Mycoscience (2004) 45:377–382
DOI 10.1007/s10267-004-0197-5

FULL PAPER

Kazuaki Tanaka · Yukio Harada

Bambusicolous fungi in Japan (1): four *Phaeosphaeria* species

Received: February 12, 2004 / Accepted: August 5, 2004

Abstract Four *Phaeosphaeria* species on bamboos are reported. *Leptosphaeria lelebae* on culms of *Bambusa multiplex* is synonymized with *P. oryzae*. A *Phaeosphaeria* sp. on leaves of *Sasa kurilensis* is noted to have some similarities to *Leptosphaeria sasae*. Cultural characteristics of *P. brevispora* collected from culms of *Sasa* sp. are first recorded. *Phaeosphaeria bambusae* on leaves of *Pleioblastus simoni* is redescribed. In addition, the history of taxonomic studies on bambusicolous fungi in Japan is briefly reviewed.

Key words Bamboo · *Leptosphaeria* · Phaeosphaeriaceae · Pleosporales · Taxonomy

Introduction

In the early days, studies on the fungi occurring on bamboos in Japan were mostly made by European mycologists such as P. Hennings, P. Dietel, H. Sydow, and P.A. Saccardo, based on the specimens sent to them by Japanese mycologists (Hino 1961). For example, *Haraea japonica* Sacc. & Syd. (Saccardo 1913), *Puccinia kusanoi* Dietel (1899), and *Shiraia bambusicola* Henn. (Hennings 1900) were described in such studies. Some pioneering Japanese mycologists such as K. Hara, S. Hori, S. Ito, S. Kawamura, S. Kusano, I. Miyake, and M. Shirai also studied bambusicolous fungi, and these studies were listed in his review articles by Ito (1965a,b, 1966). Hara (e.g., 1911, 1913, 1918a–d, 1938, 1957a–c) in particular made significant contributions to the study of fungi on bamboo by introducing 53 new species (Hino 1961).

Systematic studies on the Japanese bambusicolous fungi were extensively done by Hino (1938) and by Hino and Katumoto (1954–1961), with reports of seven new genera and more than 100 new species. In 1961, a book entitled *Icones Fungorum Bambusicolorum Japonicorum* was published by Hino in collaboration with Katumoto, in which previous works of the bambusicolous fungi in Japan were compiled. In this comprehensive work, Hino (1961) listed 258 species as occurring in Japan and presented descriptions and illustrations of 173 species. At present, the greatest diversity of fungi on bamboo is known from Asia with records of about 500 species, 38% of which are recorded from Japan (Hyde et al. 2002). Of the 585 pyrenomycetous fungi described from bamboos, about 28% are reported from Japan (Eriksson and Yue 1998). These high percentages of the total number are mostly attributable to the works of Hara, Hino, and Katumoto cited above.

In the past four decades, however, studies on bambusicolous fungi in Japan have been somewhat inactive with some scattered reports (Hino and Katumoto 1964, 1965, 1966, 1968; Kobayashi 1965; Matsushima 1975; Nagasawa 1973, 1987; Nagasawa and Otani 1977; Oguchi 2001; Réblová and Gams 2000; Samuels et al. 1987; Tanaka et al. 2002). To date, 307 species (Ascomycota 63%; Basidiomycota 10%; Anamorphic fungi 27%) on 86 bamboo taxa (including infraspecific taxa) are reported from Japan (Phytopathological Society of Janpan 2000).

According to Hyde et al. (2002), more than 1100 species have been described or recorded worldwide from bamboo. It is certain that many undescribed species exist in Japan, because a large number of bamboo host plants belonging to 16 genera and 123 species are widely distributed in this country (Suzuki 1996). As is pointed by Hyde et al. (2002), our knowledge of bamboo fungi is incomplete and still at the cataloguing stage. In this series, we intend to provide further information on bambusicolous fungi in Japan by describing some interesting species.

Four *Phaeosphaeria* species, *P. oryzae* I. Miyake, *Phaeosphaeria* sp., *P. brevispora* (Nagas. & Y. Otani)

K. Tanaka
The United Graduate School of Agricultural Sciences, Iwate University (assigned to Hirosaki University), Faculty of Agriculture and Life Science, Hirosaki University, Aomori, Japan

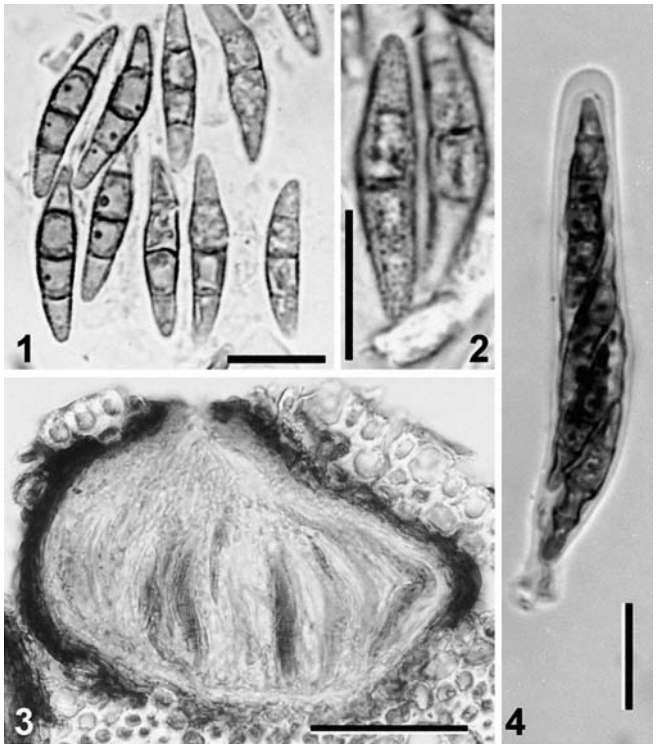
Y. Harada (✉)
Faculty of Agriculture and Life Science, Hirosaki University, 3 Bunkyo-cho, Hirosaki, Aomori 036-8561, Japan
Tel. +81-172-39-3816; Fax +81-172-39-3816
e-mail: harada@cc.hirosaki-u.ac.jp

Shoemaker & C.E. Babc., and *P. bambusae* I. Miyake & Hara, are treated in this first report. Among them, the latter two species have been reported previously as bambusicolous *Phaeosphaeria* in Japan.

Materials and methods

Methods of microscopic observation and single ascospore isolation are those described in Tanaka and Harada (2003). To observe the gelatinous material around the pseudoparaphyses and ascospores, India ink in distilled water was used. Growth rate and colony characteristics were recorded from cultures grown on potato dextrose agar (PDA; Difco, Detroit, MI, USA) at 20°C (or 15°C) in the dark. Colony colors were taken from Kornerup and Wanscher (1978). Induction of sexual reproduction was attempted by culturing on rice straw agar (RSA; Tanaka and Harada 2003) at 20° under black light.

Some herbarium specimens were borrowed from the herbaria of TMI, SAPA, and YAM. All other specimens are preserved in the Herbarium of Hirosaki University, Fungi (HHUF), and isolates are deposited in the culture collection of MAFF.



Figs. 1–4. *Phaeosphaeria oryzae*. **1** Ascospores; **2** Ascospores with echinulate ornamentation; **3** Ascoma in longitudinal section; **4** Ascus (all from YAM 21786, holotype of *Leptosphaeria lelebae*). *Bars* **1, 2, 4** 10 μm; **3** 50 μm

Taxonomy

Phaeosphaeria I. Miyake, Bot. Mag. Tokyo, 23: 93, 1909.

Type species: *Phaeosphaeria oryzae* I. Miyake

Anamorphs: *Stagonospora* (Sacc.) Sacc. macroconidial state, and *Aposphaeria* Sacc.-like microconidial state (Leuchtmann 1985).

The genus *Phaeosphaeria*, morphologically similar to *Leptosphaeria* Ces. & De Not., was established by Miyake (1909). This genus has been regarded as doubtful in its identity for a long time, and this may be because of the mistake in the original description in which the ascomata were noted as "aparaphysate." In his study of Pleosporaceae, Holm (1957) accepted *Phaeosphaeria* as an autonomous genus having pseudoparaphyses on the basis of a study of a specimen deposited in BPI and determined as the type species *P. oryzae* by him, and transferred 17 *Leptosphaeria* species with small pseudoparenchymatous ascomata and monocotyledonous host to *Phaeosphaeria*. Holm (1957) could not locate the original material of *P. oryzae*, but it was rediscovered in Sydow's herbarium (S) by Eriksson (1967) and the presence of pseudoparaphyses in *P. oryzae* was confirmed by him based on it. In his treatment of *Phaeosphaeria*, Eriksson (1967) recognized a dictyosporous species, *P. vagans* (Niessl) O.E. Erikss., within the genus along with taxa with phragmosporous or scolecosporous ascospores. The concept of *Phaeosphaeria* in the sense of Holm (1957) and Eriksson (1967) has been accepted by several authors (Ahn and Shearer 1995, 1998; Barr 1992; Hedjaroude 1969; Khashnobish and Shearer 1996a,b; Leuchtmann 1985; Shoemaker and Babcock 1989), but not by others (Dennis 1978; Ellis and Ellis 1997; Morales et al. 1995; Sivanesan 1984).

Recent molecular phylogenetic study of Câmara et al. (2002) supported the concept of *Phaeosphaeria* proposed by Holm (1957) and Eriksson (1967), and they suggested that ascomal wall anatomy (pseudoparenchymatous in *Phaeosphaeria* vs. scleroplectenchymatous in *Leptosphaeria*), anamorph morphology (*Stagonospora* vs. *Phoma* Sacc.), and hosts (monocotyledons vs. dicotyledons) are phylogenetically significant for delimiting the two genera. Currently *Phaeosphaeria* is assigned to the Phaeosphaeriaceae, Pleosporales (Barr 1992; Kirk et al. 2001).

Shoemaker and Babcock (1989) recognized 114 species in this genus. In Japan, about 20 species have been recorded (Fukuhara 2002; Kobayashi et al. 1992).

1. ***Phaeosphaeria oryzae*** I. Miyake, Bot. Mag. Tokyo 23: 93, 1909. Figs. 1–4, 25A

=*Leptosphaeria lelebae* I. Hino & Katum., Bull. Fac. Agric. Yamaguchi Univ. 9: 904, 1958.

For other synonyms, see Eriksson and Yue (1998) and Shoemaker and Babcock (1989).

Ascomata 85–125 μm high, 110–150 μm diameter, uniloculate, scattered, immersed, sometimes erumpent, globose, glabrous. Beak 12–18 μm long, 35–45 μm diameter, central, short papillate, without periphyses. Ascomal wall 8–15 μm thick at sides, composed of 3–5 layers of polygonal 2.5–8 × 1–2.5 μm pseudoparenchymatic cells, slightly thinner at the base. Pseudoparaphyses cellular, 1.5–2.5 μm thick,

hyaline, with septa at 5- to 10-μm intervals. Asci 48–68 (−73) × 7.5–10 (−11.5) μm (mean = 58.0 × 8.7 μm, *n* = 30), bitunicate, cylindrical, with a short stipe 2–8 μm long. Ascospores 16–21.5 (−23.5) × 3.5–5 μm (mean = 18.8 × 3.9 μm, *n* = 60), L/W 4.3–5.3 (mean = 4.8, *n* = 60), fusiform with tapered ends, 3-septate, with a primary septum nearly median (0.49–0.54; mean = 0.51, *n* = 45), yellowish-brown, echinulate, with a sheath up to 4 μm thick.

Cultural characteristics: Not examined. According to Teranaka et al. (1982), *P. oryzae* (as *Leptosphaeria oryzaecola* Hara) produces a teleomorph state and a *Stagonospora*-like anamorph state (as *Septoria oryzae* Catt.) in culture. A microconidial state is also recorded (Miyake 1910).

Material examined: On culms of *Bambusa multiplex* (Lour.) Raeusch.: Fuji Bamboo Garden, Gotenba, Shizuoka, Aug. 11, 1957, H. Muroi (YAM 21786, holotype of *Leptosphaeria lelebae*).

Notes: *Leptosphaeria lelebae* has small ascomata composed of thin pseudoparenchymatic cells, and certainly belongs in the genus *Phaeosphaeria*. Based on the morphological similarity in the ascospores, we determined this fungus is conspecific with *P. oryzae*.

Phaeosphaeria oryzae originally described from *Oryza sativa* L. has been recorded on other monocotyledons such as *Cyperus monti* L. (Shoemaker and Babcock 1989), *Phragmites australis* (Cav.) Trin. ex Steud. (Fukuhara 2002), and also on a bamboo, *Chusquea serrulata* Pilg. (Eriksson and Yue 1998; see *Leptosphaeria chusqueae* Syd.).

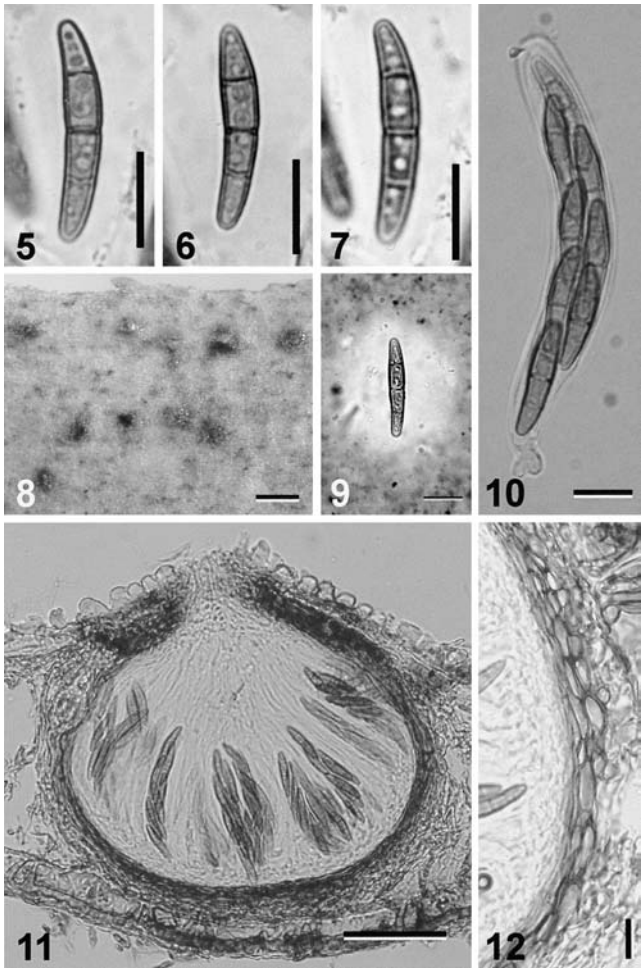
2. ***Phaeosphaeria*** sp. Figs. 5–12, 25B

Ascomata 140–180 μm high, 160–230 μm diameter, uniloculate, scattered, immersed, globose, short papillate at the apex, glabrous. Ascomal wall uniformly 5–8 μm thick, composed of 3–4 layers of pale brown polygonal pseudoparenchymatic cells of 5–15 × 2–4 μm. Pseudoparaphyses cellular, 2.5 μm thick, hyaline, with septa at 5- to 15-μm intervals. Asci (63−) 70–80 (−85) × 9.5–12 μm (mean = 75.2 × 10.7 μm, *n* = 61), cylindrical, bitunicate, with a short stipe 2–10 μm long, basal and slightly lateral, with 8 biseriate ascospores. Ascospores (19−) 20.5–27 × 4–5 μm (mean = 23.1 × 4.2 μm, *n* = 100), L/W 4.8–6.4 (mean = 5.5, *n* = 90), narrowly fusiform, with slightly rounded ends, 3-septate, weakly constricted at the submedian primary septum (0.50–0.55; mean = 0.52, *n* = 90), yellowish-brown to dark brown, echinulate, with a sheath 5 μm thick.

Cultural characteristics: Colonies on PDA 19 mm in diameter after 4 weeks at 15°C in the dark, Dark-Green (27F4) in center, with entire white margin; reverse similar; no pigment produced. No fructifications formed on PDA or RSA.

Materials examined: On leaves of *Sasa kurilensis* (Rupr.) Makino & Shibata: Yunotai, Aomori, Sept. 2, 2001, Y. Harada (HHUF 26885); Mt. Tashiro, Akita, 140°24.6′ E, 40°25.3′ N, Oct. 21, 2003, K. Tanaka 1523 (HHUF 28231, single ascospore isolate MAFF 239275).

Notes: Hara (1918d) described two *Leptosphaeria* species, *L. sasae* Hara and *L. sasicola* Hara (as *sasacola*), on leaves of *Sasa palmata* (Lat.-Marl. ex N.E. Br.) Nakai. These species may both belong to *Phaeosphaeria* judging from the descriptions.



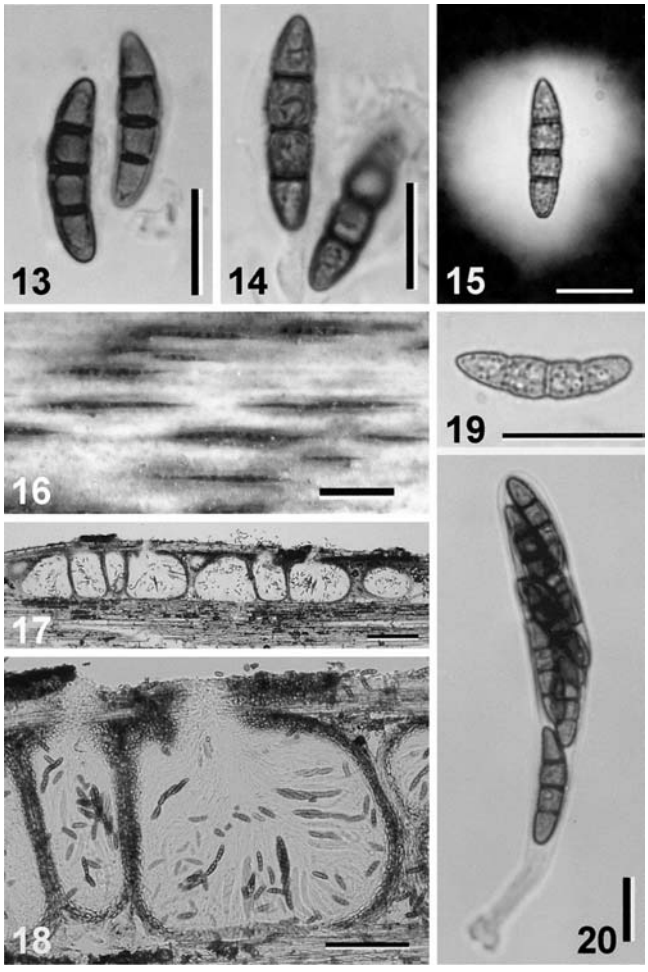
Figs. 5–12. *Phaeosphaeria* sp. **5–7** Ascospores; **8** Ascomata on host surface; **9** Ascospore with a sheath (in India ink); **10** Ascus; **11** Ascoma in longitudinal section; **12** Pseudoparenchymatic peridial cells (**5–8, 10–12** from HHUF 26885; **9** from HHUF 28231). *Bars* **5–7, 9, 10, 12** 10 μm; **8** 250 μm; **11** 50 μm

Our *Phaeosphaeria* sp. is very similar to *L. sasae*, but the asci and ascospores are slightly smaller than those of *L. sasae* (asci 85–100 × 11–13 μm and ascospores 23–26 × 6–8 μm; Hara 1918d). The type or authentic specimens of *L. sasae* were not found at SAPA, TMI, and YAM, as well as among Hara's collections in TNS, and we failed to determine whether these two fungi are conspecific.

3. ***Phaeosphaeria brevispora*** (Nagas. & Y. Otani) Shoemaker & C.E. Babc., Can. J. Bot. 67: 1523, 1989. Figs. 13–20, 25C

≡ *Phaeosphaeria arundinacea* (Sowerby: Fr.) Hedjar. var. *brevispora* Nagas. & Y. Otani, Rep. Tottori Mycol. Inst. 15: 38–39, 1977.

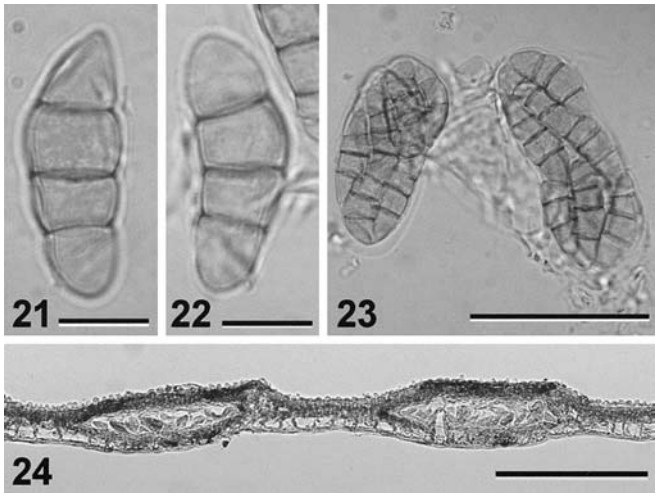
Ascomata 200–370 (−400) μm high, 400–700 μm wide, 1000–3500 μm long, with 5–13 loculi of 190–330 (−440) μm diameter arranged in single or double rows along the long axis of the culms, subepidermal, clustered, subglobose, with undifferentiated hyaline polygonal cells at the corner of the



Figs. 13–20. *Phaeosphaeria brevispora*. **13, 14** Ascospores; **15** Ascospore with a sheath (in India ink); **16** Ascomata on host surface; **17, 18** Ascomata in longitudinal section; **19** Immature ascospore with verrucose ornamentation; **20** Ascus (**13, 16, 20** from TMI 3175 holotype; **14** from TMI 3520 paratype; **15, 17, 18** from HHUF 28229; **19** from MAFF 239276). *Bars* **13–15, 19, 20** 10 μm; **16** 1 mm; **17** 250 μm; **18** 100 μm

ascomata. Ascomal wall 15–20 μm thick at side, composed of 4–6 layers of polygonal cells of 5–12.5 × 2.5–7 μm. Beak 50–75 (−110) μm long, with hyaline periphyses. Pseudoparaphyses cellular, 1.5–2.5 μm thick, hyaline, septate, with slime coating. Asci (70−) 75–118 × 9–15 μm (mean = 92.5 × 11.8 μm, *n* = 77), cylindrical to clavate, bitunicate, with a stipe (10−) 13–25 (−30) μm long, (4−) 8-spored. Ascospores 17–23.5 (−25) × 5–7 μm (mean = 20.3 × 5.7 μm, *n* = 126), L/W 3.1–4.2 (mean = 3.6, *n* = 114), fusiform, 3-septate, and with a submedian (0.50–0.54; mean = 0.52, *n* = 114) primary septum, reddish-brown, thick-walled, verrucose, with an entire sheath 2–5 μm thick.

Cultural characteristics: Colonies on PDA 69 mm in diameter after 4 weeks at 20°C in the dark, Light-Yellow (4A4) in center, Yellowish-White (4A2) in other parts, with irregular margin; reverse similar; slightly yellowish pigment produced. On RSA, ascomata formed on the surface of rice straws within 2 months. Ascospores similar to those found on host, measuring 18–21 × 4–5.5 μm (mean = 19.4 × 4.8 μm, *n* = 50).



Figs. 21–24. *Phaeosphaeria bambusae*. **21, 22** Ascospores; **23** Asci; **24** Ascomata in longitudinal section (all from SAPA: Y. Nishikado and C. Miyake 1051). *Bars* **21, 22** 10 μm; **23** 50 μm; **24** 200 μm

Materials examined: On culms of *Sasa* sp.: Moiwa-yama, Sapporo, Hokkaido, June 13, 1972, E. Nagasawa (TMI 3175, holotype); Mt. Haguro, Yamagata, Oct. 7, 2001, T. Handa (HHUF 26902); Osenuma, Minamiaizu, Fukushima, 139°19.4′ E, 36°55.3′ N, Aug. 30, 2003, N. Asama 1466 (HHUF 28229, single ascospore isolate MAFF 239276). On culms of *Sasa senanensis* (Franch. & Sav.) Rehder: Kyoritsu-Daiichi, Saroma, Tokoro, Hokkaido, Jan. 2, 1973, E. Nagasawa (TMI 1026, paratype); Sawamachi, Yoichi, Hokkaido, 140°46′ E, 43°11′ N, May 6, 2000, K. Tanaka 163-2 (HHUF 28227); K. Tanaka 168-2 (HHUF 28228). On culms of *Sasa kurilensis*: Hinaizawa, Kakunodate, Senpoku, Akita, Oct. 19, 1976, E. Nagasawa (TMI 3520, paratype); Souma, Aomori, June 7, 2001, Y. Ooki 536 (HHUF 28230).

Notes. This species appears to be widely distributed in northern Japan, but there is no report from other countries so far as we know. Leuchtmann (1985) stated that within *Phaeosphaeria* the ability or inability to form an anamorph varies among individual strains. Our isolate (MAFF 239276) of *P. brevispora* produced only the ascomatal state, but further cultural studies based on other isolates might be required to confirm the presence or absence the anamorphic state of this species. Leuchtmann (1985) suggested also that specialized species, or species occurring in alpine or subapline regions, usually do not produce anamorphic states.

4. ***Phaeosphaeria bambusae*** I. Miyake & Hara, Bot. Mag. Tokyo 24: 340, 1910. Figs. 21–24, 25D

For synonyms see Eriksson and Yue (1990).

Ascomata 60–90 μm high, 100–200 μm diameter, uniloculate, depressed globose, scattered, immersed in the leaf tissue on lower surface. Ascomal wall composed of three layers of thin pseudoparenchymatic cells, glabrous. Pseudoparaphyses not seen. Asci (56.5−) 59–90 (−94.5) × 18.5–31 μm (mean = 70.5 × 23.5 μm, *n* = 40), cylindrical to broadly clavate, bitunicate, with 8 biseriate to tetraseriate ascospores, short-stalked. Ascospores 25.5–36 × 9–12.5 μm

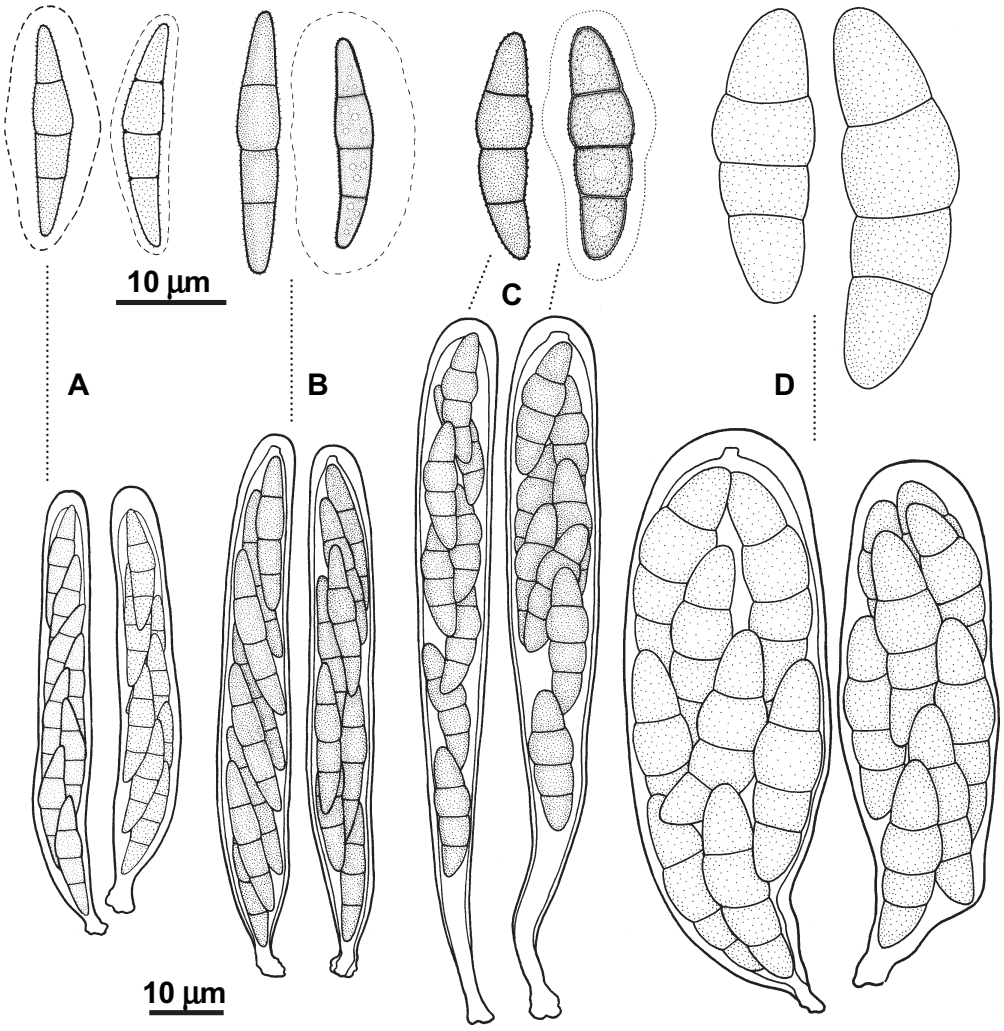


Fig. 25. Ascospores (*upper*) and asci (*lower*) of *Phaeosphaeria* spp. **A** *Phaeosphaeria oryzae* (YAM 21786, holotype of *Leptosphaeria lelebae*); **B** *Phaeosphaeria* sp. (HHUF 26885); **C** *P. brevispora* (*left*, TMI 3175 holotype; *right*, TMI 3520 paratype); **D** *P. bambusae* (SAPA: Y. Nishikado and C. Miyake 1051)

(mean = 30.0 × 10.5 µm, n = 50), L/W 2.5–3.2 (mean = 2.8, n = 50), broadly fusiform with rounded ends, 3-septate, with the primary septum nearly median, constricted at all septa, yellow to pale brown, smooth.

Cultural characteristics: Not examined. A putative microconidial state was known to associate with this fungus on the same leaf lesion (Miyake and Hara 1910).

Material examined: On leaves of *Pleioblastus simoni* (Carrière) Nakai: Mukouyama, Tsukubo, Okayama, June 11, 1921, Y. Nishikado and C. Miyake 1051 (SAPA).

Notes: This species has been recorded on leaves of various bamboos such as *Phyllostachys* Siebold & Zucc., *Pleioblastus* Nakai, *Pseudosasa* Makino ex Nakai, *Sasa* Makino & Shibata, *Sasaella* Makino, and *Semiarundinaria* Makino ex Nakai in Japan (Phytopathological Society of Japan 2002), and is also reported from China (Teng 1936) and Africa (Eriksson and Yue 1990).

From the ascospore morphology, *P. bambusae* belongs to the subgenus *Ovispora* sensu Shoemaker and Babcock (1989). The pseudoparaphyses of this species have not been reported previously (Eriksson and Yue 1990; Hino 1961; Miyake and Hara 1910; Teng 1936). We also could not find any hamathecia from the above material, but as pointed out by Eriksson and Yue (1990) it is necessary to collect fresh materials to confirm the presence or absence of pseudoparaphyses and as well as to examine the cultural state of this species.

Acknowledgments We thank the curators of herbaria, Eiji Nagasawa (TMI), Hideki Takahashi (SAPA), and Shuhei Tanaka (YAM), who permitted us to examine collections in their keeping. We are also grateful to anonymous reviewers for their valuable comments on the manuscript.

References

Ahn Y, Shearer CA (1995) Reexamination of six taxa described in *Leptosphaeria* from species in the Ranunculaceae. Can J Bot 73:573–582

Ahn Y, Shearer CA (1998) Reexamination of taxa in *Leptosphaeria* originally described on host species in Ranunculaceae, Papaveraceae, and Magnoliaceae. Can J Bot 76:258–280

Barr ME (1992) Additions to and notes on the Phaeosphaeriaceae (Pleosporales, Loculoascomycetes). Mycotaxon 43:371–400

Câmara MPS, Palm ME, van Berkum P, O'Neill NR (2002) Molecular phylogeny of *Leptosphaeria* and *Phaeosphaeria*. Mycologia 94:630–640

Dennis RWG (1978) British Ascomycetes. Cramer, Vaduz

Dietel P (1899) Uredineae japonicae I. Engl Bot Jahrb 27:564–576
Ellis MB, Ellis JP (1997) Microfungi on land plants (enlarged edn). Richmond, Slough, England
Eriksson OE (1967) On graminicolous pyrenomycetes from Fennoscandia. 2. Phragmosporous and scolecosporous species. Ark Bot 6:381–440
Eriksson OE, Yue JZ (1990) Notes on bambusicolous pyrenomycetes, nos. 1–10. Mycotaxon 38:201–220
Eriksson OE, Yue JZ (1998) Bambusicolous pyrenomycetes, an annotated check-list. Myconet 1:25–78
Fukuhara M (2002) Three *Phaeosphaeria* species and *Paraphaeosphaeria michotii* isolated from *Phragmites* leaves in Osaka, Japan. Mycoscience 43:375–382
Hara K (1911) New genus of the fungus on *Arundinaria simoni* (in Japanese). Bot Mag Tokyo 25:222–225
Hara K (1913) Fungi on Japanese bamboo. II (in Japanese). Bot Mag Tokyo 27:245–256
Hara K (1918a) Foliicolous and ramicolous fungi I (in Japanese). J Plant Prot 5:347–352
Hara K (1918b) Foliicolous and ramicolous fungi V (in Japanese). J Plant Prot 5:726–729
Hara K (1918c) Foliicolous and ramicolous fungi VI (in Japanese). J Plant Prot 5:805–808
Hara K (1918d) Foliicolous and ramicolous fungi VII (in Japanese). J Plant Prot 5:883–885
Hara K (1938) Notes on Torahudake (in Japanese). J Plant Prot 25:443–449
Hara K (1957a) Ascomycetes on bamboo, I (in Japanese). Trans Mycol Soc Jpn 1(3):1–12
Hara K (1957b) Ascomycetes on bamboo, II (in Japanese). Trans Mycol Soc Jpn 1(4):3–7
Hara K (1957c) Ascomycetes on bamboo, III (in Japanese). Trans Mycol Soc Jpn 1(5):4–7
Hedjaroude GA (1969) Etudes taxonomiques sur les *Phaeosphaeria* Miyake et leurs formes voisines (Ascomycetes). Sydowia 22[1968]:57–107
Hennings P (1900) Fungi japonici. Engl Bot Jahrb 28:259–280
Hino I (1938) Illustrationes fungorum bambusicolorum. Bull Miyazaki Coll Agric For 10:55–64
Hino I (1961) Icones fungorum bambusicolorum japonicorum. Fuji Bamboo Garden, Gotenba
Hino I, Katumoto K (1954) Illustrationes fungorum bambusicolorum. II. Bull Fac Agric Yamaguchi Univ 5:213–234
Hino I, Katumoto K (1955) Illustrationes fungorum bambusicolorum. III. Bull Fac Agric Yamaguchi Univ 6:29–68
Hino I, Katumoto K (1956) Illustrationes fungorum bambusicolorum. IV. Bull Fac Agric Yamaguchi Univ 7:267–274
Hino I, Katumoto K (1957) Illustrationes fungorum bambusicolorum. V. Bull Fac Agric Yamaguchi Univ 8:649–658
Hino I, Katumoto K (1958) Illustrationes fungorum bambusicolorum.VI. Bull Fac Agric Yamaguchi Univ 9:877–908
Hino I, Katumoto K (1959) Illustrationes fungorum bambusicolorum. VII. Bull Fac Agric Yamaguchi Univ 10:1175–1194
Hino I, Katumoto K (1960) Illustrationes fungorum bambusicolorum. VIII. Bull Fac Agric Yamaguchi Univ 11:9–34
Hino I, Katumoto K (1961) Illustrationes fungorum bambusicolorum. IX. Bull Fac Agric Yamaguchi Univ 12:151–162
Hino I, Katumoto K (1964) Notes on some new species of fungi collected in the Ryukyu Archipelago. Bull Fac Agric Yamaguchi Univ 15:505–516
Hino I, Katumoto K (1965) Notes on bambusicolous fungi (1). J Jpn Bot 40:81–89
Hino I, Katumoto K (1966) Notes on bambusicolous fungi (2). J Jpn Bot 41:292–297
Hino I, Katumoto K (1968) The genus *Melchioria* of Japan. J Jpn Bot 43:26–32
Holm L (1957) Études taxonomiques sur les Pléosporacées. Symb Bot Ups 14(3):1–188
Hyde KD, Zhou D, Dalisay T (2002) Bambusicolous fungi: a review. Fungal Divers 9:1–14
Ito K (1965a) View of the development of forest pathology in Japan–I (in Japanese). Bull Gov For Exp Sta 174:59–162
Ito K (1965b) View of the development of forest pathology in Japan–II (in Japanese). Bull Gov For Exp Sta 181:1–196
Ito K (1966) View of the development of forest pathology in Japan–III (in Japanese). Bull Gov For Exp Sta 193:1–375
Khashnobish A, Shearer CA (1996a) Reexamination of some *Leptosphaeria* and *Phaeosphaeria* species, *Passeriniella obiones* and *Melanomma radicans*. Mycol Res 100:1341–1354
Khashnobish A, Shearer CA (1996b) Phylogenetic relationships in some *Leptosphaeria* and *Phaeosphaeria* species. Mycol Res 100:1355–1363
Kirk PM, Cannon PF, David JC, Stalpers JA (eds) (2001) Ainsworth & Bisby's dictionary of the fungi, 9th edn. CAB International, Wallingford
Kobayashi T (1965) *Neopycnodithis* (Sphaerioidaceae, Fungi Imperfecti), a new genus of bamboo inhabitant. Ann Phytopathol Soc Jpn 30:153–155
Kobayashi T, Katumoto K, Abiko K, Abe Y, Kakishima M (1992) Illustrated genera plant pathogenic fungi in Japan (in Japanese). Zenkoku Nouson Kyouiku Kyoukai, Tokyo
Kornerup A, Wanscher JH (1978) Methuen handbook of colour, 3rd edn. Methuen, London
Leuchtmann A (1985) Über *Phaeosphaeria* Miyake und andere bitunicate Ascomyceten mit mehrfach querseptierten Ascosporen. Sydowia 37[1984]:75–194
Matsushima T (1975) Icones microfungorum a Matsushima lectorum. Published by the author, Kobe
Miyake I (1909) Studies on the parasitic fungi of rice in Japan (in Japanese). Bot Mag Tokyo 23:85–97
Miyake I (1910) Studien über die Pilze der Reispflanze in Japan. J Coll Agric Univ Tokyo 2:237–276
Miyake I, Hara K (1910) Fungi on Japanese bamboos (in Japanese). Bot Mag Tokyo 24:331–341
Morales VM, Jasalavich CA, Pelcher LE, Petrie GA, Taylor JL (1995) Phylogenetic relationship among several *Leptosphaeria* species based on their ribosomal DNA sequences. Mycol Res 99:593–603
Nagasawa E (1973) Notes on some ascomycetous fungi on *Sasa* plants from Hokkaido, Japan. Rep Tottori Mycol Inst 10:453–464
Nagasawa E (1987) *Dicellomyces gloeosporus* (Basidiomycotina: Brachybasidiales) from Japan. Rep Tottori Mycol Inst 25:1–5
Nagasawa E, Otani Y (1977) Some species of the bambusicolous ascomycetes from Japan. I. Rep Tottori Mycol Inst 15:38–42
Oguchi T (2001) *Aciculosporium sasicola* sp. nov. on witches' broom of *Sasa senanensis*. Mycoscience 42: 217–221
Phytopathological Society of Japan (ed) (2000) Common names of plant diseases in Japan (in Japanese). Japan Plant Protection Association, Tokyo
Réblová M, Gams W (2000) Life-history of Ascomycetes: two new species of *Chaetosphaeria* with *Chloridium* and *Chloridium-Dictyochaeta* anamorphs. Mycoscience 41:129–138
Saccardo PA (1913) Notae mycologicae. Ser XVI. Ann Mycol 11:312–325
Samuels G, Rogers JD, Nagasawa E (1987) Studies in the Amphisphaeriaceae (sensu lato) 1. *Collodiscula japonica* and its anamoph, *Acanthodochium collodisculae*. Mycotaxon 28:453–459
Shoemaker RA, Babcock CE (1989) *Phaeosphaeria*. Can J Bot 67:1500–1599
Sivanesan A (1984) The bitunicate Ascomycetes and their anamorphs. Cramer, Vaduz
Suzuki S (1996) Illustrations of Japanese bambusaceae (revised edn). Published by the author, Chiba
Tanaka E, Tanaka C, Gafur A, Tsuda M (2002) *Heteroepichloë*, gen. nov. (Clavicipitaceae; Ascomycotina) on bamboo plants in East Asia. Mycoscience 43:87–93
Tanaka K, Harada Y (2003) Pleosporales in Japan (1): the genus *Lophiostoma*. Mycoscience 44:85–96
Teng SC (1936) Additional fungi from China. II. Sinensia 7:490–527
Teranaka M, Yamashita S, Natsuaki T, Okuda S (1982) Identity of *Leptosphaeria oryzaecola* Hara and *Septoria oryzae* Cattaneo, and its pathogenicity to rice plant (in Japanese). Ann Phytopathol Soc Jpn 48:19–26