holotype – MFLU 15–0547

Saprobic on dead stem of *Arundo pliniana* Turra. **Sexual morph**: *Ascomata* (150–)200–300 µm diameter × 280–420 µm high ($\bar{x}$ = 225 × 345 µm, n = 8), immersed, slightly erumpent at maturity, solitary or aggregated in small groups, scattered, subglobose, coriaceous, dark brown to black, covered by dark brown, septate vegetative hyphae, with long necks, ostiolate. *Peridium* 10–35 µm wide, wider at the apex, comprising few layers of thick-walled, dark brown to lightly pigmented cells of *textura angularis*, outer layers fusing and indistinguishable from the host tissues. *Hamathecium* comprising 2–3 µm wide, cellular, septate pseudoparaphyses with guttules. *Asci* 95–150 × 14–18 µm ($\bar{x}$ = 118 × 16 µm, n = 15), 8-spored, bitunicate, fissitunicate, cylindrical to cylindric-clavate, strait or slightly curved, short pedicellate, apically rounded, with an ocular chamber. *Ascospores* 35–42.5 × 4.7–6.5 µm ($\bar{x}$ = 38.5 × 5.7 µm, n = 25), overlapping 1–3-seriate, pale yellowish-brown, cylindric-fusiform, 10–11-septate, tapering towards the rounded ends, enlarged at the third cell from the apex, straight to slightly curved, slightly constricted at the septa, guttulate, smooth-walled, surrounded by a thick mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and producing germ tubes from several cells. Colonies growing on PDA, reaching a diameter of 40 mm after 7 d at 25 °C, flat to slightly raised, surface smooth to velvety, with entire edge, white to grey olivaceous, dense, circular; reverse olivaceous to pale brown.

Material examined — ITALY, Province of Forlì-Cesena [FC], Strada San Zeno – Galeata, dead aerial stem of *Arundo plinii* Turra. (*Poaceae*), 26 November 2012, Erio Camporesi IT 931 (MFLU 15–0547, **holotype**); *ibid*. (GZAAS 16–0130, **isotype**), ex-type living culture MFLUCC 13–0267, ICMP 21567.

Notes – *Poaceicola italica* is introduced here as a new species and it differs from all other *Poaceicola* species in having 10–11-septate ascospores (Table 3).

Septoriella Oudem., Ned. kruidk. Archf, 2 sér. 5: 52 (repr.) (1889)

Septoriella is an asexual genus that is commonly distributed on grasses. The genus is characterized by pycnidial, unilocular conidiomata and fusiform to subcylindrical, euseptate, pale brown, conidia bearing mucoid appendages at both ends (Crous et al. 2015, Li et al. 2015). Crous et al. (2015) reduced to synonymy *Wojnowicia* with *Septoriella*, but we recognized *Wojnowicia* as a separate genus (Fig. 26)

Septoriella chlamydospora (Jayasiri, Camporesi & K.D. Hyde) Thambugala, & K.D. Hyde, ***comb. nov.***

Index Fungorum number: IF552990, *Facesoffungi number*: FoF 03209

Basionym: *Vagicola chlamydospora* Jayasiri, Camporesi & K.D. Hyde, in Jayasiri et al. 6(6): 718 (2015)

Notes – *Vagicola chlamydospora* was introduced by Jayasiri et al. (2015b), based on phylogenetic analysis of a combined LSU and ITS sequence dataset. However, in our phylogenetic analysis of a combined LSU, SSU, ITS and RPB2 sequence data, the ex-type strain (MFLUCC 15–0177) of *V. chlamydospora* clustered in the *Septoriella* clade. Therefore, we transfer *V. chlamydospora* to *Septoriella*. This species was reported on dead stem of *Dactylis* sp. (*Poaceae*) from Italy (Jayasiri et al. (2015b).

Septoriella tridentina Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 40

Index Fungorum number: IF552992, *Facesoffungi number*: FoF 03211

Etymology – Referring to the province of Trento, where the species was encountered

Holotype – MFLU 16–2567

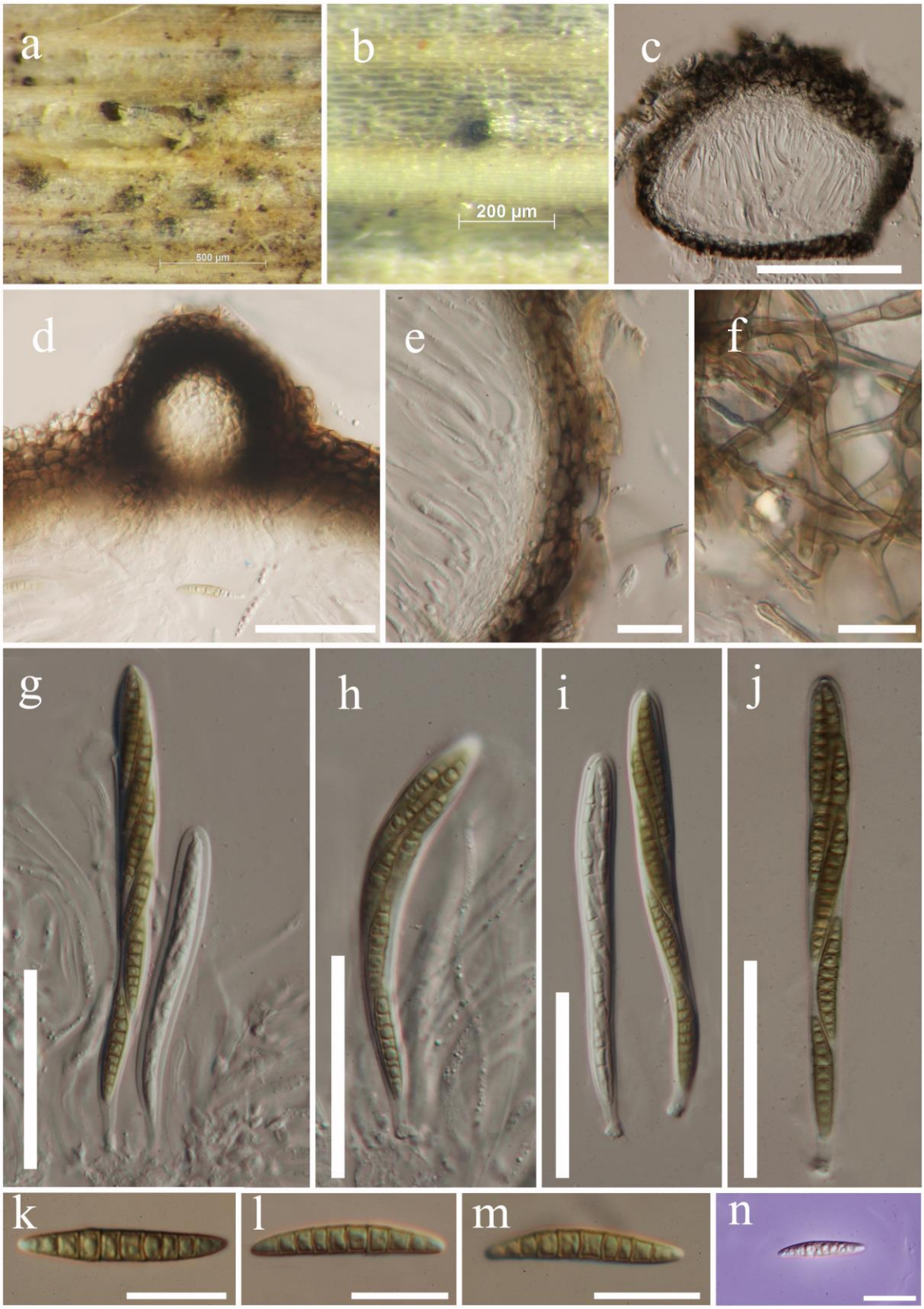

Fig. 38 – ***Poaceicola garethjonesii*** (MFLU 15–2626, holotype). a, b. Appearance of ascomata on the host surface. c. Vertical sections through ascomata. d. Apex of ascoma e. Peridium f. Dark brown vegetative hyphae. g–j. Mature and immature asci (note pseudoparaphyses in h). k–n. Ascospores. Scale bars: c = 100 µm, d, g–j = 50 µm, e, f = 20 µm, k–n = 15 µm

Table 3 Synopsis of *Poaceicola* species (sexual morph).

Species	Septa	Ascospores (µm)	Host	Reference
Poaceicola forlicesenica	(6–)7	26–31 × 4.2–5.4 ($\bar{x}$ = 28.2 × 4.7, n = 30)	*Dactylis glomerata*	This study
Poaceicola italica	10–11	35–42.5 × 4.7–6.5 ($\bar{x}$ = 38.5 × 5.7, n = 25)	*Arundo plinii*	This study
Poaceicola garethjonesii	(7–)8(–9)	27–32 × 4–4.8 ($\bar{x}$ = 30 × 4.5, n = 35)	*Dactylis glomerata*	This study
Poaceicola elongata	10	44–52×6–7 (–8) ($\bar{x}$ = 50 × 6, n = 20)	*Calamagrostis canadensis* (Michx.) Beauv. *Elymus glaucus* Buckl., *Calamagrostis purpurea* Trin.	Shoemaker & Babcock (1989)
Poaceicola arundinis	(5–)8–9	23–34 × 4.5–8 ($\bar{x}$ = 29 × 6, n = 30),	*Arundo plinii* *Dactylis* sp.	Hyde et al. (2016)
Poaceicola dactylidis	7	14–19 × 3–4 ($\bar{x}$ = 16 × 3, n = 15)	*Dactylis* sp.	This study

Saprobic on dead stems of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 115–180 µm diameter × 90–150 µm high ($\bar{x}$ = 132 × 110 µm, n = 7), immersed, becoming erumpent at maturity, solitary or aggregated in a small group, scattered, subglobose to conical, with a flattened base, coriaceous, dark brown to black, ostiolate. *Peridium* 10–15 µm wide, comprising a few layers of thick-walled, dark brown to lightly pigmented cells of *textura angularis*. *Hamathecium* comprising 1.5–2 µm wide, cellular, septate, rarely branched pseudoparaphyses, with small guttules. *Asci* 60–90 × 11–15 µm ($\bar{x}$ = 70 × 12.8 µm, n = 20), 8-spored, bitunicate, fissitunicate, cylindrical to cylindric-subclavate, strait or slightly curved, short pedicellate, apically rounded, with an ocular chamber. *Ascospores* 25–33 × 4.4–5.4 µm ($\bar{x}$ = 29 × 5 µm, n = 35), overlapping 2–3-seriate, hyaline to pale yellowish brown, cylindric-fusiform, 5–6-septate, tapering towards the rounded ends, enlarged at the second or third cell from the apex, straight to slightly curved, slightly constricted at the septa, sometimes guttulate, smooth-walled, surrounded by a mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and producing germ tubes from one or several cells. Colonies growing on PDA, reaching a diameter of 18 mm after 7 d at 25 °C, flat to slightly raised, surface smooth to velvety, with entire to slightly undulate edge, iron-grey to white, dense, circular; reverse buff to dark brown.

Material examined — ITALY, Province of Trento [TN], near Marilleva 900 - Mezzana, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 11 August 2014, Erio Camporesi IT 2046 (MFLU 16–2567, **holotype**); *ibid*. (GZAAS 16–0117, **isotype**), ex-type living culture MFLUCC 15–0474, ICMP 21423; *ibid*. IT 2046–2 (MFLU 16–2568, **paratype**), ex-paratype living culture MFLUCC 15–0475.

Notes – *Septoriella tridentina* is identified as a new species based on both the morphological traits and phylogeny. *Septoriella tridentina* is similar to other reported sexual species of *Septoriella*, *S. chlamydospora* in having immersed ascomata becoming erumpent at maturity and

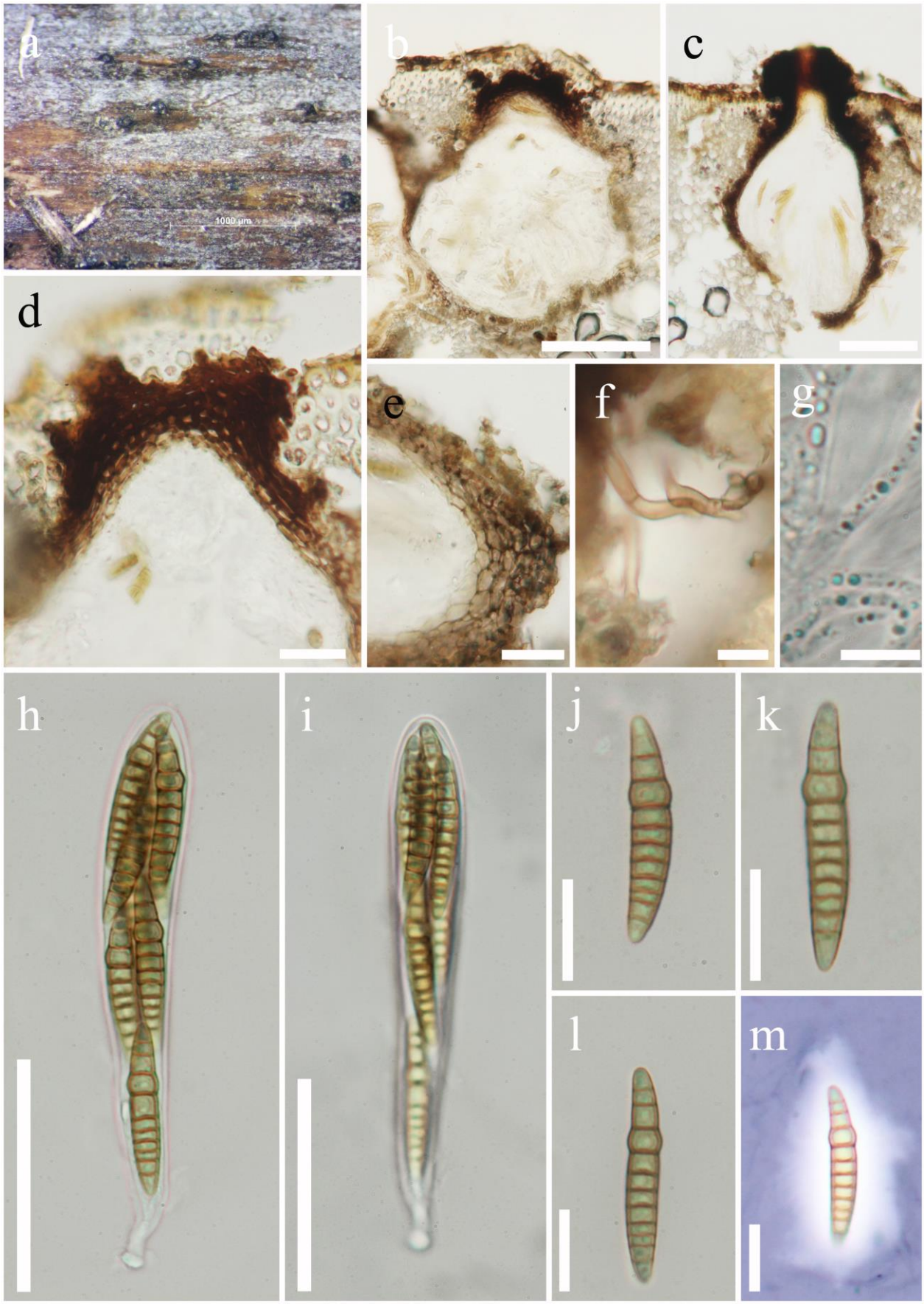

Fig. 39 – ***Poaceicola italica*** (MFLU 15–0547, holotype). a. Appearance of ascomata on the host surface. b, c. Vertical sections through ascomata. d. Apex of ascoma e. Peridium. f. Dark brown vegetative hyphae. g. Pseudoparaphyses. h, i. Asci j–l. Ascospores. m. Ascospore stained in Indian ink. Scale bars: b, c = 100 µm, d, e = 25 µm, f, g = 10 µm, h–i = 50 µm, j–m= 15 µm.

fusiform, phragmosporous, hyaline to pale yellowish brown ascospores. However, *S. chlamydospora* has 9-septate ascospores, while *S. tridentina* with 5–6-septate ascospores.

Setophoma Gruyter, Aveskamp & Verkley, in de Gruyter, Woudenberg, Aveskamp, Verkley, Groenewald & Crous, Mycologia 102(5): 1077 (2010)

Setophoma was introduced by de Gruyter et al. (2010) to accommodate *Phoma terrestris* H.N. Hansen and *Pyrenochaeta sacchari* Bitancourt in the family *Phaeosphaeriaceae*. There are five species currently listed in Index Index Fungorum (2017).

Setophoma poaceicola Goonas., Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 41

Index Fungorum number: IF552993, *Facesoffungi number*: FoF 03212

Etymology – in reference to holotype occurring on grasses (*Poaceae*).

Holotype – MFLU 16– 2850

Saprobic on dead culm of grass, appearing as black, flat to slightly raised lesions, sometimes coalescing creating larger lesions. **Sexual morph**: *Ascomata* 90–110 µm high, 70–100 µm diameter, perithecial, solitary, scattered to gregarious, glabrous, globose, dark brown to black, with a centrally located short ostiole. *Peridium* 10–15 µm wide, composed of several layers of outer thick-walled, cells of *textura prismatica* and inner, hyaline cells of *textura prismatica* to *textura angularis*. *Hamathecium* comprising many, filamentous, 0.5–1 µm wide, indistinctly septate, anastomosing pseudoparaphyses. *Asci* 30–70 × 6.5–8 µm ($\bar{x}$ = 48.5 × 7 µm, n = 20), 8-spored, bitunicate, fissitunicate, cylindrical, with a short pedicel, apex rounded, ocular chamber present. *Ascospores* 14–16 × 3–4 µm ($\bar{x}$ = 15 × 3.5 µm, n = 20), overlapping 1–2-seriate, light brown, fusiform, with acute ends, 3-septate, smooth-walled, guttulate. **Asexual morph**: Undetermined.

Culture characteristics — Conidia germinating on PDA within 12 h, growing into an irregular colony, reaching a diameter of 15 mm after 7 d at 25 °C, flat with a filamentous margin, dull and wrinkled surface, opaque, dark brown, orange-brown at the margin; reverse same.

Material examined — THAILAND, Chiang Mai Province, Mae Taeng, Mushroom Research Center, on culm of dead grass (*Poaceae*), 9 March 2016, Ishani D. Goonasekara IGm 05 (MFLU 16–2850, **holotype**); *ibid.* (HKAS 97386, **isotype**), ex-type living culture MFLUCC 16–0880, KUMCC 17–0021.

Notes – This is the second record of the sexual morph of the genus *Setophoma* from Thailand and the first report was *S. sacchari* (Bitanc.) Gruyter, Aveskamp & Verkley. *Setophoma poaceicola* mainly differs from *S. sacchari* in having smaller (22.5 × 5.6 µm in *S. sacchari*), light brown ascospores, while *S. sacchari* causes a ring spot disease on sugarcane (Phookamsak et al. 2014b). In the present phylogenetic analysis the ex-type strain of *S. poaceicola* forms a strongly supported clade (100% ML) within the genus and clearly separated from the other species (Fig. 26).

Vagicola K.W.T. Chethana & K.D. Hyde, in Ariyawansa et al., Fungal Diversity: 75: 113 (2015)

=*Phaeosphaeria* subgen. *Vagispora* Shoemaker & Babcock, Can. J. Bot. 67: 1500–1599 (1989)

Ariyawansa et al. (2015a) raised the subgenus *Vagicola* (Shoemaker & Babcock 1989) to generic rank to accommodate *Phaeosphaeria vagans* Niessl. Subsequently Jayasiri et al. (2015b) introduced two new species to the genus namely, *V. chlamydospora* and *V. dactylidis*.

Vagicola arundinis Phukhamsakda, Camporesi & K.D. Hyde, ***sp. nov.*** Figs 42 & 43

Index Fungorum number: IF552985, *Facesoffungi number*: FoF 03208

Etymology – Named after the host genus from which it was collected, *Arundo*.

Holotype – MFLU 17–0016 & MFLU 17–0017

Saprobic on dead branch of *Arundo plinii* Turra. **Sexual morph**: *Ascomata* 230–345 µm high × 279–323 µm diameter ($\bar{x}$ = 329 × 310 µm, n = 5), immersed to erumpent, only ostioles part visible, gregarious, confluence, globose to depressed globose, with attached hyphae, coriaceous, black to dark brown, ostiole central. *Ostioles* 154–164 µm high × 109–143 µm diameter ($\bar{x}$ = 126 × 159 µm, n = 3), papillate, dark brown, smooth, with periphyses. *Peridium* 19–29 µm wide., up to 40

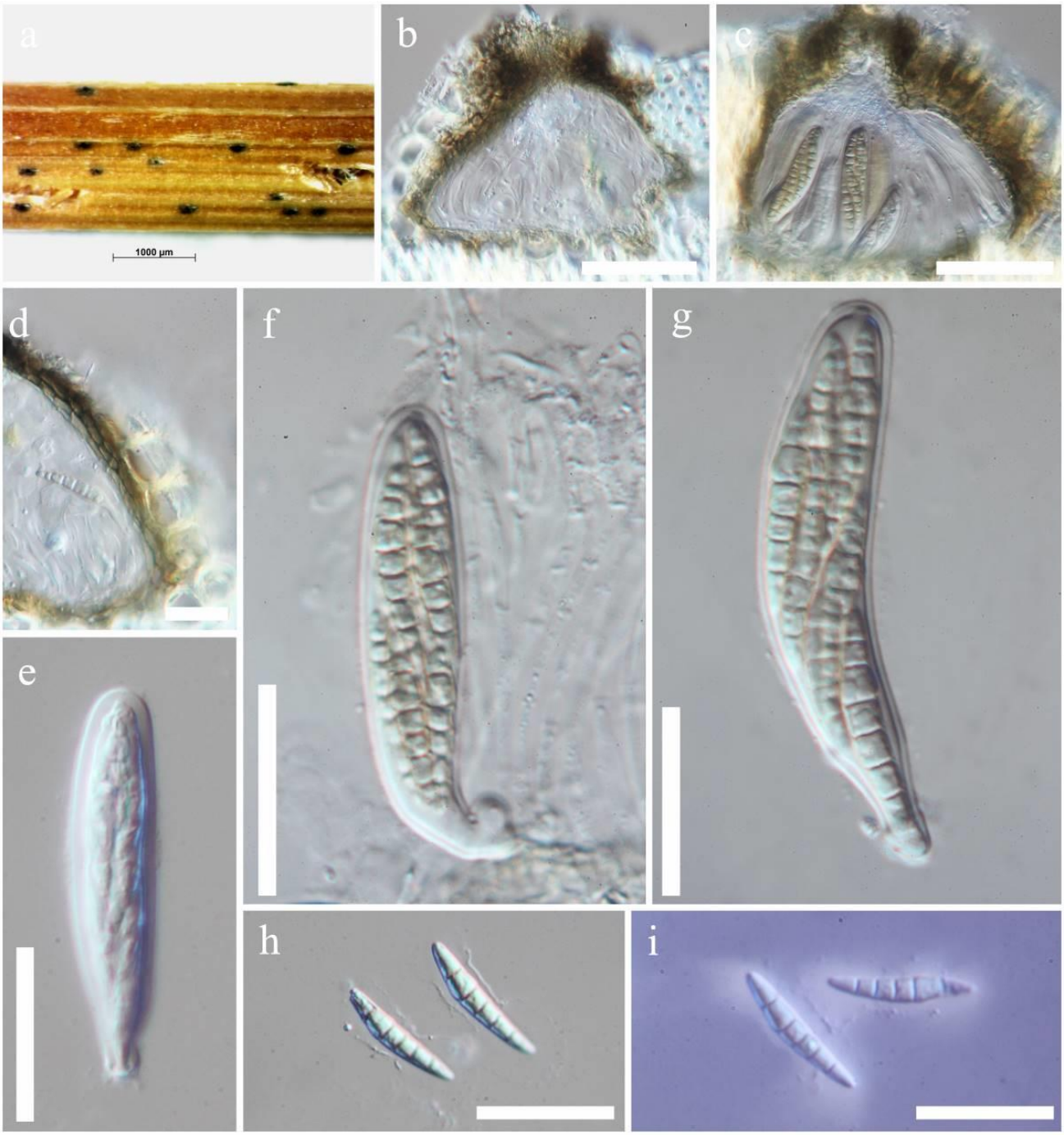

Fig. 40 – ***Septoriella tridentina*** (MFLU 16–2567, holotype). a. Appearance of ascomata on the host surface. b, c. Vertical sections through ascomata. d. Peridium e. Immature ascus f, g. Mature asci (note pseudoparaphyses in f). h. Ascospores i. Ascospores stained in Indian ink. Scale bars: b = 20 µm, e–i = 25 µm.

µm wide at the apex, composed of 8–10 layers of *textura angularis*, outer region haeavily pigment, cells 4–8 µm wide, inner layer composed of hyaline gelatinous cell, merging with psedoparaphyses. *Hamathecium* comprising numerous, long, 1.8–3 µm (n = 30) wide, broad, transversely septate, branched, cellular pseudoparaphyses. *Asci* 84–153 × 10–20 µm ($\overline{x}$ = 111 × 15 µm, n = 20), 8-spored, bitunicate, clavate, with furcate pedicel, 15–25 µm long, apically rounded, with an ocular chamber well visible when immature. *Ascospores* 34–45 × 5–7 µm ($\overline{x}$ = 37 × 6 µm, n = 30), overlapping 2-seriate, hyaline when immature, pale brown to yellowish at maturity, narrowly fusiform, tapering towards the ends, (5–)8–9-septate, distoseptate, slightly contricted at the fouth cell, enlarged at the fouth cell from apex, smooth-walled. **Asexual morph**: *Conidiomata* 95–169

μm high × 240–290 μm diameter ($\bar{x}$ = 136 × 282 μm, n = 10), pycnidial, solitary or in small groups, brown to dark brown, globose, immersed to semi-immersed, clypeus, appeared as black dot on host tissue, rise up from host, solitary, scattered, uniloculate, ostiolate. *Peridium* 7–16 μm wide, thick-walled, comprising 4–5 layers, comprising of brown-walled cells of *textura angularis*. *Ostiole* central, roundish, single. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 1–3 × 2–5 μm, ($\bar{x}$ = 3 × 4 μm, n = 20), holoblastic, solitary, phialidic blastoconidia, discrete, hyaline, formed from the inner layer of pycnidial wall. *Conidia* 7–13 × 2–6 μm ($\bar{x}$ = 9.8 × 3.8 μm, n = 50), ellipsoid, subfusiform, narrowly rounded at both ends, 1−3 transverse septa at maturity, hyaline immature, pale brown to brown when mature.

Culture characteristics — Colonies on PDA, reaching 40 mm diameter after 30 d at 16° C, surface white, with aerial mycelium, fluffy, entire margins; reverse pale orange at the edges, light brown at the centre, radiating orange outward, sparse, circular, flattened, margin rough.

Material examined — ITALY, Province of Marsignano - Predappio, on a dead stem of *Arundo plinii* (*Poaceae*), 10 November 2014, Erio Camporesi IT 2223A (MFLU 17–0016, **holotype** - sexual morph); *ibid*. (HKAS, **isotype**); ex-type living culture MFLUCC 15–0027, KUMCC; *ibid*. (IT 2223B, MFLU 17–0017, asexual morph), living culture MFLUCC 15–0046.

Notes — *Vagicola arundinis* is introduced as a new species and both sexual and asexual morphs are described and illustrated in this study. This species primarily differs from other *Vagicola* species in having narrowly fusiform, (5–)8–9-septate ascospores and 1−3 transverse septate conidia.

Pleosporaceae Nitschke, Verh. naturh. Ver. preuss. Rheinl. 26: 74 (1869)

Ariyawansa et al. (2015b) revised the family and accepted 18 genera. A number of members of this family are associated with a wide range of grasses (*Poaceae*) worldwide (Manamgoda et al. 2012, Ariyawansa et al. 2014b, 2015b, Woudenberg et al. 2015).

Alternaria Nees, Syst. Pilze (Würzburg): 72. 1816 [1816–1817]

Alternaria is a cosmopolitan fungal genus that consists of saprobic, endophytic and pathogenic species associated with a wide variety of substrates. There are a lot of synonyms under *Alternaria* and the genus is currently divided into 26 sections (Ariyawansa et al. 2015b, Woudenberg et al. 2013, 2015).

Alternaria alternata (Fr.) Keissl., Beih. bot. Zbl., Abt. 2 29: 434 (1912) Fig. 46

Pathogenic or saprobic on a wide range of hosts. **Sexual morph**: See Ariyawansa et al. (2015). **Asexual morph**: *Conidiophores* 35–230 × 4– 7 μm ($\bar{x}$ = 100 × 5.2 μm, n = 50), short to long, simple or branched, straight or flexuous, pale, olivaceous or brown, smooth, septate, with one or several apical conidiogenous loci. *Conidia* 20–100 × 9–17 μm ($\bar{x}$ = 45 × 12 μm, n = 70), simple or branched chains, obclavate, obpyriform, ovoid or ellipsoidal, pale to mid dark brown, up to 6 transverse and usually few longitudinal or oblique septa, slightly constricted near some septa, smooth-walled or slightly verrucose.

Culture characteristics — Conidia germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 45 mm after 5 d at 25 °C, flat to slightly umbonate, surface smooth to velvety, with entire edge, grey to white, dense to moderately dense, circular; reverse pale orange buff.

Material examined — CHINA, Guizhou Province, Guizhou Academy of Agricultural Sciences, on dead leaves of bamboo sp. (*Poaceae*), 20 July 2015, K.M. Thambugala CN019 (MFLU 16–2588, GZAAS 16–0034), living culture MFLUCC 16–0595, GZCC 15–0044; *ibid*., on dead leaves of *Triticum aestivum* L. (*Poaceae*), 16 May 2015, K.M. Thambugala CN002 (MFLU 16–2589, GZAAS 16–0021), living culture MFLUCC 16–0343, GZCC 15–0031; *ibid*., on dead kernels of *Triticum aestivum* L. (*Poaceae*), 10 June 2015, K.M. Thambugala CN015 (MFLU 16–2590, GZAAS 16–0030), living culture MFLUCC 16–0279, GZCC 15–0040; *ibid*., dead leaves of *Sorghum bicolor* (L.) Conrad Moench (*Poaceae*), 20 July 2015, K.M. Thambugala CN016 (MFLU

Fig. 41 – ***Setophoma poaceicola*** (MFLU 16–2850, holotype). A. Appearance of ascomata on host surface b. Close up of ascomata c, d. Vertical sections through ascomata e. Peridium f. Pseudoparaphyses g–k. Asci l–q. Ascospores r. Colony - from above s. Colony - from below. Scale bars: a = 1000 µm, b = 200 µm, c = 100 µm, d, g = 50 µm, e, f, h–k = 20 µm, l–q = 10 µm.

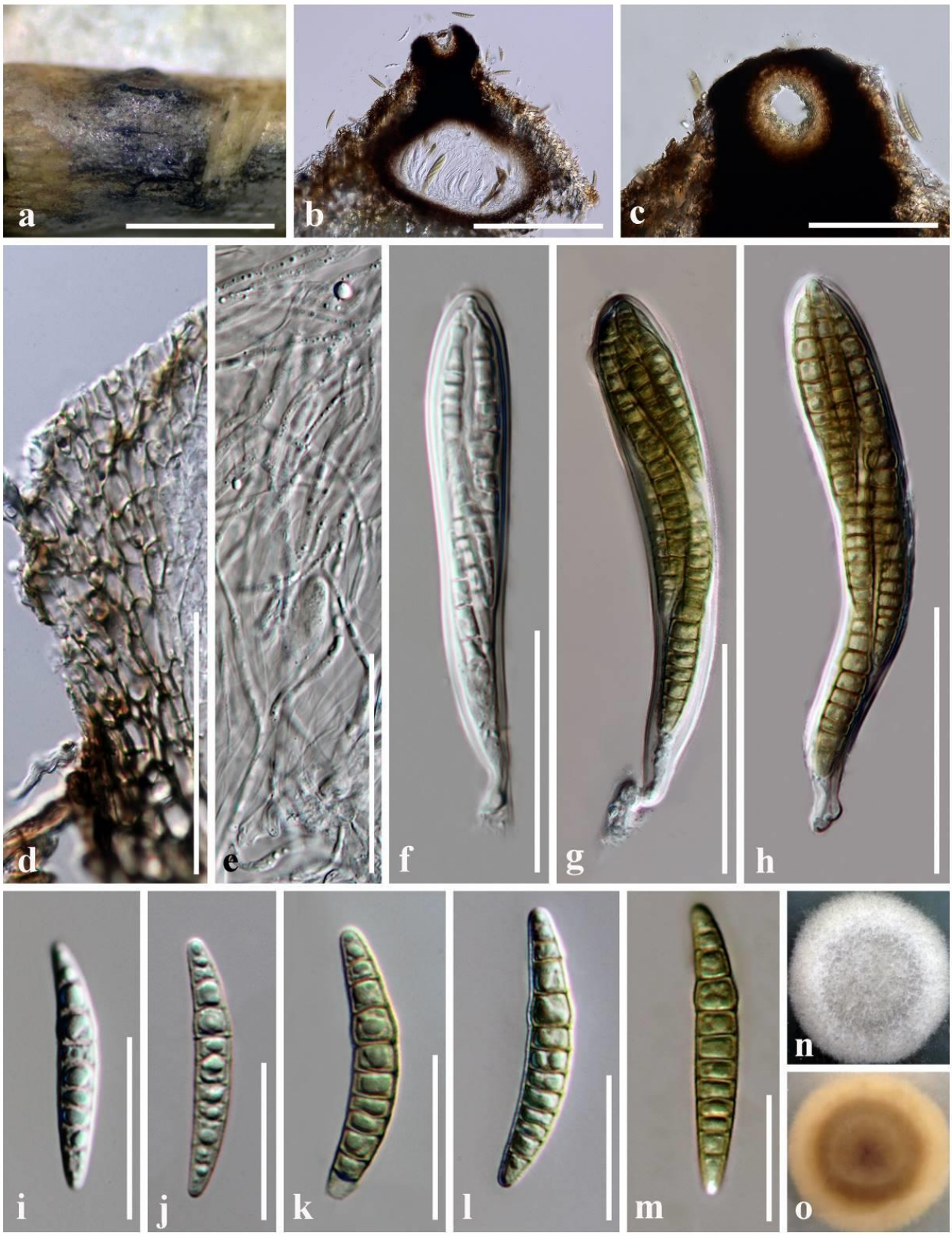

Fig. 42 – ***Vagicola arundinis*** (MFLU 17–0016, holotype - sexual morph). a. Appearance of ascomata on host surface. b. Vertical section of ascoma. c. Ostiole. d. Peridium. e. Pseudoparaphyses. f–h. Development state of asci. i–m. Development of ascospores. n–o. Culture character on PDA from surface and reverse. Scale bars: a = 500 µm, b = 100 µm, c = 100 µm, d–h = 50 µm, i–m = 20 µm.

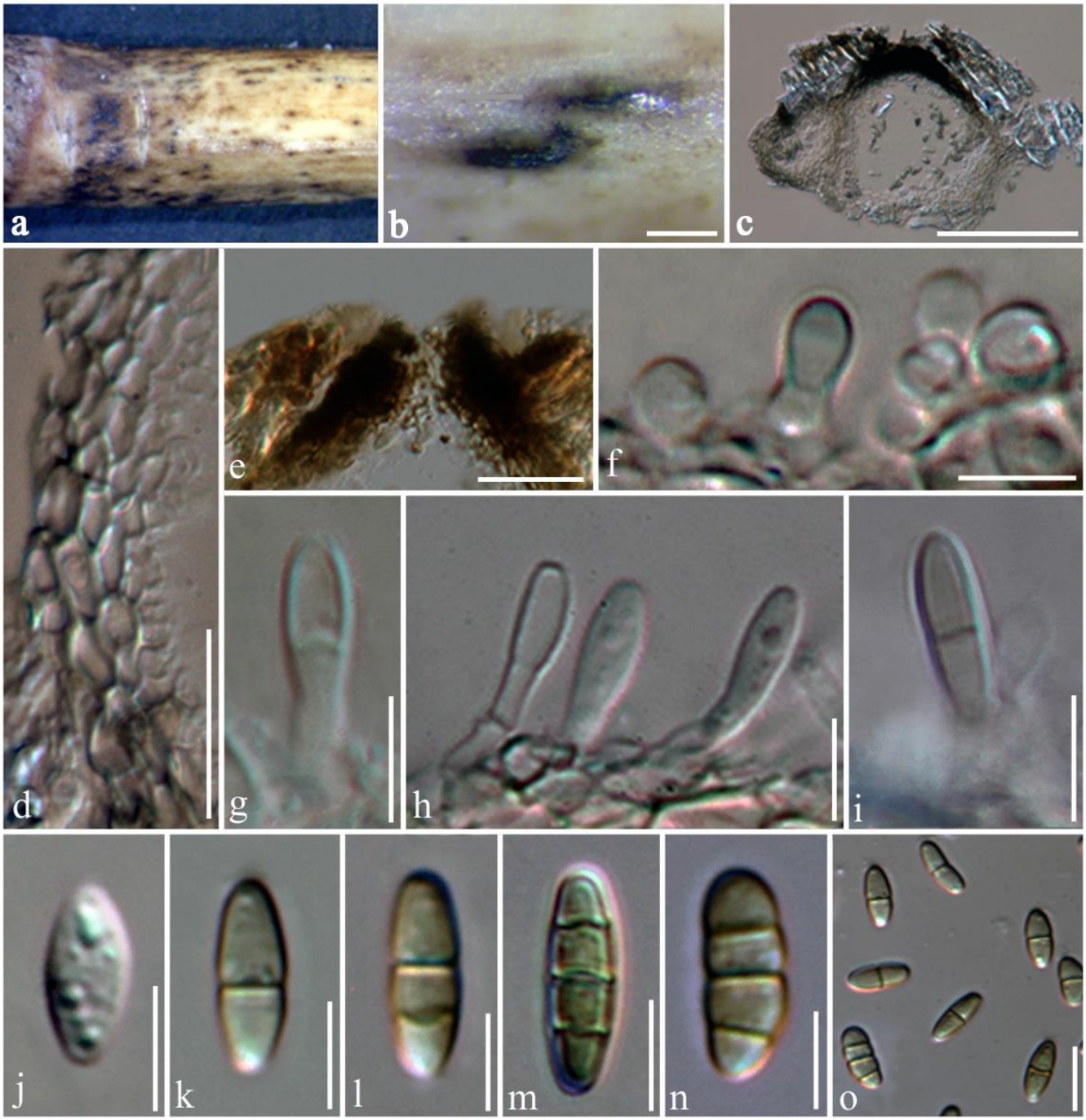

Fig. 43 – ***Vagicola arundinis*** (MFLU 17–0017, holotype - asexual morph). a–b. Appearance of conidiomata on host surface. c. Vertical section of conidiomata. d. Conidiomatal wall. e. Ostiole. f–i. Development of conidia. j–o. Conidia. Scale bar: b = 200 µm, c = 100 µm, d–e = 20 µm, f–n = 5 µm, o = 10 µm.

16–2591, GZAAS 16–0031), living culture MFLUCC 16–0280, GZCC 15–0041; *ibid.*, on dead leaves of *Triticum aestivum* L. (*Poaceae*), 20 July 2015, K.M. Thambugala CN001 (MFLU 16–2592, GZAAS 16–0020), living culture MFLUCC 16–0594, GZCC 15–0030

Notes – *Alternaria alternata* belongs to the *Alternaria* sect. *Alternaria*, which consists of only eleven phylogenetic species and one species complex (Woudenberg et al. 2015). Woudenberg et al. (2015) listed many synonyms under *A. alternata* based on genome and transcriptome comparisons and molecular phylogenies. *Alternaria alternata* occurs on a number of substrates worldwide and we collected the species associated with *Sorghum bicolor* (L.) Conrad Moench,

Triticum aestivum L., and bamboo sp. in china and slightly different conidial morphology was observed among those collections (Fig. 45).

Alternaria dactylidicola Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 47

Index Fungorum number: IF553166, *Facesoffungi number*: FoF 03227

Etymology – Named after the host genus from which it was collected, *Dactylis*.

Holotype – MFLU 15–2622

Saprobic on *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 175–225 µm diameter × 125–150 µm high ($\bar{x}$ = 190 × 140 µm, n = 4), scattered or clustered, semi-immersed to erumpent, black, subglobose, coriaceous, ostiolate. *Peridium* 12–20 µm wide, comprising 3–5, cell layers of dark brown to lightly pigmented, thick-walled cells of *textura angularis*. *Hamathecium* composed of 1–2 µm wide, filiform, septate, rarely branched, pseudoparaphyses anastomosing between and above asci. *Asci* 60–85 × 12–14.5 µm ($\bar{x}$ = 74 × 13.5 µm, n = 12), 8-spored, bitunicate, fissitunicate, cylindrical to subcylindrical, straight or somewhat curved, with a short pedicel and apically rounded with an ocular chamber. *Ascospores* 14–17.5 × 6–8 µm ($\bar{x}$ = 15.8 × 7 µm, n = 30), partially overlapping 1–2-seriate, ellipsoid to fusoid, initially yellowish, becoming pale brown to brown, muriform, transversely 3−5-septate, with 2−4 vertical septa, with rounded to somewhat pointed ends, smooth-walled, with a thin mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 38 mm after 5 d at 25 °C, flat, surface smooth to velvety, with entire edge, grey at the middle, white at the margin, moderately dense, circular; reverse grey to black to white.

Material examined — ITALY, Province of Forlì-Cesena [FC], near Passo delle Forche - Galeata, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 7 April 2014, Erio Camporesi IT 1802 (MFLU 15–2622, **holotype**); *ibid*. (GZAAS 16–0132, **isotype**), ex-type living culture MFLUCC 15–0466, ICMP 21430

Notes – *Alternaria dactylidicola* morphologically and phylogenetically closely resembles *A. cesenica* Phukhamsakda et al. However, *A. dactylidicola* differs from *A. cesenica* in having a thin peridium and smaller, transversely 3−5-septate, uni to biseriately arranged ascospores with a mucilaginous sheath. *Alternaria dactylidicola* is associated with dead stems of *Dactylis glomerata* L. (*Poaceae*), while *A. cesenica* was reported on dead and hanging branches of *Bellevalia romana* (*Asparagaceae*) (Ariyawansa et al. 2015a). Therefore, *A. dactylidicola* is described here as a new species.

Alternaria forlicesenensis Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 48

Index Fungorum number: IF553167, *Facesoffungi number*: FoF 03228

Etymology – Referring to the province Forlì-Cesena, where the species was encountered.

Holotype – MFLU 15–0560

Saprobic on dead stem of *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 100–200 µm diameter × 130–220 µm high ($\bar{x}$ = 150 × 156 µm, n = 8), scattered to gregarious, semi-immersed to densely erumpent, elongate, black, subglobose, coriaceous, ostiolate. *Peridium* 15–25 µm wide, dark brown to lightly pigmented, thick-walled cells of *textura angularis* and attached short, brown to reddish brown, setae at the outer layer. *Hamathecium* of 1–2 µm wide, filiform, septate, pseudoparaphyses, anastomosing between and above asci. *Asci* 78–125 × 11–14 µm ($\bar{x}$ = 98 × 12 µm, n = 15), 8-spored, bitunicate, fissitunicate, cylindrical to subcylindrical, straight or somewhat curved, with a short pedicel and apically rounded with an ocular chamber. *Ascospores* 16.3–19 × 6.4–8.3 µm ($\bar{x}$ = 17.4 × 7.2 µm, n = 30), partially overlapping 1-seriate, ellipsoid to fusoid, initially yellowish, becoming pale brown to brown, muriform, transversely (4−)5-septate, with (2−)3−4 vertical septa, with rounded to pointed ends, smooth-walled, surrounded by a mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 60 mm after 7 d at

25 °C, flat, surface smooth to velvety, with entire edge, grey to white, dense to moderately dense, circular; reverse grey to black.

Material examined — ITALY, Province of Forlì-Cesena [FC], San Lorenzo in Noceto, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 6 February 2013, Erio Camporesi IT 993 (MFLU 15–0560, **holotype**); *ibid*. (GZAAS 16–0131, **isotype**), ex-type living culture MFLUCC 13–0456, ICMP 21559

Notes – *Alternaria forlicesenensis* is described here as a new species that is morphologically similar to *A. infectoria* E.G. Simmons (=*Lewia infectoria* (Fuckel) M.E. Barr & E.G. Simmons). However, *A. forlicesenensis* differs from *A. infectoria* in having smaller ascomata with short, brown to reddish-brown, setae and smaller ascospores surrounded by a mucilaginous sheath. In the present phylogenetic analysis, *A. forlicesenensis* and the ex-type strain of *A. infectoria* (CBS 210.86) grouped separately in the section *Infectoriae*. *Alternaria forlicesenensis* was associated with dead stems of *Dactylis glomerata* L., while *A. infectoria* was reported on *Triticum aestivum* L. (Simmons 1993, Woudenberg et al. 2013).

Alternaria longipes (Ellis & Everh.) E.W. Mason, Mycol. Pap. 2: 19 (1928) Fig. 49

Basionym: *Macrosporium longipes* Ellis & Everh., J. Mycol. 7: 134. 1892.

= *Alternaria brassicae* var. *tabaci* Preissecker, Fachliche Mitt. Österr. Tabakregie 16: 4. 1916.

Pathogenic or saprobic on *Nicotiana tabacum* L. and *Triticum aestivum* L. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiophores* 60–260 × 4.5– 6– (9) µm ($\bar{x}$ = 155 × 5.8 µm, n = 20), short to long, simple, straight or flexuous, pale, olivaceous or brown, smooth, septate, with one or several apical conidiogenous loci. *Conidia* 30–60(–77) × (–7)9.5–13.5(–16.2) µm ($\bar{x}$ = 44 × 11.2 µm, n = 30), simple or branched chains, obclavate, obpyriform, ovoid or ellipsoidal, pale to dark brown, up to 5 transverse and usually few longitudinal or oblique septa, slightly constricted near some septa, smooth to finely verrucose.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 40 mm after 7 d at 25 °C, flat to slightly umbonate, surface velvety, with entire to slightly undulate edge, grey, dense, circular to slightly irregular; reverse orange buff to greyish.

Material examined — CHINA, Guizhou Province, Guizhou Academy of Agricultural Sciences, on dead leaves of *Triticum aestivum* L. (*Poaceae*), 16 May 2014, K.M. Thambugala CN006 (MFLU 16–2595, GZAAS 16–0025, **reference specimen designated here**), living culture MFLUCC 16–0592, GZCC 15–0035

Notes – *Alternaria longipes* is commonly known as the causal agent of brown spot of tobacco (*Nicotiana tabacum*) and widely distributed in U.S.A. (Woudenberg et al. 2015). During our research, we found this species on *Triticum aestivum* L. from China and the present phylogenetic analysis confirms its identity (Fig. 45).

Alternaria poaceicola Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 50

Index Fungorum number: IF553168, *Facesoffungi number*: FoF 03229

Etymology – in reference to holotype occurring on grasses (*Poaceae*)

Holotype – MFLU 16–2594

Saprobic on *Dactylis glomerata* L. **Sexual morph**: *Ascomata* 110–250 µm diameter × 100–250(–350) µm high ($\bar{x}$ = 155 × 190 µm, n = 7), scattered or clustered, semi-immersed to erumpent, elongate, black, subglobose to irregular, with a somewhat flattened base, coriaceous, ostiolate. *Peridium* 20–30 µm wide, dark brown to hyaline, thick-walled cells of *textura angularis*, fusing with the host at the base. *Hamathecium* of 2–3 µm wide, filiform, septate, pseudoparaphyses, anastomosing between and above asci. *Asci* 75–105 × 10–14 µm ($\bar{x}$ = 89 × 11.8 µm, n = 15), 8-spored, bitunicate, fissitunicate, cylindrical to subcylindrical, straight or somewhat curved, with a short pedicel and apically rounded with an ocular chamber. *Ascospores* 14–17.5 (–19) × 6.2–8.8 µm ($\bar{x}$ = 16 × 7.2 µm, n = 30), partially overlapping 1-seriate, ellipsoid to fusoid, initially yellowish, becoming pale brown to brown, muriform, transversely 5-septate, with 3−5 vertical

septa, with rounded to pointed ends, smooth-walled, surrounded by a mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Conidia germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 70 mm after 7 d at 25 °C, flat to slightly umbonate, surface smooth to velvety, with entire edge, grey to white, dense to moderately dense, circular; reverse grey to white.

Material examined — ITALY, Province of Forlì-Cesena [FC], Pietrapazza - Bagno di Romagna, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 6 January 2013, Erio Camporesi IT 1001 (MFLU 16–2594, **holotype**); *ibid*. (GZAAS 16–0126, **isotype**), ex-type living culture MFLUCC 13–0346, ICMP 21560

Notes – *Alternaria poaceicola* is introduced here as a new species that is known only by its sexual morph. Subglobose to irregular ascomata with a somewhat flattened base and poorly developed peridium are quite unique to this species compared to other sexual *Alternaria* species. *Alternaria arbusti* E.G. Simmons and *A. oregonensis* E.G. Simmons appear to be closest species of *A. poaceicola* and unfortunately, no sexual morphs have been reported for those species. *Alternaria poaceicola* is associated with dead stems of *Dactylis glomerata* L., while *A. arbusti* and *A. oregonensis* were reported on *Pyrus pyrifolia* (Burm.) Nak. and *Triticum aestivum* L. respectively (Simmons 1993).

Comoclathris Clem., Gen. fung. (Minneapolis): 37 (1909)

Comoclathris was introduced by Clements (1909) and typified by *Comoclathris lanata* Clem. The genus was referred to *Diademaceae* (Shoemaker & Babcock 1992), but currently accepted in *Pleosporaceae*. However, molecular data for *C. lanata* are not available (Ariyawansa et al. 2015b).

Comoclathris arrhenatheri Thambugala, Camporesi & K.D. Hyde, ***sp. nov.*** Fig. 51

Index Fungorum number: IF552097, *Facesoffungi number*: FoF 03230

Etymology – Named after *Arrhenatherum*, the host genus from which the holotype was collected.

Holotype – MFLU 16–2583

Saprobic on *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C. Presl. **Sexual morph**: *Ascomata* 100–150 diameter × 80–120 µm high ($\bar{x}$ = 128 × 98 µm, n = 5), solitary, scattered or aggregated in small groups, immersed to erumpent, black, elongate, subglobose, covered with pale to dark brown setae, without a distinct ostiole. *Peridium* 10–20 µm wide, comprising few layers of dark brown to black, thick-walled, cells of *textura angularis*; becoming thin-walled and hyaline towards the inner region. *Hamathecium* comprising 1–2 µm wide, filiform, septate, rarely branched pseudoparaphyses, embedded in a gelatinous matrix, extending above the asci. *Asci* (60–)70–95 × 18.5–25 µm ($\bar{x}$ = 82 × 22 µm, n = 25), 8-spored, bitunicate, fissitunicate, cylindro-clavate, short pedicellate, apically rounded, with an ocular chamber. *Ascospores* 16.5–22 × 7.7–10.2 µm ($\bar{x}$ = 19 × 9 µm, n = 40), 1–2-seriate, partially overlapping initially yellowish, 1-septate, becoming yellow to pale brown and muriform, with 4 transverse septa and 2–3 vertical septa, broadly fusiform, with obtuse ends, smooth-walled, surrounded by a thick mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Ascospores germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 20 mm after 24 d at 25 °C, flat to umbonate, surface velvety, with undulate edge, greenish-olivaceous, dense, slightly irregular to filamentous; reverse black to green olivaceous.

Material examined — ITALY, Province of Forlì-Cesena [FC], Passo delle Forche - Galeata, on dead aerial stems of *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C. Presl (*Poaceae*), 2 April 2014, Erio Camporesi IT 1794–2 (MFLU 16–2583, **holotype**); *ibid*. (GZAAS 16–0125, **isotype**), ex-type living culture MFLUCC 15–0465, ICMP 21426; *ibid.*, Santa Sofia, on dead stems of *Dactylis glomerata* L. (*Poaceae*), 29 August 2014, IT 2068 (MFLU 16–2584, **paratype**), living culture MFLUCC 15–0476

Notes — In this study, *Comoclathris arrhenatheri* is introduced as a new species and it is phylogenetically distinct from other *Comoclathris* species (Fig. 44). In the present phylogenetic analysis, strains of *C. arrhenatheri* grouped with other *Comoclathris* species forming a distinct clade with 98% BS support.

Comoclathris italica Tibpromma, Camporesi & K.D. Hyde, Fungal Diversity 80(1): 170 (2014)

Fig. 52

Saprobic on dead stems of *Dactylis glomerata* L. and *Thalictrum* sp. **Sexual morph**: *Ascomata* 180–240 µm high, 200–250 µm diameter ($\bar{x}$ = 199.4 × 217.6 µm, n = 10), semi-immersed to erumpent, solitary, scattered, broadly oblong to flattened, dark brown to black, coriaceous, cupulate when dry. *Peridium* 8–12 µm wide at the base, 15–20 µm wide in sides, comprising 3–4 layers, outer layer heavily pigmented, thin-walled, comprising blackish to dark brown cells of *textura angularis*, inner layer composed of hyaline, thin-walled cells of *textura angularis*. *Hamathecium* comprising numerous, 2.5–3 µm (n = 30) wide, filamentous, branched, septate, pseudoparaphyses. *Asci* 100–120 × 30–35 µm ($\bar{x}$ = 111.3 × 33.1 µm, n = 40), 8-spored, bitunicate, fissitunicate, clavate, short pedicellate, thick-walled at the apex, with a minute ocular chamber. *Ascospores* 30–35 × 10–15 µm ($\bar{x}$ = 31.5 × 12.9 µm, n = 50), overlapping 1–3-seriate, initially 1-septate and hyaline, becoming brown at maturity, muriform, mostly ellipsoidal, 6−8 transversely septate, with 1−2 vertical septa, constricted at the septa, rounded at the ends, surrounded by a thick, hyaline, mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Colonies on PDA reaching 30–35 mm diameter after 21 d, surface pale brown, spreading with moderate aerial mycelium, and even, smooth margins; reverse dirty buff.

Material examined — ITALY, Province of Forlì-Cesena [FC], near Premilcuore, on dead aerial stem of *Dactylis glomerata* L. (*Poaceae*), 27 January 2015, Erio Camporesi IT 2357 (MFLU 16–0243).

Notes — *Comoclathris italica* Tibpromma et al. was introduced by Hyde et al. (2016) and this is the very first report of *C. italica* reported on *Dactylis glomerata* L. Morphological characters plus phylogenetic analysis (Fig. 44) confirmed the identity of the present collection of *C. italica*.

Comoclathris permunda (Cooke) E. Müll., Monogr. Biol. Soc. Pakistan 8: 68 (1979) [1978]

Fig. 53

Basionym: *Sphaeria permunda* Cooke, Grevillea 5(no. 35): 111 (1877)

Facesoffungi number: FoF 03231

Saprobic on dead herbaceous branches. **Sexual morph**: *Ascomata* 150–200 µm high, 150–200 µm diameter ($\bar{x}$ = 168.5 × 160.7 µm, n = 10), semi immersed to erumpent, solitary, scattered, broadly oblong to flattened, dark brown to black, coriaceous, cupulate when dry, with brown to reddish-brown, setae. *Peridium* 8–12 µm wide at the base, 10–15 µm wide in sides, comprising 3–4 layers, outer layer heavily pigmented, thin-walled, comprising blackish to dark brown cells of *textura angularis*, inner layer composed of hyaline, thin-walled cells of *textura angularis*. *Hamathecium* comprising numerous, 2–2.5 µm (n = 30) wide, filamentous, branched, septate, pseudoparaphyses. *Asci* 90–110 × 19–22 µm ($\bar{x}$ = 104.6 × 20.3 µm, n = 40), 8-spored, bitunicate, fissitunicate, cylindric-clavate, with a 20–30 µm long pedicel, thick-walled at the apex, with a minute ocular chamber. *Ascospores* 22–28 × 9–12 µm ($\bar{x}$ = 25.2 × 10.1 µm, n = 50), overlapping 1–2-seriate, muriform, mostly ellipsoidal, 2−4 transversely septate, with 1–2 vertical septa, constricted at the septa, initially hyaline, becoming golden brown at maturity, rounded at the ends, surrounded by a thick, hyaline, mucilaginous sheath. **Asexual morph**: Undetermined.

Culture characteristics — Colonies on PDA reaching 30–35 mm diameter in 21 d, surface dirty white, spreading with moderate aerial mycelium, and even, smooth margins; reverse dirty buff.

Material examined — ITALY, Province of Forlì-Cesena [FC], near Balze - Verghereto, on dead aerial stem of *Phleum pratense* L. (*Poaceae*), 25 July 2014, Erio Camporesi IT 2013 (MFLU

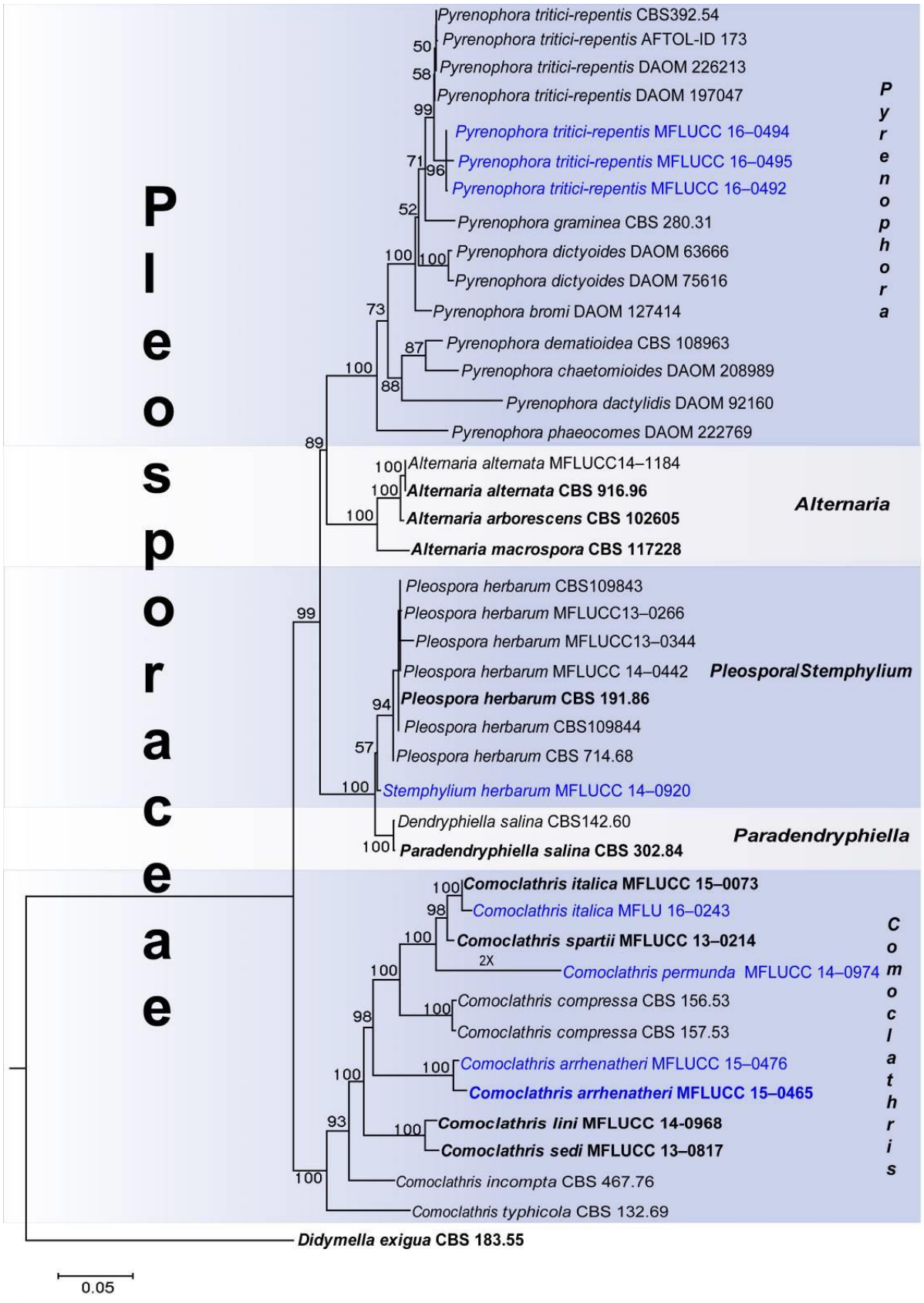

Fig. 44 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU, SSU, ITS, and RPB2 dataset of selected taxa in *Pleosporaceae*. Bootstrap support values equal to or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Didymella exigua*.

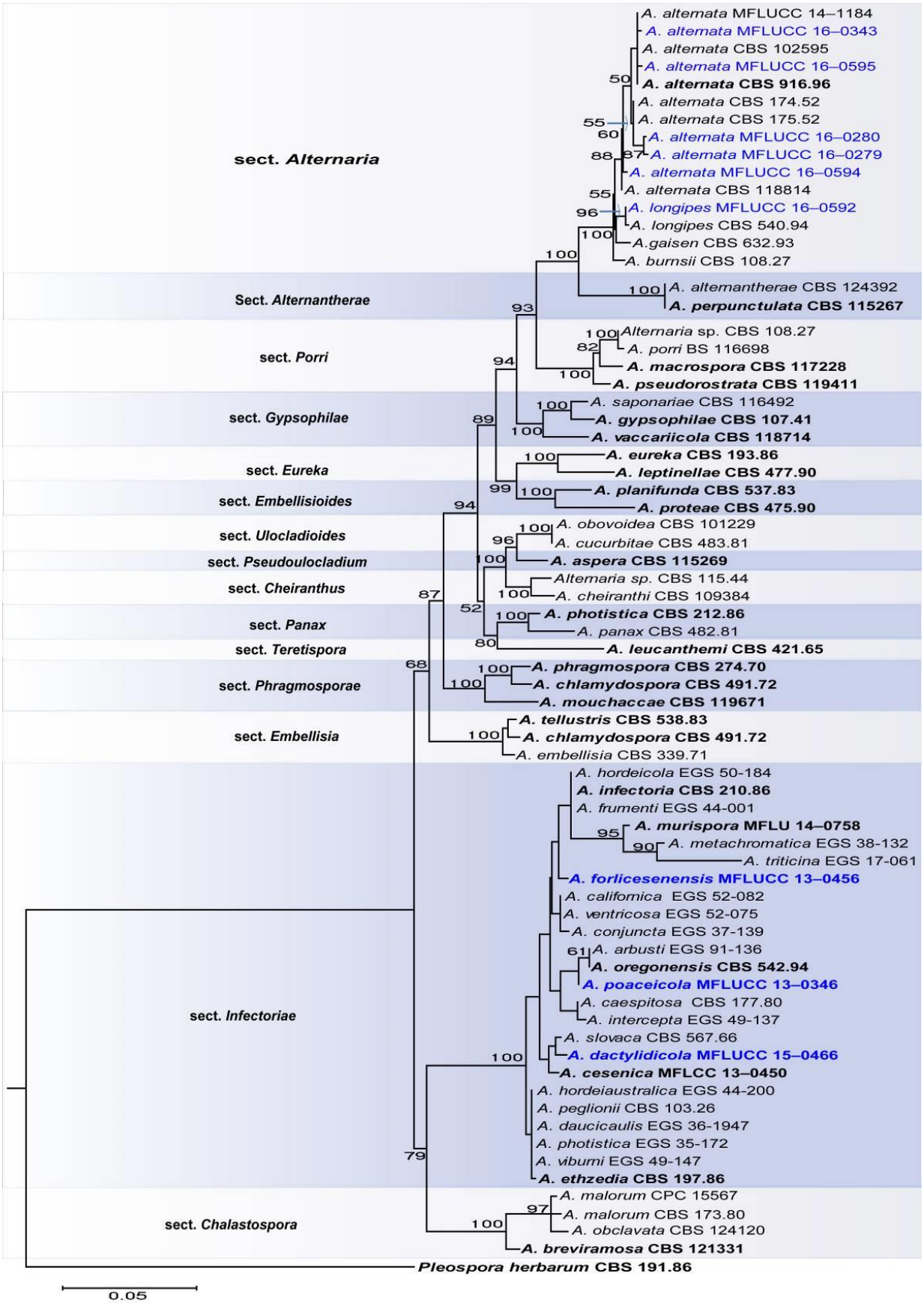

Fig. 45 – Phylogram resulting from maximum likelihood analysis of the combined LSU, ITS, RPB2 and EF1-α sequences of 70 strains representing the *Alternaria* complex. Maximum likelihood bootstrap support values equal to or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Pleospora herbarum*.

Fig. 46 – ***Alternaria alternata*** a–f. on bamboo (MFLU 16–2588). g–m. on *Sorghum bicolor* (MFLU 16–2591). a, g, h. Appearance of colonies and conidiophores on host surface. b, c, i, j. Conidiophores d–f, k–m. Conidia. Scale bars: b, c = 30 µm, d–f = 20 µm, i = 25 µm, j = 50 µm, k–m = 15 µm.

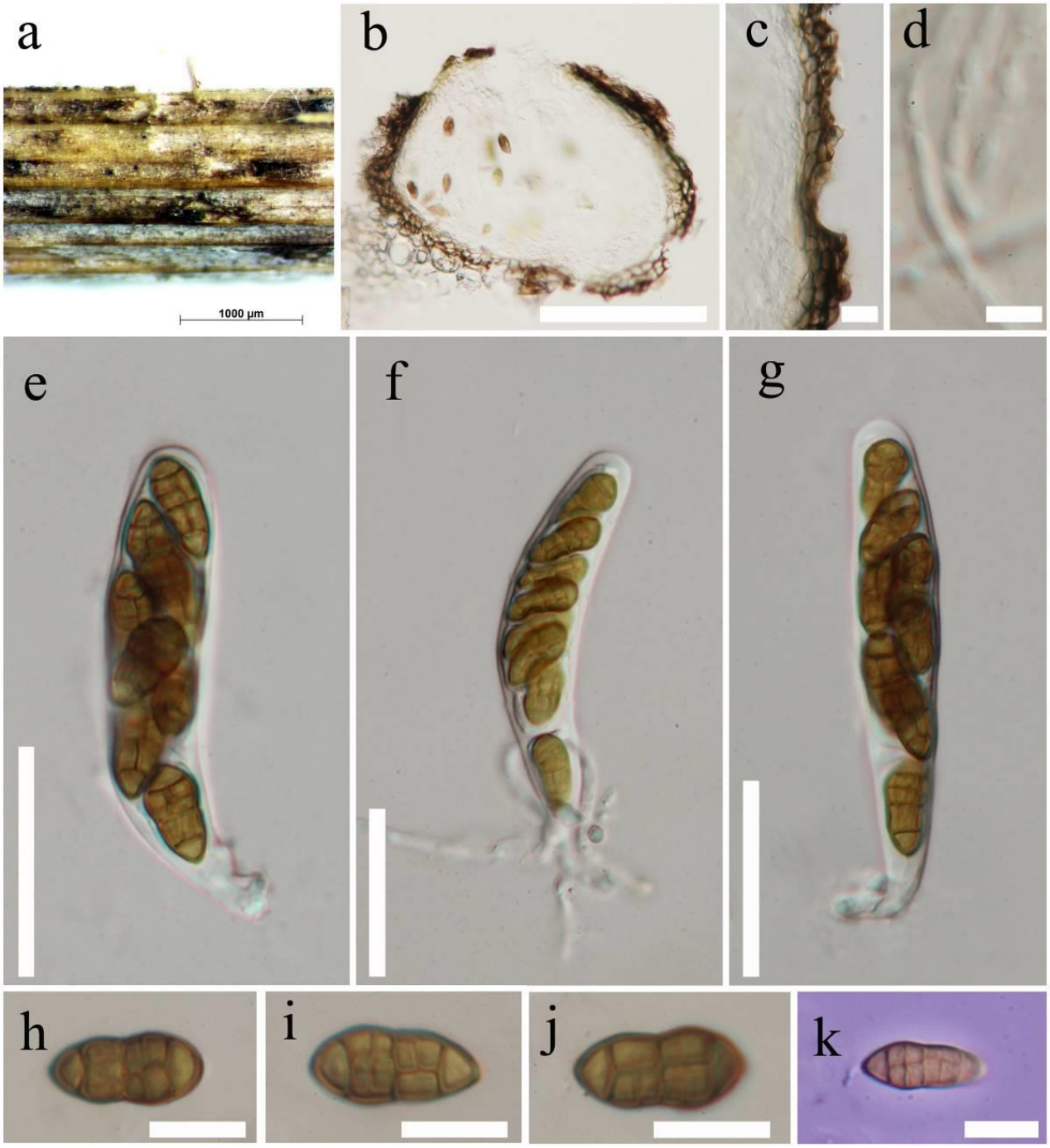

Fig. 47 – ***Alternaria dactylidicola*** (MFLU 15–2622, holotype). a. Appearance of ascomata on the host surface. b. Vertical section through ascoma. c. Peridium. d. Pseudoparaphyses. e–g. Asci h–k. Ascospores. Scale bars: b = 100 µm, c, h–k = 10 µm, d = 5 µm, e–g = 30 µm.

16–0210, GZAAS 16–0156 **reference specimen designated here**), living culture MFLUCC 14–0974, ICMP 21561

Notes — *Comoclathris permunda* (Cooke) E. Müll. was introduced by Müller (1977) and the taxon was reported on different hosts such as soap plant (*Chlorogalum* sp.), oil flax seed (*Linum usitatissimum* L.) and *Amorpha fruticosa* L. in USA (Cooke 1877, Cooke 1983a, Gruzdevienė et al. 2006). We collected a morphologically closely similar species to *C. permunda* (Cooke 1877) in Italy on *Phleum pratense* L. and designate it as a reference specimen. In the phylogenetic analysis, *C. permunda* formed a strongly-supported, distinct clade in the genus *Comoclathris* with 100% bootstrap support (Fig. 44).

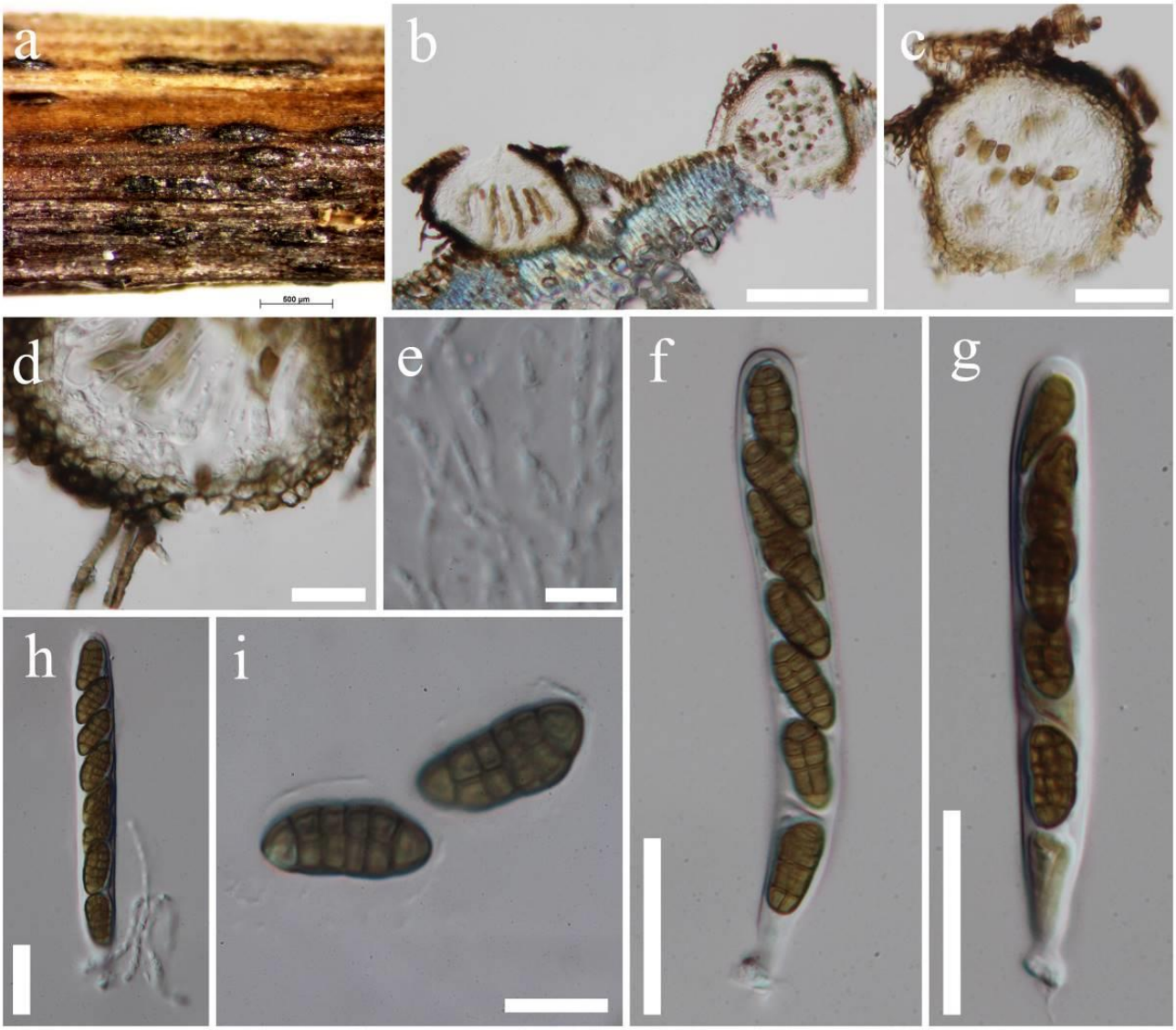

Fig. 48 – ***Alternaria forlicesenensis*** (MFLU 15–0560, holotype). a. Appearance of ascomata on the host surface. b, c. Vertical sections through ascomata. d. Peridium and dark brown setae. e. Pseudoparaphyses. f–h. Asci. i. Ascospores. Scale bars: b = 150 µm, c = 50 µm, d = 25 µm, e, i = 10 µm, f–h = 30 µm.

Pleospora Rabenh. ex Ces. & De Not., Comm. Soc. crittog. Ital. 1(fasc. 4): 217 (1863)

Members of *Pleospora* are saprobic or parasitic on stems and leaves in terrestrial or aquatic habitats. The genus is characterized by immersed, erumpent to superficial ascomata, 8-spored, bitunicate, cylindrical to clavate asci and brown to pale brown, muriform ascospores. *Stemphylium* is the asexual morph of the genus (Ariyawansa et al. 2015b). There are more than 1000 names recorded in Index Fungorum (2017).

Pleospora herbarum (Pers.) Rabenh., Klotzschii Herb. Viv. Mycol.: no. 547 (1854) Fig. 54

Basionym: *Sphaeria herbarum* Pers., Syn. meth. Fung. (Göttingen) 1: 78 (1801)

= *Stemphylium herbarum* E.G. Simmons, Sydowia 38: 291 (1986) [1985]

Saprobic or *parasitic* on stems and leaves. **Sexual morph**: See Ariyawansa et al. (2015b) and Thambugala et al. (2017). **Asexual morph**: Hyphomycetous. *Conidiophores* 40–100 × 3.5–5 ($\bar{x}$ = 69.5× 4.19 µm), macronematous, mononematous, scattered or caespitose, unbranched or branched, straight or flexuous, septate, usually nodose, with a number of vesicular swellings, pale to olivaceous brown, smooth or in part verruculose. *Conidiogenous cells* holoblastic, integrated,

Fig. 49 – ***Alternaria longipes*** (MFLU 16–2595). a. Appearance of conidiophores on host surface. b, c. Conidiophores. d. Developing conidia. e–h. Conidia. Scale bars: b = 50 µm, c–h = 20 µm.

terminal, percurrent, at first clavate or subsphaerical with thin wall at the apex. *Conidia* 15–25 × 10–15 µm ($\bar{x}$ = 20.2 × 12.9 µm, n = 20), solitary, acrogenous, oblong, rounded at the ends, ellipsoidal, obclavate or subsphaerical, dark brown to olivaceous brown, verrucose or echinulate, muriform, often constricted at one or more of the septa.

Culture characteristics — Colonies on PDA reaching 20 mm diameter after 21 d at 16 °C, flat, surface smooth, with entire to slightly undulate edge, white at first, greenish grey to dirty white after 6 weeks, pale white near the margin, moderately dense, circular; reverse dirty green. Hyphae septate branched, hyaline, thin, with chlamydospores, sporulating after 8weeks.

Material examined — ITALY, Province of Forlì-Cesena [FC], Fiumicello – Premilcuore, on dead aerial stem of *Lolium* sp. (*Poaceae*), 6 May 2014, Erio Camporesi IT 682 (MFLU 16–0111), living culture, MFLUCC 14–0920.

Notes — *Stemphylium herbarum* is the sexual morph of *Pleospora herbarum* E.G. Simmons and associated with a wide range of hosts worldwide (Nene et al. 1996, Woudenberg et al. 2013, Thambugala et al. 2017). Our collection of *S. herbarum* grouped with other strains of *P. herbarum* (Fig. 44) and is phylogenetically and morphologically indistinguishable.

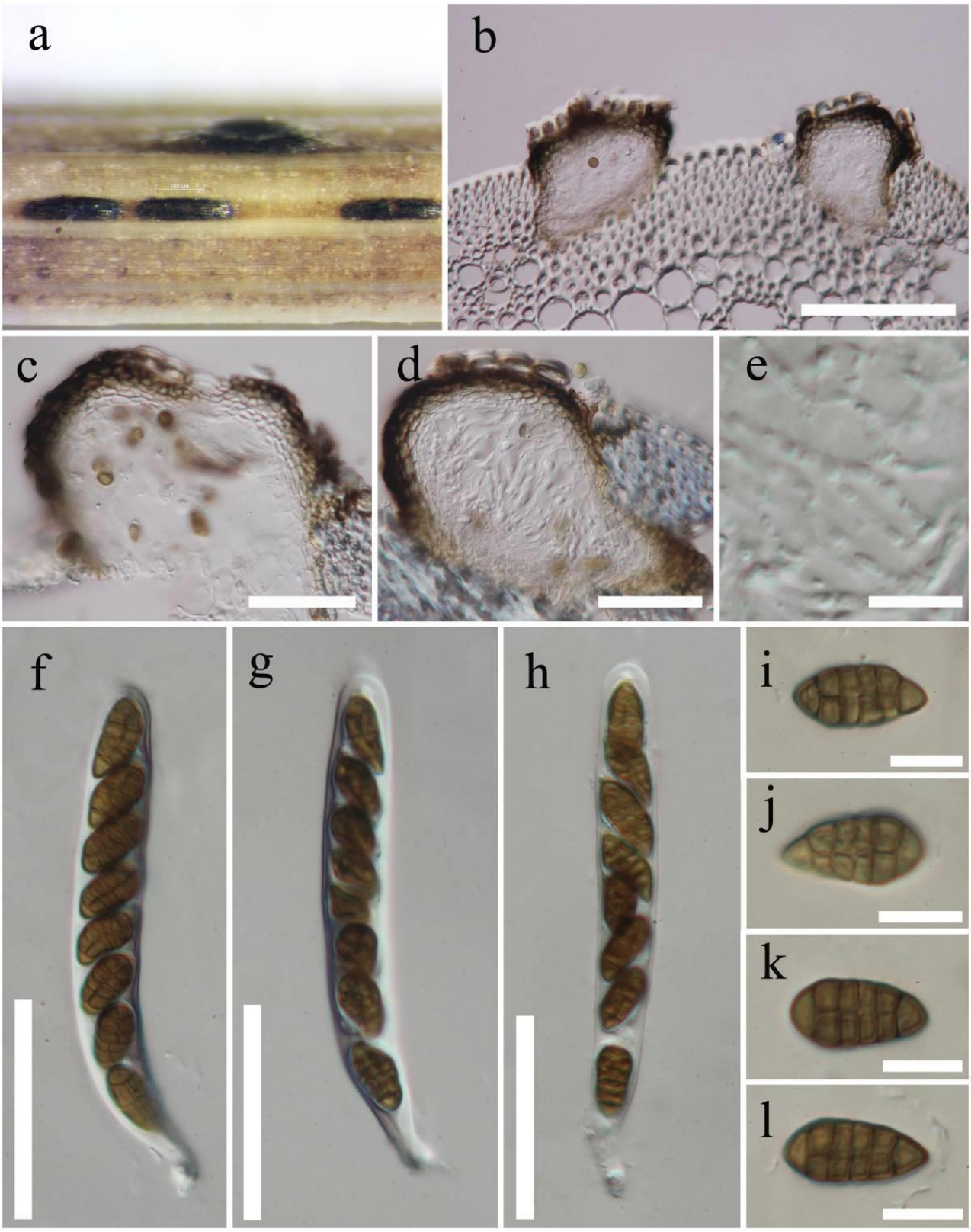

Fig. 50 – ***Alternaria poaceicola*** (MFLU 16–2594, holotype). a. Appearance of ascomata on the host surface. b–d. Vertical sections through ascomata. e. Pseudoparaphyses f–h. Asci. i–l. Ascospores. Scale bars: b = 100 µm, c, d = 50 µm, e, i–l = 10 µm, f–h = 40 µm.

Pyrenophora Fr., Summa veg. Scand., Sectio Post. (Stockholm): 397 (1849)
= *Drechslera* S. Ito, Proc. Imp. Acad. Japan 6: 355 (1930)

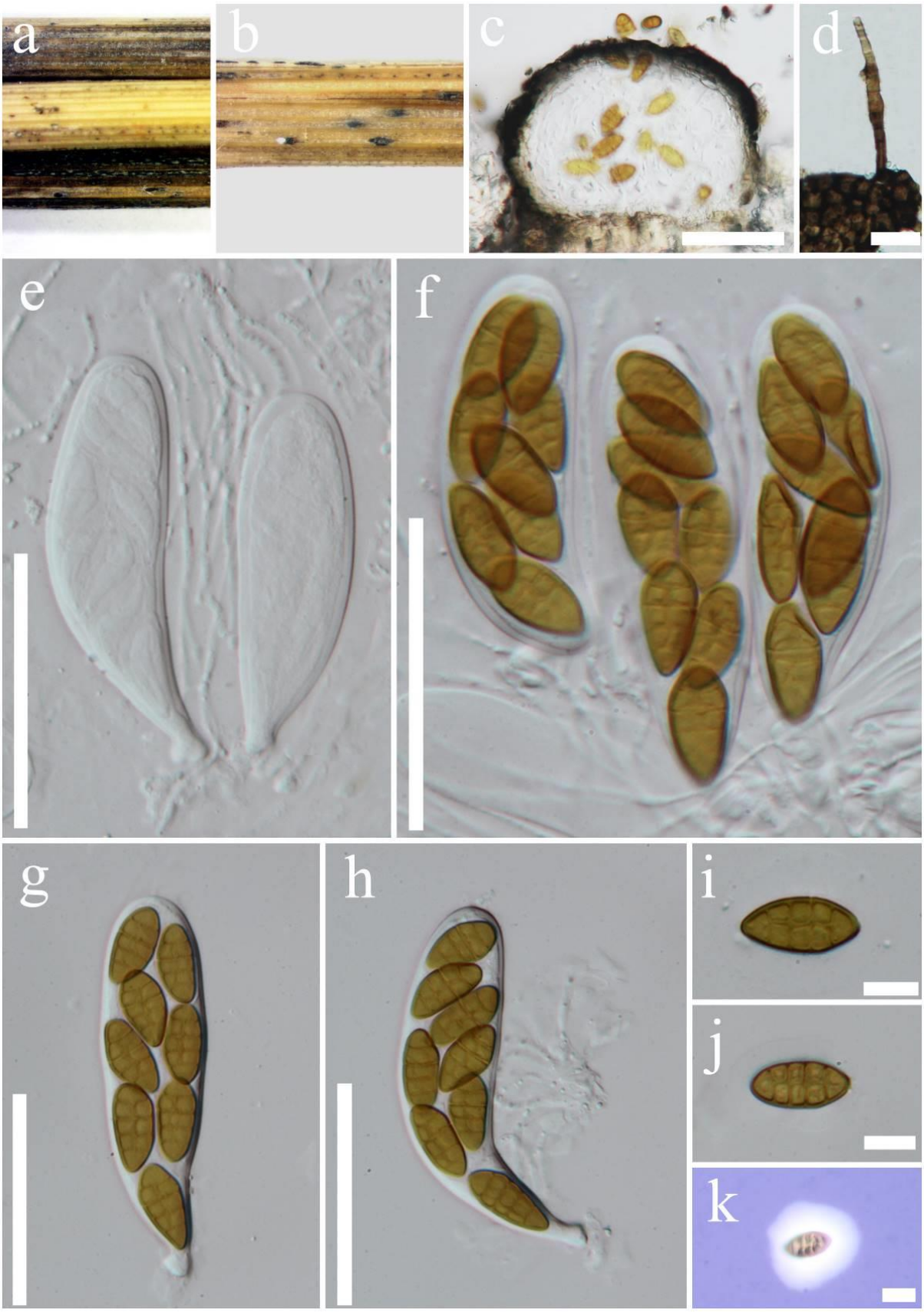

Fig. 51 – ***Comoclathris arrhenatheri*** (MFLU 16–2583, holotype). a, b. Appearance of ascomata on the host surface. c. Vertical section through ascomata. d. Dark brown setae e. Immature asci and pseudoparaphyses f–h. Mature asci i–j Ascospores. k. Ascospore stained in Indian ink to reveal the sheath. Scale bars: c–h = 50 µm, i–k= 10 µm.

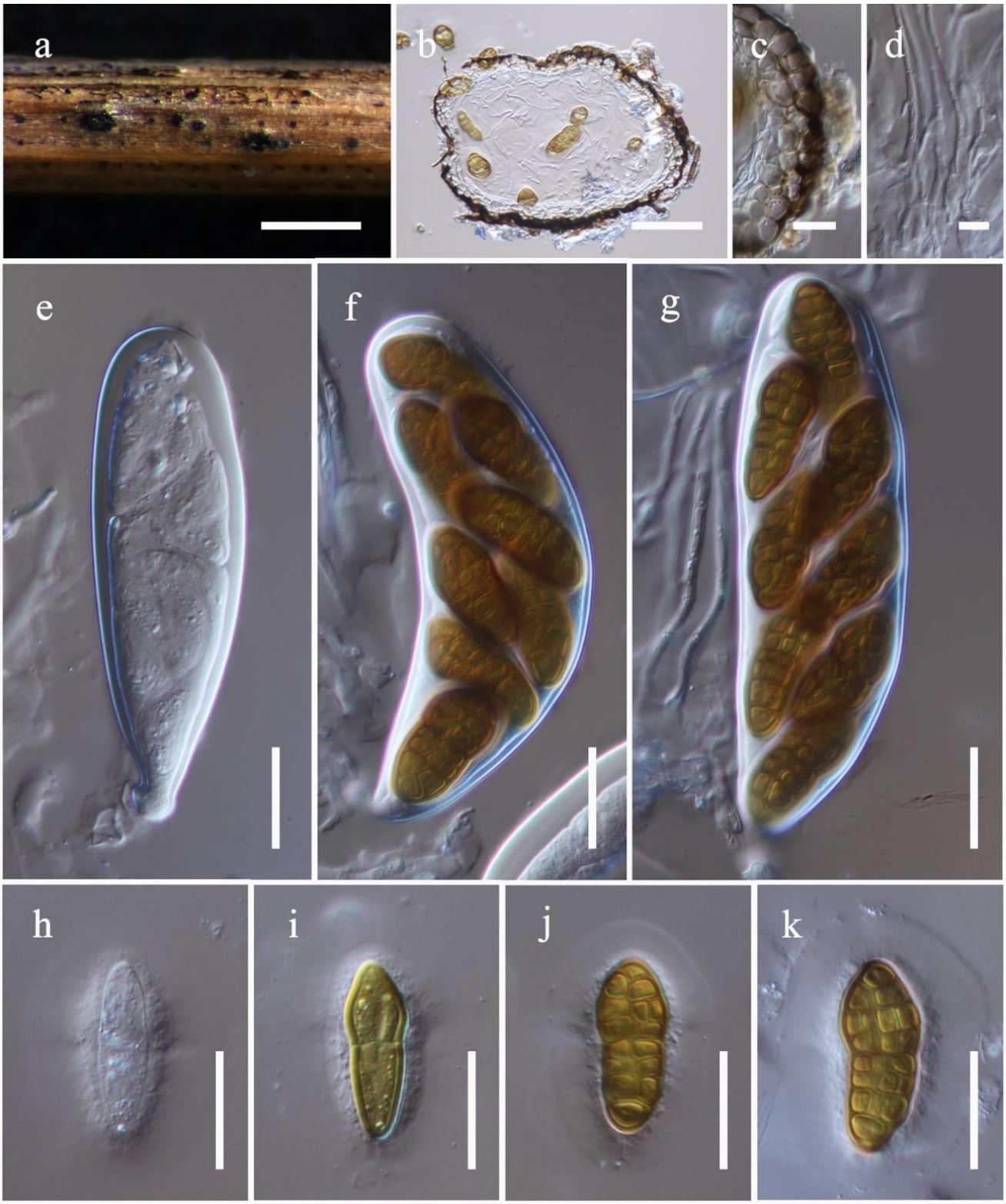

Fig. 52 – ***Comoclathris italica*** (MFLU 16–0243). a. Appearance of ascomata on host surface. b. Section of the ascoma. c. Peridium. d. Pseudoparaphyses. e–g. Asci. h–l. Ascospores. Scale bars: a = 500 µm, b = 50 µm, c, d = 10 µm, e–k = 20 µm.

Pyrenophora species cause disease on many graminicolous hosts and some *Pyrenophora* species have been used as biocontrol agents (Faris et al. 1996, Ariyawansa et al. 2014b). Species have erumpent to near superficial ascomata covered with brown to reddish-brown setae, bitunicate, clavate to sub-cylindrical asci and muriform ascospores surrounded by a mucilaginous sheath. *Pyrenophora* has been linked to asexual morphs in *Drechslera* (Ariyawansa et al. 2014b, Ariyawansa et al. 2015b).

Pyrenophora tritici-repentis (Died.) Drechsler, J. Agric. Res., Washington 24(8): 667 (1923) Fig. 55

Basionym: *Pleospora tritici-repentis* Died., Centbl. Bakt. ParasitKde, Abt. I 11: 56 (1903)

Facesoffungi number: FoF 03232

Saprobic on dead stems of grasses. **Sexual morph**: *Ascomata* 420–525 diameter × 430–510 μm high ($\bar{x}$ = 482 × 472 μm, n = 5), solitary or scattered, erumpent to near superficial, globose to subglobose, coriaceous, ostiolate. *Ostiole* usually broadly papillate, central ostiolar canal filled with periphyses and covered with short, brown to reddish-brown, setae. *Peridium* 55–135 μm wide, comprising two types of cell layers, outer layer comprising heavily pigmented, thick-walled cells of *textura angularis*, inner layer composed of 5–7 rows of lightly pigmented to hyaline, thick-walled, cells of *textura angularis*, becoming thin-walled and flattened towards the inner layers. *Hamathecium* comprising 2–3 μm wide, filiform, septate, rarely branched pseudoparaphyses. *Asci* 160–235 × (45–)50–65 μm ($\bar{x}$ = 194 × 54 μm, n = 15), 8-spored, bitunicate, fissitunicate, clavate to subcylindrical, with a short, broad pedicel or sessile, thickened and rounded at apex with a distinct ocular chamber surrounded by a large, distinct, apical ring. *Ascospores* 42–54 × 16–20.5 μm ($\bar{x}$ = 48 × 18 μm, n = 35), partially overlapping 2-seriate, ellipsoidal with broadly rounded ends, hyaline to pale brown when immature, becoming yellowish brown when mature, muriform with 3 transverse septa, and 1–2 longitudinal septa, constricted at the septa, smooth-walled, surrounded by a thick mucilaginous sheath. **Asexual morph**: *see notes*.

Culture characteristics — Conidia germinating on PDA within 24 h and germ tubes produced from several cells. Colonies growing on PDA, reaching a diameter of 50 mm after 7 d at 25 °C, flat to slightly umbonate, surface smooth to velvety, with filiform edge, greenish olivaceous to brown, moderately dense, circular to filamentous; reverse brown olivaceous to black.

Material examined — RUSSIA, Rostov region, Shakhty city, shore meadow near Grushevsky pond, on dead stems of *Poa pratensis L.* (*Poaceae*), 12 May 2015, Timur Bulgakov T-298 (MFLU 16–2585), living culture MFLUCC 16–0494, ICMP 21428; *ibid.*, Solyonaya Balka (Salty gully), on dead stem of *Bromus tectorum* L., 1 May 2015, Timur Bulgakov, T-210 (MFLU 16–2586), living culture MFLUCC 16–0495, ICMP 21405; *ibid.*, Oktyabrsky District, Persianovsky settlement, on dead stems of *Elymus repens* (L.) Gould, 28 April 2015, Timur Bulgakov T-211 (MFLU 16–2587), living culture MFLUCC 16–0492.

Notes – *Pyrenophora tritici-repentis* (*Drechslera tritici-repentis* (Died.) Shoemaker) is commonly known as the causal agent of tan spot of wheat with a worldwide distribution (Ballance et al. 1989, Lamari & Bernier 1989) and *Pyrenophora* has *Drechslera* asexual morph. In this study, we collected the sexual morph of the fungus on three different graminicolous host (*Poa pratensis L.*, *Bromus tectorum* L. and *Elymus repens* (L.) Gould), in Russia.

Roussoellaceae J.K. Liu, R. Phookamsak, D.Q. Dai & K.D. Hyde, Phytotaxa 181: 7 (2014)

The family was introduced by Liu et al. (2014) to accommodate *Roussoella* Sacc., *Neoroussoella* J.K. Liu et al., and *Roussoellopsis* I. Hino & Katum. The members of this family are widely distributed on bamboo and palm hosts and characterized by semi-immersed or immersed ascostromata, forming under darkened, lightly raised, somewhat linear or dome-shaped areas, 4–8-spored, bitunicate asci with septate, brown to dark brown ascospores. The asexual morphs of the family are linked to *Cytoplea* and *Melanconiopsis* or "neomelanconium"-like species (Liu et al. 2014, Dai et al. 2017).

Roussoella Sacc., in Saccardo & Paoletti, Atti Inst. Veneto Sci. lett., ed Arti, Sér. 6 6: 410 (1888)

Currently 39 species epithets are listed in Index Fungorum (2017) and a new asexual species is described here based on morphological characters and phylogeny.

Roussoella doimaesalongensis Thambugala & K.D. Hyde, ***sp. nov.*** Fig. 57

Index Fungorum number: IF553169, *Facesoffungi number*: FoF 03233

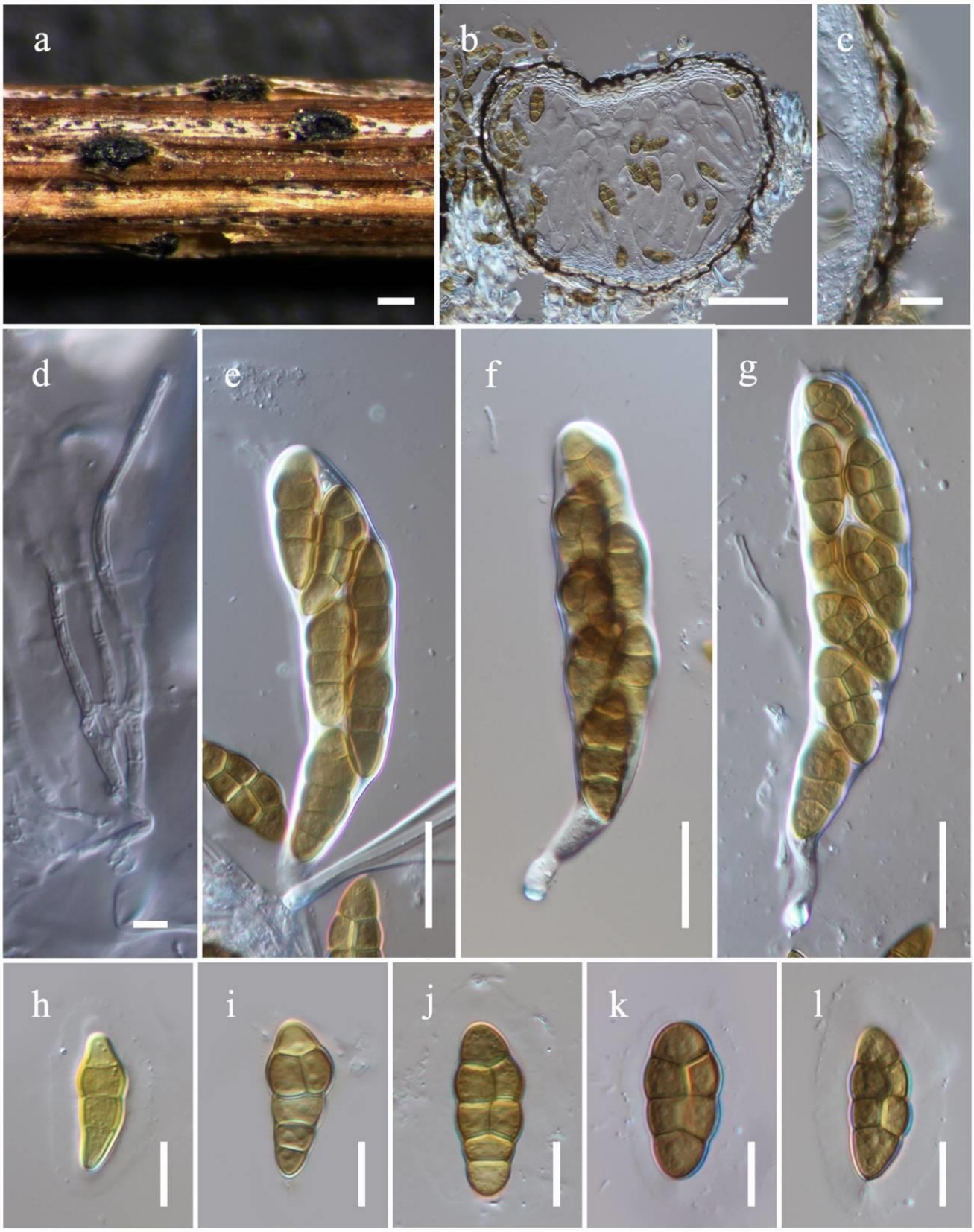

Fig. 53 – ***Comoclathris permunda*** (MFLU 16–0210). a. Appearance of ascomata on host surface. b. Vertical section through ascoma. c. Section of the peridium cells. d. Pseudoparaphyses. e–g. Asci h–l. Ascospores. Scale bars: a = 200 µm, b = 50 µm, c = 10 µm, d = 5 µm, e–g = 20 µm, h–l = 10 µm.

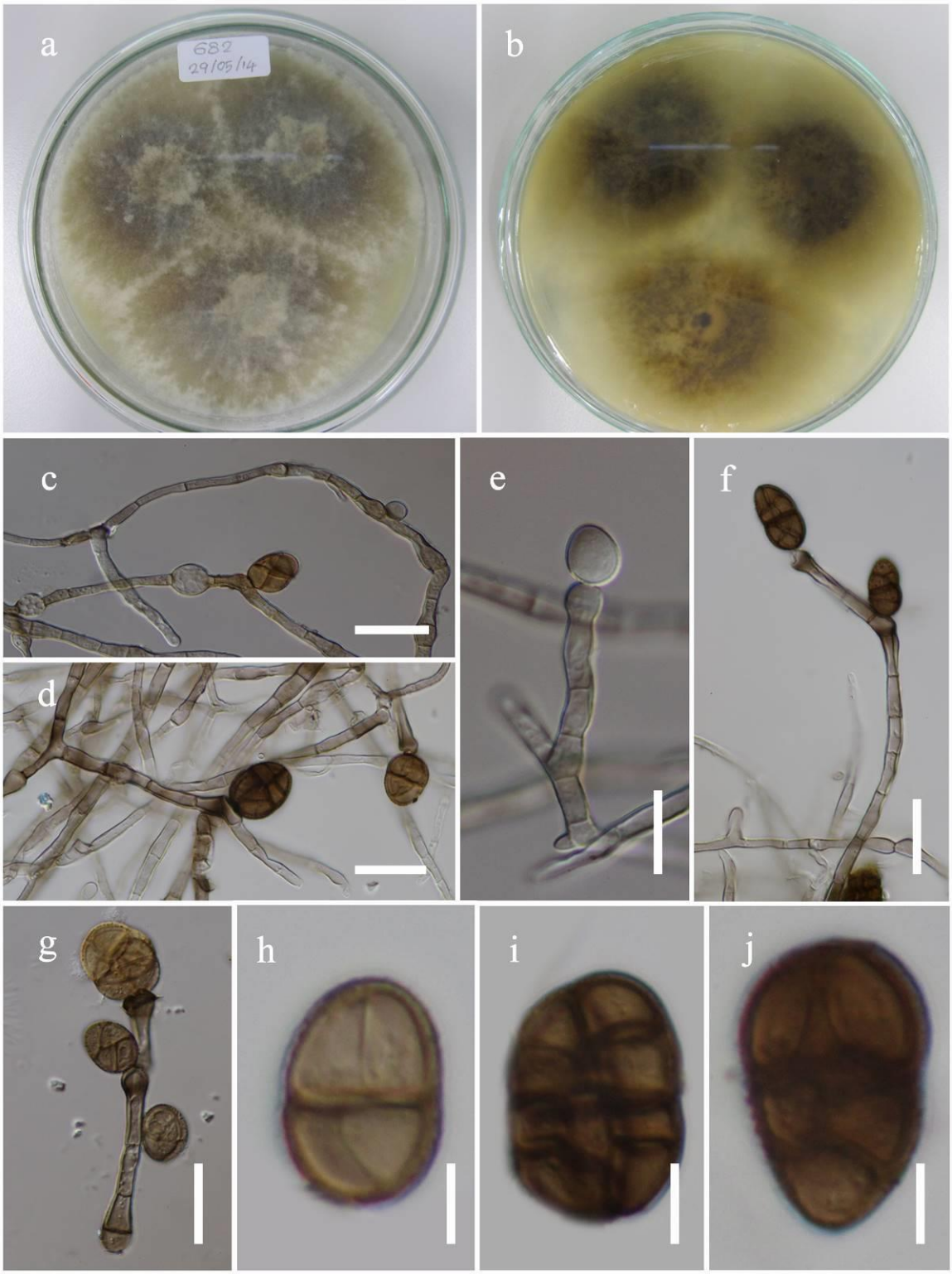

Fig. 54 – ***Pleospora herbarum/ Stemphylium herbarum*** (from MFLUCC 14–0920). a, b. Colonies on PDA. c–g. Conidiophores and developing conidia. h–j. Conidia. Scale bars: c–g = 20 µm, h–j = 5 µm.

Etymology – Referring to the region Doi Mae Salong (Thailand), where the species was encountered.
Holotype – MFLU 16–2596

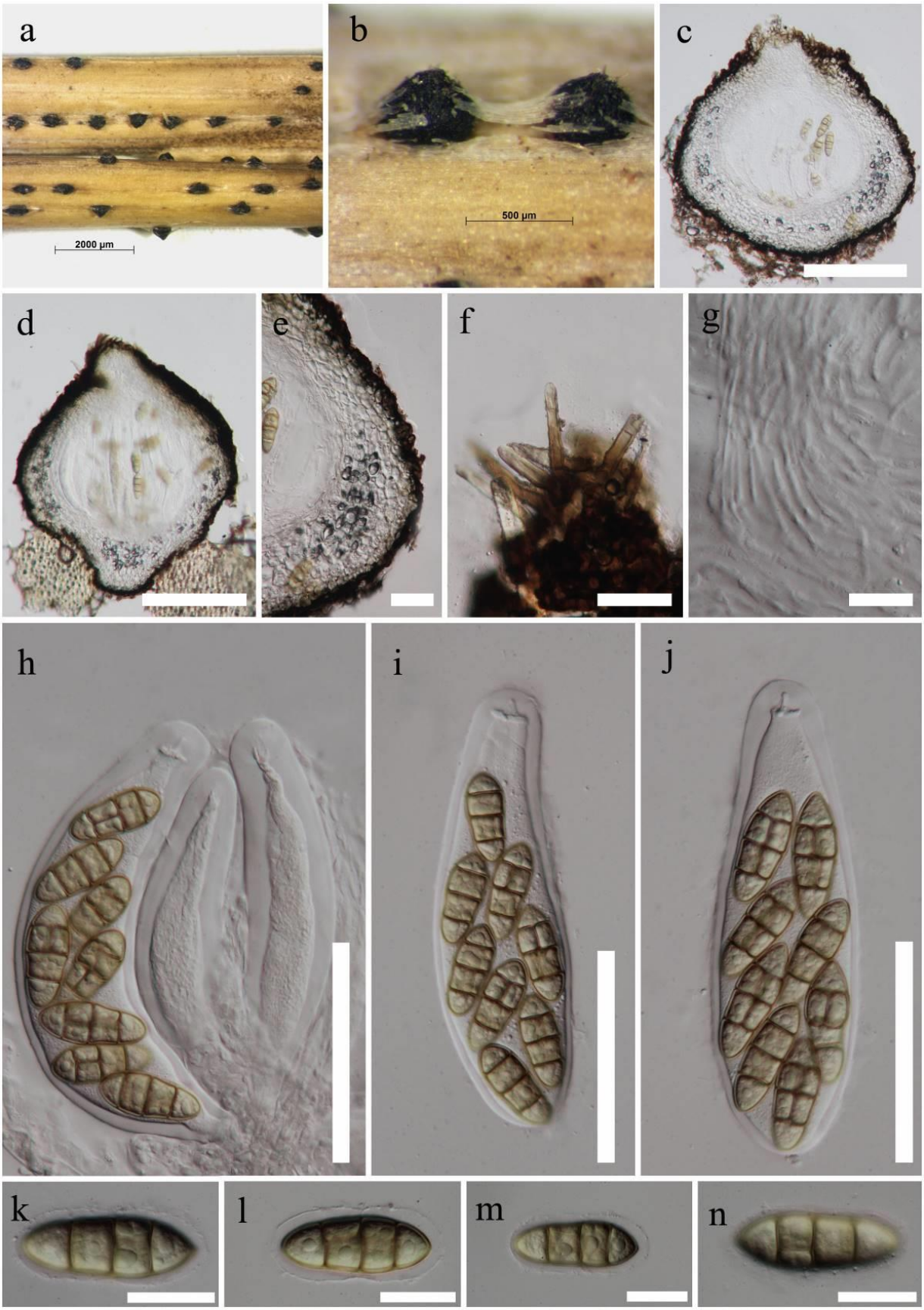

Fig. 55 – ***Pyrenophora tritici-repentis*** (MFLU 16–2585). a, b. Appearance of ascomata on the host surface. c, d. Vertical sections through ascomata. e. Peridium f. Dark brown setae. g. Pseudoparaphyses. h–j. Mature and immature asci. k–n. Ascospores. Scale bars: c, d = 200 µm, e, f = 50 µm, g = 20 µm, h–j = 100 µm, k–n = 25 µm.

Saprobic on decaying bamboo culms. **Sexual morph**: Undetermined. **Asexual morph**: *Conidiomata* 95–175 µm diameter × 90–175 µm high ($\bar{x}$ = 127 × 128 µm, n = 20), superficial on toothpick in culture, pycnidial, globose to subglobose, scattered or gregarious, ostiolate. *Conidiomatal wall* up to 20 µm wide, composed of 4–5 layers of cells of lightly pigmented to dark brown cells of *textura angularis*. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* 3.2–4.6 × 3.2–5.3 µm ($\bar{x}$ = 3.5 × 4.3 µm, n = 15), lining the inner wall layer of the pycnidium, holoblastic, subcylindrical to ampulliform, hyaline, smooth. *Conidia* (2–)3–4.4(–5.6) × 1.6 –2.5 µm ($\bar{x}$ = 3.6 × 2 µm, n = 50), subglobose to oblong or ellipsoidal, initially hyaline, becoming light brown to yellowish brown, aseptate with two guttules, smooth-walled.

Culture characteristics — Conidia germinating on PDA within 18 h. Colonies growing on PDA, reaching a diameter of 23 mm after 7 d at 25 °C, flat to slightly umbonate, surface velvety, with entire edge, grey, white near the margin, dense, circular; reverse grayish black.

Material examined — THAILAND, Chiang Rai Province, Doi Mae Salong, on dead Bamboo branches, 17 July 2014, K.M. Thambugala KM 015 (MFLU 16–2596, **holotype**); *ibid*. (GZAAS 16–0127, **isotype**), ex-type living culture MFLUCC 14–0584, ICMP 21416.

Notes – *Roussoella doimaesalongensis* is described here as a new species from dead bamboo branches. Only the asexual morph is known for *Roussoella doimaesalongensis*. This species shows the typical morphological characters of the asexual morphs of *Roussoella* species (Liu et al. 2014, Dai et al. 2017), while the results of the present phylogenetic analysis (Fig. 56) provide robust evidence that *R. doimaesalongensis* is a new species.

Roussoella scabrispora (Höhn.) Aptroot, Nova Hedwigia 60: 368. 1995 Fig. 58

≡ *Didymosphaeria scabrispora* Höhn., Sber. Akad. Wiss. Wien, Math. Nat 118: 1501. 1909

Facesoffungi number: FoF 03234

Saprobic on decaying bamboo culms or palms branches. **Sexual morph:** *Ascostromata* 2−2.5 mm diameter, solitary to gregarious, immersed under a clypeus, black, partially erumpent, uniloculate, carbonaceous. *Locules* subglobose to conical, with a flattened base, ostiolate. *Peridium* up to 15 µm wide, composed of dark brown to lightly pigmented cells of *textura angularis* to *textura prismatica*, fusing at the outside with the host cells. *Hamathecium* comprising 1−2 µm wide, numerous, anastomosing, aseptate, cellular pseudoparaphyses, embedded in a gelatinous matrix. *Asci* (150−)180−215(−230) × 10.5−12.5 µm ($\bar{x}$ = 197 × 11.2 µm, n = 20), 8-spored, bitunicate, cylindrical, with a short knob-like pedicel, apically rounded with an ocular chamber. *Ascospores* 25−33 × 7−10 µm ($\bar{x}$ = 28 × 8.4 µm, n = 35), partially overlapping 1-seriate, ellipsoid to broad fusiform, with rounded ends, 2-celled, constricted at the septum, with a reticulate spore wall ornamentation. **Asexual morph**: Undetermined.

Culture characteristics — Conidia germinating on PDA within 18 h and germ tubes produced from one or both cells. Colonies growing on PDA, reaching a diameter of 25 mm after 7 d at 25 °C, flat to slightly umbonate, surface smooth to velvety, with entire to slightly undulate edge, white to grey, moderately dense, circular to filamentous; reverse olivaceous grey to black.

Material examined – THAILAND, Chiang Rai Province, Doi Mae Salong, on dead Bamboo culms, 17 July 2014, K.M. Thambugala KM 010 (MFLU 16–2597), living culture MFLUCC 14–0582, ICMP 21406.

Notes – *Roussoella scabrispora* is a bamboo-inhabiting ascomycete widely distributed in Asia (Hyde et al. 1997, Höhnel 1909, Liu et al. 2014). This could possibly be a species of *Roussoellopsis* and no asexual morph has been reported so far (Liu et al. 2014).

Sporormiaceae Munk, Dansk bot. Ark. 17(no. 1): 450 (1957)

The members of the family *Sporormiaceae* are mainly saprobic on dung, plant debris, soil and wood. Presently, nine genera are accepted in the family (Hyde et al. 2013, Phukhamsakda et al. 2016).

Sparticola Phukhams., Ariyaw., Camporesi & K.D. Hyde, in Phukhamsakda et al., Cryptog. Mycol. 37(1): 84 (2016).

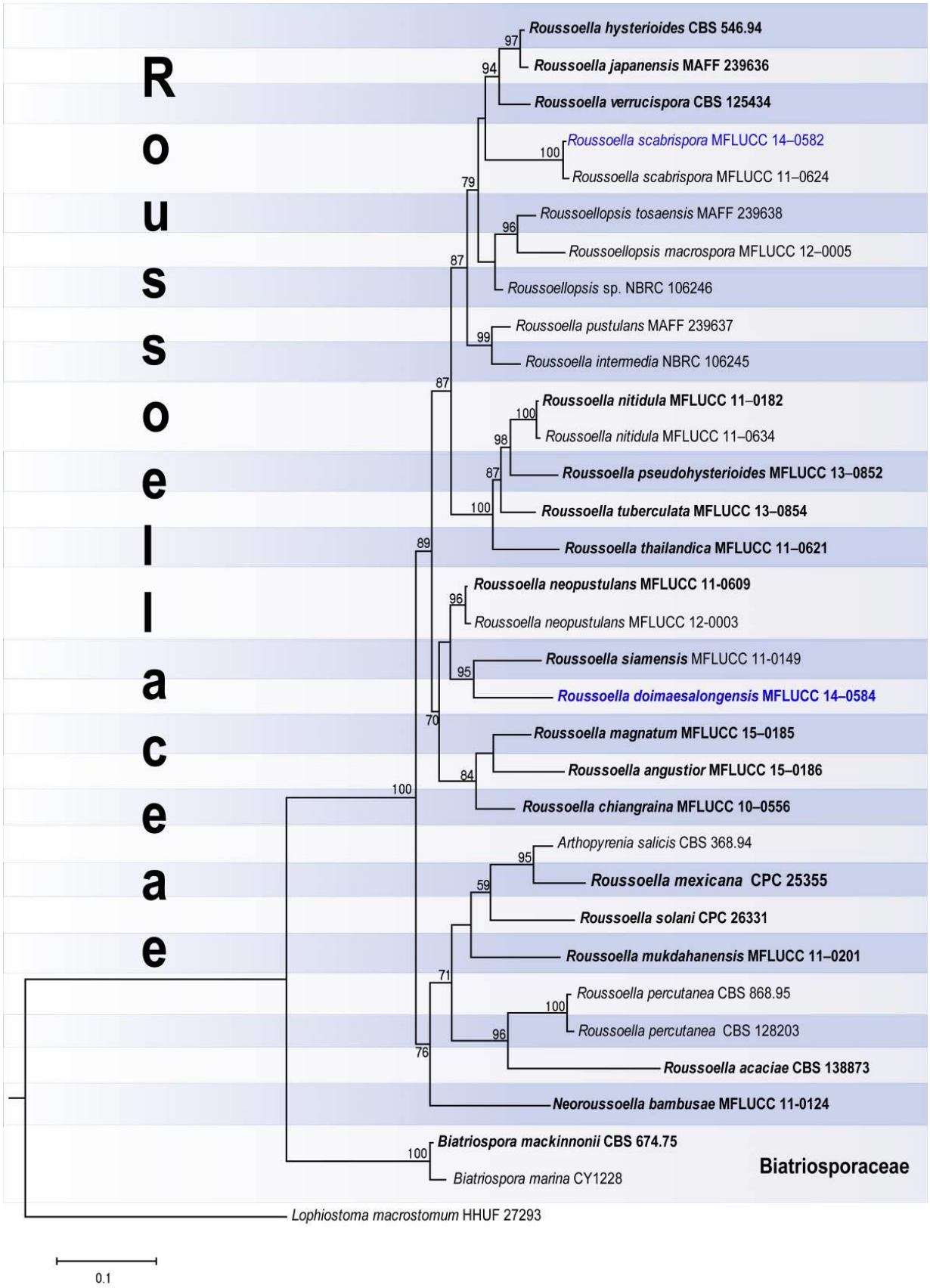

Fig. 56 – Phylogram resulting from maximum likelihood (RAxML) analysis of a combined LSU, ITS, EF1-α and RPB2 dataset of *Roussoellaceae* and *Biatriosporaceae*. Bootstrap support values equal to or greater than 50 % are given above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Lophiostoma macrostomum*.

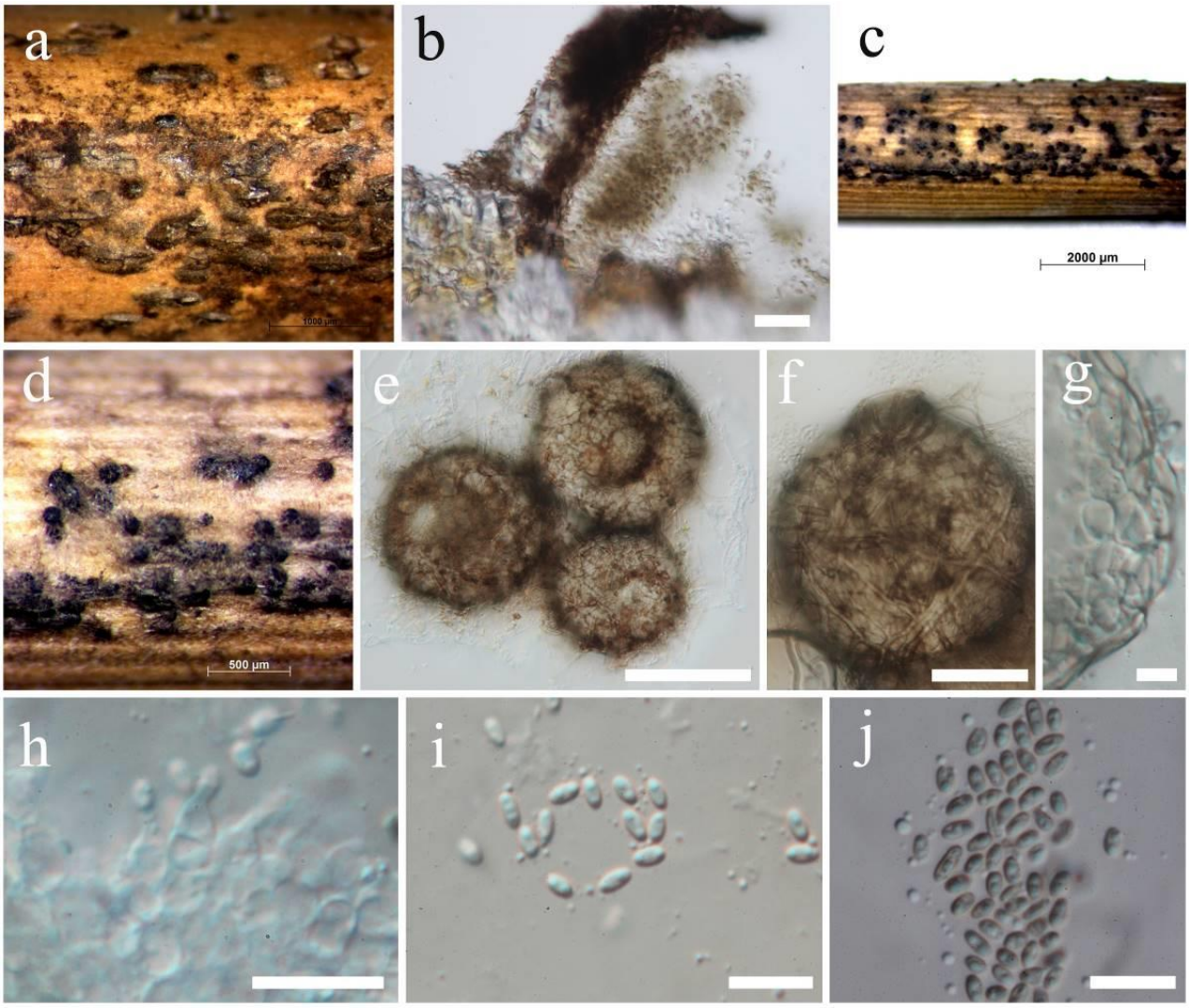

Fig. 57 – ***Roussoella doimaesalongensis*** (MFLU 16–2596, holotype). a. Appearance of conidiomatal on host surface b. Conidiomata wall. c, d Conidiomata formed on a toothpick. e, f. Squash mount of conidiomata. g. Conidiomatal wall. h. Conidiogenous cells and developing conidia. i, j. Conidia. Scale bars: b = 20 µm, e = 100 µm, f = 50 µm g = 5 µm, h–j = 10 µm.

Sparticola was introduced by Phukhamsakda et al. (2016) to accommodate three ascomycetous fungal species occurring on *Spartium junceum* L. (*Fabaceae*). The genus is characterized by immersed, ostiolate ascomata, 8-spored, bitunicate, short pedicellate asci, yellowish, 3-transversely septate ascospores and hyphomycetous asexual morph with dictyosporous, coiled, involute, brown conidia.

Sparticola junci Phukhamsakda, Camporesi & K.D. Hyde, in Phukhamsakda et al., Cryptog. Mycol. 37(1): 87 (2016) Fig. 60

Saprobic on dead *Spartium junceum* L. and *Anthoxanthum odoratum* L. **Sexual morph**: *Ascomata* 150–220 µm high, 150–200 µm diameter ($\bar{x}$ = 180.4 × 172.9 µm, n = 10), immersed to semi-erumpent, solitary, scattered, globose to subglobose, dark brown to black, coriaceous. *Peridium* 8–12 µm wide at the base, 15–20 µm wide in sides, comprising 3–4 layers, outer layer heavily pigmented, thin-walled, comprising blackish to dark brown cells of *textura angularis*, inner layer composed of hyaline, thin-walled cells of *textura angularis*. *Hamathecium* comprising numerous, 2.5–3 µm (n = 30) wide, filamentous, branched, septate, pseudoparaphyses. *Asci* 110–130 × 20–25 µm ($\bar{x}$ = 117.6 × 22.8 µm, n = 40), 8-spored, bitunicate, fissitunicate, cylindrical to cylindric-clavate, short pedicellate, thick-walled at the apex, with a minute ocular chamber. *Ascospores* 22–24 × 9–11 µm ($\bar{x}$ = 23.1 × 9.9 µm, n = 50), overlapping 2-seriate, fusiform,

ellipsoidal, 2−3 septate, slightly constricted at the septa, initially hyaline, becoming golden brown at maturity, pointed at upper end and rounded at the lower end, surrounded by a thick, hyaline, mucilaginous sheath. **Asexual morph:** See Phukhamsakda et al. (2016).

Culture characteristics — Colonies on PDA reaching 30–35 mm diameter after 21 d, greenish grey centre and dark brown periphery, spreading with moderate aerial mycelium, and even, smooth margins; reverse dirty blackish brown.

Material examined — ITALY, Province of Forlì-Cesena [FC], on dead aerial stem of *Anthoxanthum odoratum* L. (*Poaceae*), 27 January 2015, Erio Camporesi IT 2354 (MFLU 16–0242)

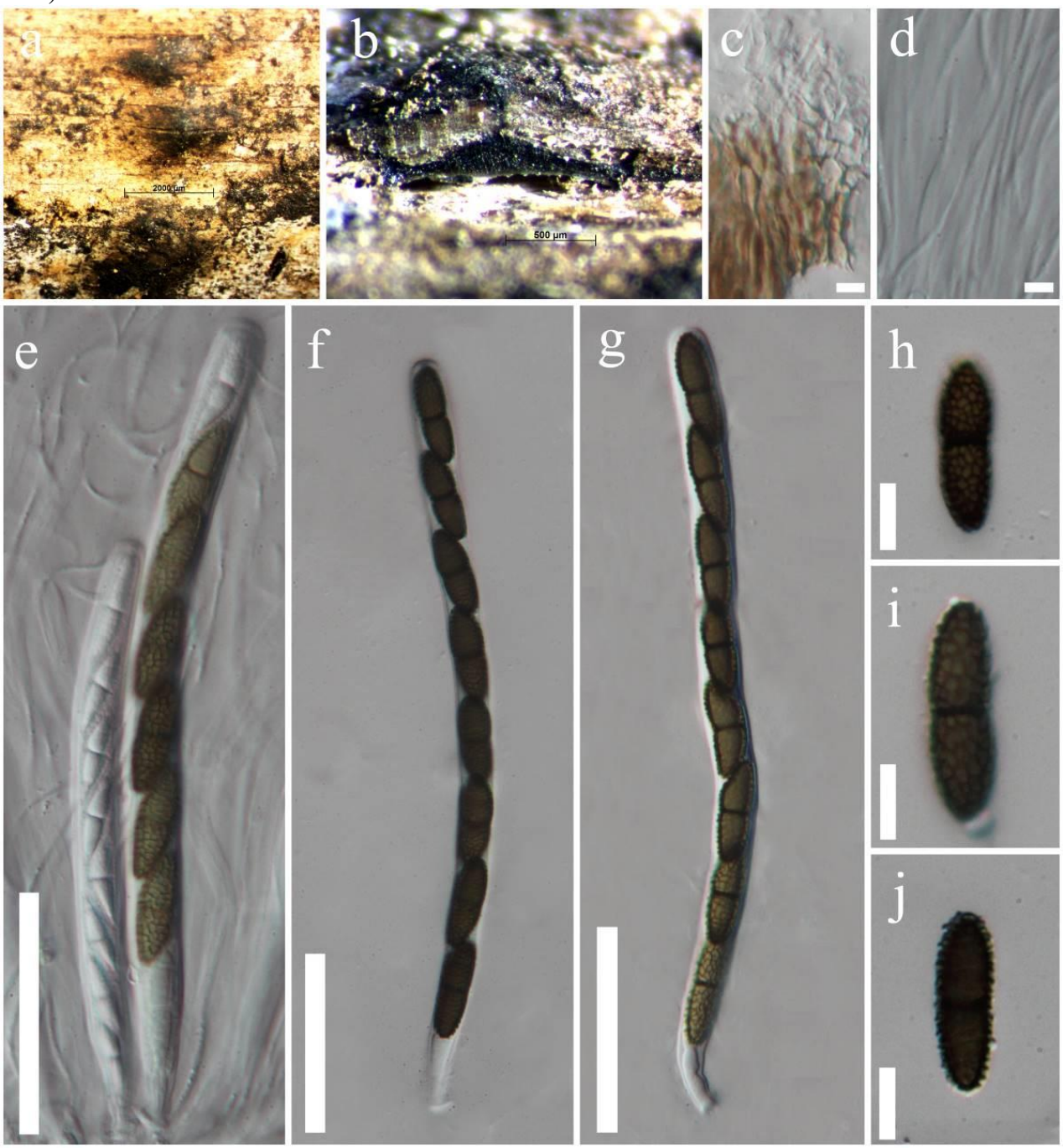

Fig. 58 – ***Roussoella scabrispora*** (MFLU 16–2597). a. Ascostromata on a bamboo culm. b. Vertical section through ascostroma. c. Peridium. d. Pseudoparaphyses. e–g. Asci. h−j. Ascospores with reticulate ornamentation. Scale bars: c, d = 5 µm, e–g = 50 µm, h−j =10 µm.

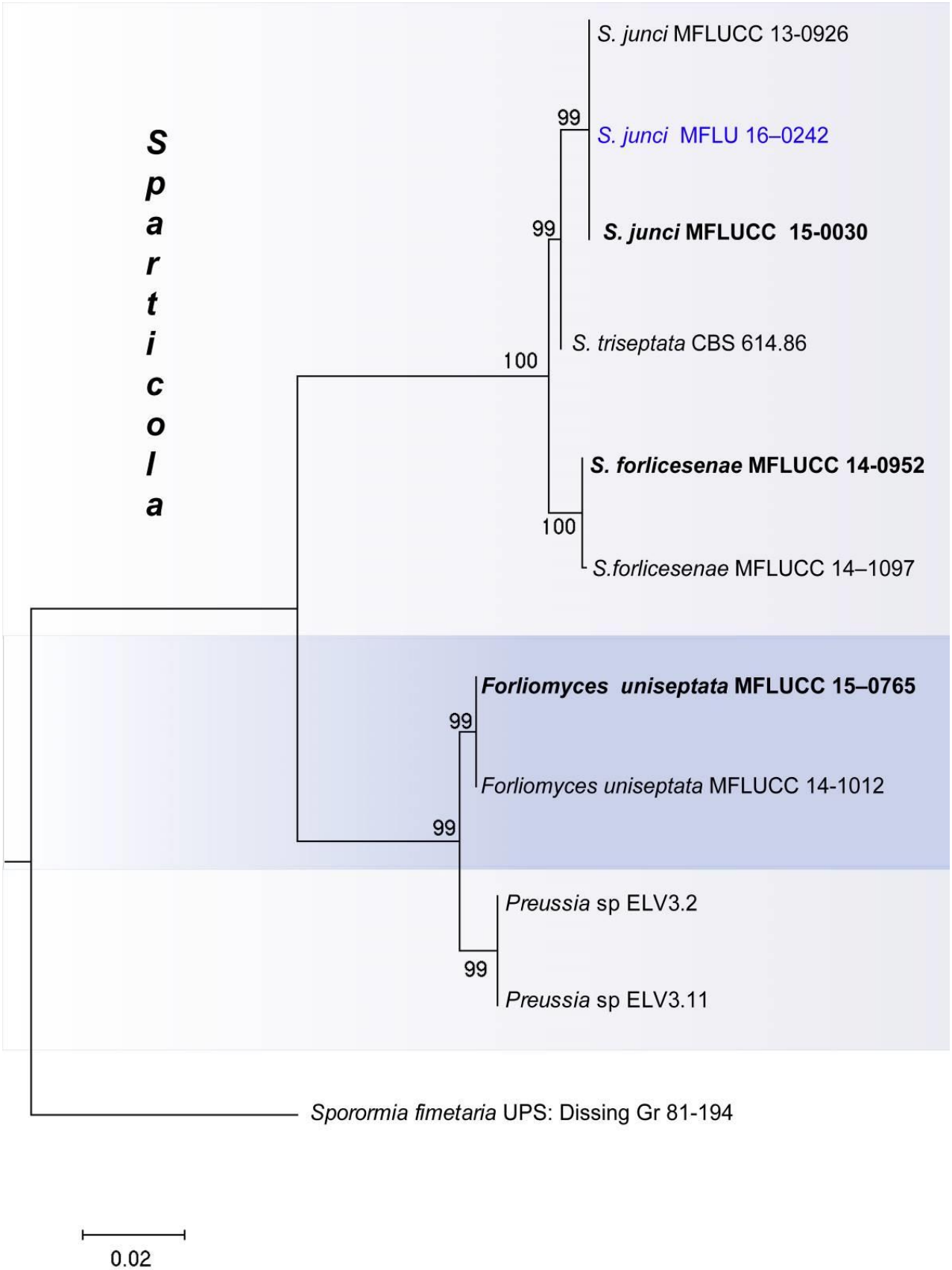

Fig. 59 – Phylogram resulting from maximum likelihood analysis of the combined LSU and ITS sequences of the genus *Sparticola* and allied taxa in *Sporormiaceae*. Maximum likelihood bootstrap support values equal to or greater than 50 % are indicated above or below the nodes. The ex-type strains are in bold and the new isolates are in blue. The tree is rooted to *Sporormia fimetaria*.

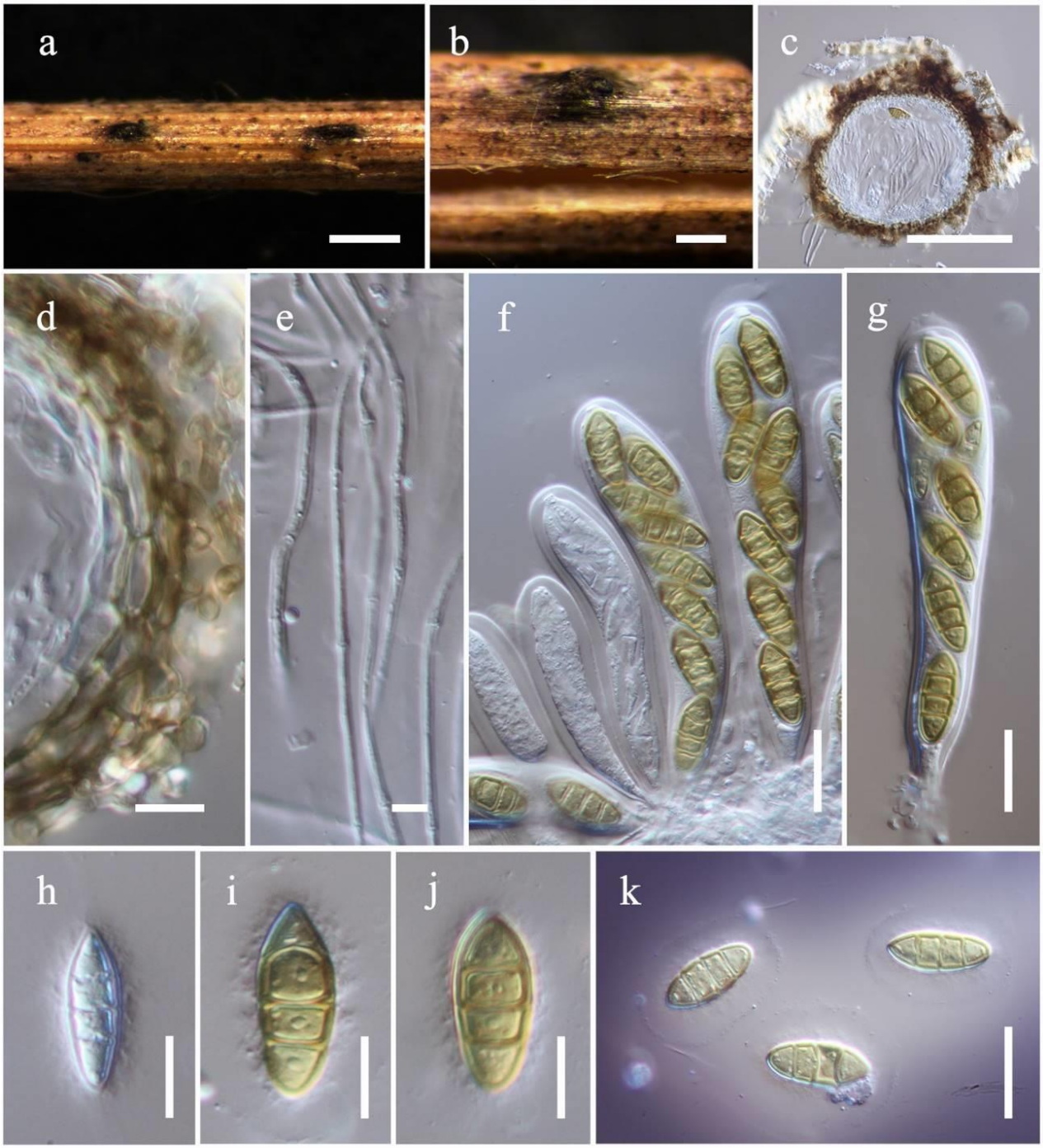

Fig. 60 – ***Sparticola junci*** (MFLU 16–0242). a, b. Appearance of ascomata on host substrate. c. Section of the ascoma. d. Peridium. e Pseudoparaphyses. f, g Asci. h–k. Ascospores (note the ascospores stained in Indian ink to show the mucilaginous sheath in k). Scale bars: a = 500 µm, b = 200 µm, c = 100 µm, d = 10 µm, e = 5 µm, f, g, k = 20 µm, h–j = 10 µm.

Notes — This is the first report of *S. junci* on a host other than *Spartium junceum* L. (*Fabaceae*). Morphological characters and phylogenetic analysis (Fig. 59) confirmed the identity of our specimen of *S. junci* on *Anthoxanthum odoratum* (*Poaceae*).

Discussion

There are numerous dothideomycetous fungal species that occur on a wide range of hosts in *Poaceae* with a worldwide distribution. In this study, we show the diversity and taxonomy of 50 grass inhabiting fungal species with molecular sequence data and descriptions linked to

morphological illustrations. We hope this research will stimulate interest in the collection and description of grass fungi.

Most of the members of the family *Bambusicolaceae* and *Phaeosphaeriaceae* appear to be grass inhabiting fungi (Quaedvlieg et al. 2013, Phookamsak et al. 2014a, Ariyawansa et al. 2015a, Liu et al. 2015, Hyde et al. 2016, Dai et al. 2017) and nearly 40 % of the species out of the total number of treated taxa in this research belong to these two families. *Didymosphaeriaceae*, *Pleosporaceae*, and *Roussoellaceae* are the other families in Dothideomycetes that include a significant number of grass fungi. However, there are likely to be thousands of Dothideomycetes as well as other fungi belonging to other classes that are associated with grasses worldwide. These taxa need to be recollected, epitypified and sequenced to establish their taxonomic affinities.

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