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ARTICLE

Cercosporoid fungi (*Mycosphaerellaceae*) 3. Species on monocots (*Poaceae*, true grasses)

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Abstract: The third part of a series of monographic treatments of cercosporoid fungi (formerly *Cercospora s. lat*., *Mycosphaerellaceae*, *Ascomycota*) continues with a treatment of taxa on monocots (*Liliopsida*; *Equisetopsida*, *Magnoliidae*, *Lilianae*), covering asexual and holomorph species with mycosphaerella-like sexual morphs on true grasses (*Poaceae*), which were excluded from the second part. The species concerned are keyed out, alphabetically listed, described, illustrated and supplemented by references to previously published descriptions, illustrations, and exsiccatae. A key to the recognised genera and a discussion of taxonomically relevant characters was published in the first part of this series. Several species are lecto- or neotypified. The following taxonomic novelties are introduced: *Cercospora barretoana* comb. nov., *C. cymbopogonicola* nom. nov., *Cladosporium elymi* comb. nov., *Passalora agrostidicola* sp. nov., *P. brachyelytri* comb. nov., and *P. dichanthii-annulati* comb. nov.

Key words:
Ascomycota
Cercospora s. lat.
Liliopsida
Gramineae
hyphomycetes

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INTRODUCTION

The taxonomy of cercosporoid fungi (*Cercospora s. lat*., *sensu* Chupp 1954), especially the circumscription of genera in this complex, has long been problematic. It has been subjected to many changes in recent decades, due to subjective assessments of morphology. The emergence of molecular phylogenetic methods and their application to the taxonomy of cercospora-like fungi has led to a better understanding of the importance of morphological and biological traits as well as more stable generic concepts (Crous *et al*. 2013a, Groenewald *et al*. 2013). Cercosporoid fungi are worldwide in distribution and embrace a wide range of asexual morphs, asexual holomorphs and species with mycosphaerella-like sexual morphs (*Mycosphaerella s. str.* is now a heterotypic synonym of *Ramularia*, see Braun *et al*. 2013), which are mostly leaf-spotting plant pathogens. Numerous species cause serious diseases on cultivated plants (crops, ornamental plants, forest trees) in agriculture and forestry. The only comprehensive treatment of this fungal complex (Chupp 1954) has become obsolete. Braun *et al*. (2013) initiated a project to produce a modern monograph of *Cercospora* and allied genera (*Mycosphaerellaceae*), through a series of monographic papers rather than by a comprehensive treatment in a single opus. A first contribution reviewed aspects of the taxonomy of cercospora-like fungi (history, taxonomic value of traits, circumscriptions of genera, key to genera) and dealt with cercosporoids on fungi, ferns and gymnosperms (Braun *et al*. 2013). The second part of this series encompassed a treatment of species occurring on monocot families (Braun *et al*. 2014), but excluding taxa on true grasses (*Poaceae*). The species of cercosporoid fungi on *Poaceae* are treated in the present contribution, which follows the principles outlined in previous parts of this series.

MATERIAL AND METHODS

The present work is a compilation based on papers and our unpublished data, as well as global literature. Details on methods are given in the papers cited. As far as new examinations are concerned, fungal structures have been examined with standard methods of light microscopy, using an Olympus BX50 microscope, with distilled water and lactic acid as media, but without any staining. If possible, measurements of 30 conidia and other structures have been made at a magnification of ×1000. All illustrations have been prepared by the first author. The following abbreviations are used: author names follow Brummit & Powell (1992), journals Bridson (2004a, b), and exsiccatae http://www.botanischestaatssammlung.de/DatabaseClient/IndExs/index.jsp (IndExs – Index of Exsiccatae). Taxonomy and

nomenclature of plant families, genera and species are based on the "Angiosperm Phylogeny Website" (http://www.mobot.org/mobot/research/apweb/), Tropicos database (http://www.tropicos.org/), and The Plant List (http://www.theplantlist.org).

TAXONOMIC TREATMENT

Cercosporoid species on *Poaceae* (*Gramineae*, true grasses)

Cercospora

Key to Cercospora species on Poaceae

1 Conidia at least partly in chains 2
Conidia consistently solitary 7

2 (1) Conidia solitary, rarely forming short chains, acicular to obclavate-cylindrical, (15–)25–120(–320) × (1.5–)2.5–5.5 µm; on *Sorghum* spp. ..... **C. sorghi var. ciccaronei**
Conidia frequently in chains, not acicular; on other hosts 3

3 (2) Conidiophores very long and rather broad, 100–275 × 4–6 µm, to 20-septate; conidia very broad, 3–7.5 µm wide, but hila narrower, 1–1.5 µm; on *Eremochloa bimaculata*, Australia ..... **C. eremochloae**
Conidiophores much shorter, less than 100 µm, narrower and only 0–7-septate; conidia narrower, 1.5–5 µm wide; on other hosts 4

4 (3) Stromata lacking or almost so; conidiophores rather long, 25–215 × 3–5 µm, 0–7-septate; conidia 2–4.5 µm wide, hila 1.5–2.5 µm wide; on *Rottboellia cochinchinensis*, Africa ..... **C. rottboelliae**
Stromata developed and/or conidiophores much shorter, to 100 µm, and/or conidia narrower, 1.5–3 µm, and hila only 1–2 µm wide 5

5 (4) Conidia (2.5–)3–5.5(–6) µm wide; on various hosts of the *Panicoideae* ..... **C. barretoana**
Conidia narrower, 1.5–3 µm wide (on hosts of *Panicoideae*) or 1.5–4 µm wide (on *Agrostis* and *Sphenopholis*, *Pooideae*, *Aveneae*, in North America) 6

6 (5) On numerous hosts of genera belonging to *Panicoideae*, almost worldwide ..... **C. fusimaculans**
On *Agrostis* and *Sphenopholis* spp. (*Pooideae*, *Aveneae*), North America ..... **C. agrostidis**

7 (1) Conidial shape variable, narrowly subcylindrical, subacicular to somewhat cylindrical-obclavate, fusiform, very narrow, 30–100 × 1–2 µm, hila narrow, 0.5–1.5 µm; loci of conidiogenous cells minute, 1–1.5 µm; on *Digitaria* spp., Africa, Oceania, South America ..... **C. digitariae**
Conidia and hila broader; loci mostly larger than 1.5 µm diam; on other hosts 8

8 (7) Conidiophores very short, 5–20 × 2–4 µm, aseptate; conidia narrowly filiform-acicular, 30–90 × 1.5–2.5 µm; conidiogenous loci and hila minute, 1–1.5 µm diam; on *Dactyloctenium* ..... **C. tessellata**
Conidiophores much longer and/or septate or conidiogenous loci broader; conidia consistently acicular or acicular to obclavate-cylindrical or uniformly obclavate-cylindrical or cylindrical, hila mostly broader; on other hosts 9

9 (8) Conidia obclavate, cylindrical, base obconically truncate, at most some conidia subacicular, but acicular conidia with truncate base lacking 10
Conidia consistently acicular (*C. apii* complex) or at least partly acicular, i.e. ranging from acicular to obclavate-cylindrical (often only younger and/or smaller conidia obclavate-cylindrical, base of the conidia truncate to obconically truncate) 28

10 (9) Conidia relatively broad, 4–9 µm wide, average ≥ 5 µm 11
Conidia narrower, (1.5–)2–5(–6) µm wide, average < 5 µm 14

11 (10) Conidiogenous loci minute, 0.5–1.5 µm diam; conidia (10–)15–65(–85) × 3–6.5 µm, hila 1–2 µm wide; on *Oryza* (*Ehrhartoideae*, *Oryzeae*) ..... **C. janseana**

Conidiogenous loci broader, more than 1.5 µm; conidia longer, at least partly more than 100 µm, 4–9 µm wide, hila larger, 2–3 µm diam; on hosts belonging to *Panicoideae*, *Andropogoneae* (*Saccharum*, *Zea*) 12

12 (11) On *Saccharum* spp. ..... **C. longipes**
On *Zea mays* 13

13 (12) Conidiophores 40–180 µm long; conidia broadly obclavate-cylindrical, 30–100 × 4–9 µm; cultures not slow-growing, forming a red pigment (cercosporin) ..... **C. zeae-maydis**
Conidiophores to about 100 µm in length; conidia broadly fusiform; cultures slow-growing, without formation of red pigments (cercosporin) [morphologically barely distinguished from *C. zeae-maydis*, but genetically clearly differentiated] ..... **C. zeina**

14 (10) Conidia long, to 150 µm, average > 50 µm (on *Eragrostis*, *Ischaemum*, *Miscanthus*, *Paspalum*, *Cenchrus* (including *Pennisetum*), *Setaria*) 15
Conidia relatively short, 15–65 µm long, average < 50 µm (on other hosts) 20

15 (14) Stromata small, little developed; conidiophores in relatively small fasciles, 2–15; on *Echinochloa*, *Ischaemum*, *Paspalum*, [*Cenchrus*, including *Pennisetum*] and *Setaria* (*Panicoideae*) 16
Stromata well-developed, large, to 80 µm diam; conidiophores numerous, to 30 per fascicle; on *Eragrostis* or *Miscanthus* 19

16 (15) Conidiophore 0–1-septate; on *Ischaemum australe* or *Cenchrus spicatus* [*Pennisetum glaucum*] 17
Conidiophores 0–4-septate; on *Echinochloa* or *Setaria* 18

17 (16) Conidia obclavate-cylindrical, but long conidia may be almost acicular; on *Cenchrus spicatus* [*Pennisetum glaucum*], India ..... **C. typhoides**
Conidia consistently obclavate; on *Ischaemum australe*, Australia ..... **C. ischaemi**

18 (16) Conidiophores short, 8–45 µm; on *Paspalum* and *Setaria* ..... **C. setariae**
Conidiophores longer, 10–80 µm; on *Echinochloa* ..... **C. echinochloae**

19 (15) Conidiophores long, (15–)40–120 µm, 1–7-septate; on *Miscanthus*, Taiwan ..... **C. miscanthi**
Conidiophores shorter, 15–30(–50) µm, 0–1(–2)-septate; on *Eragrostis brownei*, New Zealand ..... **C. eragrostidis**

20 (14) Conidiogenous loci minute, 0.5–1.5 µm diam; conidia 3–6.5 µm wide, hila 1–2 µm wide; on *Oryza* ..... **C. janseana**
Conidiogenous loci larger, 1.5–2 µm, and/or conidia narrower, 2–5 µm 21

21 (20) Conidiophores 0–1-septate; on *Cymbopogon* or *Erharta* 22
Conidiophores pluriseptate, at least partly with two or more septa 23

22 (21) Conidiophores 28.5–70 µm long, 1-septate; conidia 1–10-septate; on *Cymbopogon*, India ..... **C. cymbopogonicola**
Conidiophores shorter, 15–30(–40) µm, 0(–1)-septate; on *Ehrharta*, New Zealand ..... **C. microlaenae**

23 (21) Stromata well-developed, large, 20–300 µm diam; conidiophores long, 30–160 µm; on *Chusquea* (*Bambusoideae*, *Bambuseae*) ..... **C. chusqueae**
Stromata lacking or small, 10–30 µm diam; conidiophores shorter, to 80 µm; on hosts of other subfamilies 24

24 (23) Conidiophores 10–60 µm long, 0–1-septate; on *Bothryochloa saccharoides* ..... **C. bothryochloae**
Conidiophores with to 4 septa; on other hosts 25

25 (24) Conidiophores rather robust, broad, 10–80 × 3–8 µm, mostly pale, subhyaline, yellowish or pale to medium olivaceous-brown; on *Echinochloa* ..... **C. echinochloae**
Conidiophores narrower, 2–5 µm wide, pigmentation usually darker; on other hosts 26

26 (25) Stromata lacking or almost so; on *Zizania* (*Ehrhartoideae*, *Oryzeae*) ..... **C. zizaniae**
Stromata to 30 µm diam; on *Cynodon* or *Sporobolus* (*Chloridoideae*) 27

27 (26) On *Cynodon* (*Chloridoideae*, *Cynodonteae*), India ..... **C. cynodontis**
On *Sporobolus* (*Chloridoideae*, *Eragrostideae*), North America ..... **C. seriata**

28 (9) Conidia acicular to obclavate-cylindrical, base truncate to obconically truncate 29
Conidia consistently acicular, base truncate 35

29 (28) Conidiophores relatively short, 10–67 µm, 0–1(–2)-septate; conidia mostly obclavate-cylindrical;
on *Bromus* spp. or *Cenchrus spicatus* [*Pennisetum glaucum*] 30
Conidiophores pluriseptate (about 3–20 or even more); acicular conidia abundant 31

30 (29) Conidiophores cylindrical or only somewhat geniculate; conidia 2.5–5 µm wide;
on *Cenchrus spicatus* [*Pennisetum glaucum*], India ..... **C. typhoides**
Conidiophores distinctly, often strongly geniculate; conidia narrower, 1–3.5 µm wide;
on *Bromus*, North America ..... **Cercospora sp.**

31 (29) Stromata well-developed, to 50 µm diam; conidiophores rather long, 25–300 µm,
conidiogenous loci minute, 1–1.5(–2) µm diam; conidia to 260 µm long; on *Eleusine*, Asia ..... **C. eleusines**
Stromata lacking or very small, to 20 µm diam; and/or conidiogenous loci 1.5–2 µm diam or
even larger; on other hosts 32

32 (31) Stromata 10–50 µm diam; conidiophores (10–)20–150(–220) × (2.5–)3–6.5(–7) µm;
conidiogenous loci and conidial hila 1.5–3 µm diam; on *Sorghum* ..... **C. sorghi and C. sorghicola**
Stromata lacking or very small, to 20 µm diam; conidiogenous loci and hila 1.5–2 µm diam or,
if larger, conidiophores very long, to 800 µm 33

33 (32) Conidiophores very long, 20–800 µm; conidia 30–300 µm long; conidiogenous loci (1.5–)2–3 µm;
on *Festuca*, North America ..... **C. festucae**
Conidiophores much shorter, to 160 µm; conidiogenous loci 1.5–2 µm diam; on other hosts 34

34 (33) Conidia 20–80 µm long, hyaline, subhyaline to very pale olivaceous;
on *Bouteloua* and *Chondrosus* spp., North America ..... **C. boutelouae**
Conidia longer, 40–235 µm long, consistently hyaline; on *Rottboellia* spp., Asia, South America ..... **C. rottboelliigena**

35 (28) Conidiophores consistently short, 6–28 µm long, pale olivaceous-brown; conidia narrow,
30–130 × 2–3 µm; on *Oplismenus* ..... **C. oplismeni**
Conidiophores much longer, 20–240 µm long, and darker, and/or conidia wider, 2–5 µm wide;
on other hosts 36

36 (35) Conidiophores short, 15–50 µm long; on *Coix* or *Secale* 37
Conidiophores much longer, > 50 µm long 38

37 (36) Leaf spots circular to elliptical, 1–5 mm diam; on *Coix*, India ..... **C. coicis**
Leaf spots oblong, forming narrow lines, 0.5 mm wide or larger lesions to 35 × 3 mm; on *Secale* ..... **C. secalis**

38 (36) Stromata lacking or very small; conidiophores long, to 250 µm long;
conidiogenous loci relatively large, 2–4 µm; on *Bromus* and *Cenchrus* (including *Pennisetum*) 39
Stromata larger, 10–50 µm diam, and/or conidiophores much shorter, about 20–150 µm long;
and/or conidiogenous loci smaller, 2–2.5 µm diam; and/or conidia shorter, (15–)20–50(–100) µm 40

39 (38) Conidia to 240 µm long; on *Cenchrus* (including *Pennisetum*) spp. ..... **C. penniseti**
Conidia shorter, to about 120 µm long; on *Bromus inermis* ..... **Cercospora sp.**

40 (38) Conidia relatively short, (15–)20–50(–100) µm long; on *Secale* ..... **C. secalis**
Conidia longer, 15–155 µm long; on *Aristida* or *Arthraxon* spp. 41

41 (40) Leaf spots oval to oblong, 0.5–2 mm in length; on *Aristida* spp., North America ..... **C. aristidae**
Leaf spots circular to angular, 2–5 mm diam; on *Arthraxon* spp., India ..... **C. arthraxonis**

Tabular key to Cercospora species on Poaceae

The species are listed in form of a tabular key based on host genera in alphabetical order.

On ***Agrostis*** ..... **C. agrostidis**

On ***Aristida*** ..... **C. aristidae**

On ***Arthraxon*** ..... **C. arthraxonis**

On ***Avena*** ..... ?**C. secalis**

On ***Beckeropsis*** ..... **C. fusimaculans**

On ***Bothriochloa*** ..... **C. bothryochloae**

On ***Bouteloua***

1 Conidia solitary ..... **C. bouteloae**
Conidia catenate ..... ?**C. fusimaculans**

On ***Brachiaria*** ..... **C. fusimaculans**

On ***Bromus***

1 Conidia acicular, 3–4 µm wide; conidiophores 30–200 µm long, not or only slightly geniculate, conidiogenous loci and hila 2–3.5 µm diam ..... **C. apii s. lat.**
Conidia narrowly obclavate to acicular, shorter conidia sometimes fusiform, 1–3.5 µm wide; conidiophores shorter, 10–40 µm, distinctly, often even strongly geniculate, conidiogenous loci and hila 1–2 µm diam ..... ***Cercospora* sp.**

On ***Cenchrus*** (including *Pennisetum*)

1 Conidia catenate ..... **C. fusimaculans**
Conidia solitary 2

2 (1) Conidiophores 50–250 µm long, pluriseptate; conidia acicular ..... **C. penniseti**
Conidiophores 17–67 µm long, 0–1-septate; conidia obclavate-cylindrical ..... **C. typhoides**

On ***Chasmopodium*** ..... **C. fusimaculans**

On ***Chondrosus*** ..... **C. bouteloae**

On ***Chusquea*** ..... **C. chusqueae**

On ***Coix*** ..... **C. coicis**

On ***Cymbopogon*** ..... **C. cymbopogonicola**

On ***Cynodon*** ..... **C. cynodontis**

On ***Dactyloctenium*** ..... **C. tessellata**

On ***Digitaria***

1 Conidia solitary ..... **C. digitariae**
Conidia catenate ..... **C. fusimaculans**

On ***Echinochloa***

1 Conidia formed singly ..... **C. echinochloae**
Conidia catenate 2

2 (1) Conidia 1.5–3 µm wide ..... **C. fusimaculans**
Conidia wider, (2.5–)3–5.5(–6) µm wide ..... **C. barretoana**

On ***Ehrharta*** ..... **C. microlaenae**

On ***Eleusine***
1 Conidia catenate ..... ?**C. fusimaculans**
Conidia solitary 2

2 (1) Conidiophores 25–300 µm long, pluriseptate, conidiogenous loci 1–1.5(–2) µm diam; conidia acicular to obclavate-cylindrical, 50–260 × 3–4 µm ..... **C. eleusines**
Conidiophores very short, 5–20 × 2–4 µm, 0(–1)-septate; conidia narrowly filiform-acicular, 30–90 × 1.5–2.5 µm ..... **C. tessellata**

On ***Entolasia*** ..... **C. fusimaculans**

On ***Eragrostis*** ..... **C. eragrostidis**

On ***Eremochloa*** ..... **C. eremochloae**

On ***Festuca*** ..... **C. festucae**

On ***Hordeum*** ..... ?**C. secalis**

On ***Hymenachne*** ..... **C. barretoana**

On ***Ischaemum*** ..... **C. ischaemi**

On ***Miscanthus*** ..... **C. miscanthi**

On ***Muhlenbergia*** ..... **C. muhlenbergiae** (see Doubtful, excluded and insufficiently known species)

On ***Oplismenus***
1 Conidia catenate ..... **C. fusimaculans**
Conidia solitary ..... **C. oplismeni**

On ***Oryza*** ..... **C. janseana**

On ***Panicum***
1 Conidia 1.5–3 µm wide ..... **C. fusimaculans**
Conidia wider, (2.5–)3–5.5(–6) µm wide ..... **C. barretoana**

On ***Paspalidium*** ..... **C. fusimaculans**

On ***Paspalum*** ..... **C. setariae**

On *Pennisetum* see ***Cenchrus***

On ***Rottboellia***
1 Conidia formed singly, acicular, 40–235 µm long, 3- to pluriseptate ..... **C. rottboelliigena**
Conidia catenate 2

2 (1) Conidiophores to 215 µm long; conidia 15–55 × 2–4.5 µm, 1–7-septate ..... **C. rottboelliae**
Conidiophores much shorter, < 100 µm long; conidia 1.5–3 µm wide ..... ?**C. fusimaculans**

On ***Saccharum*** ..... **C. longipes**

On ***Secale*** ..... **C. secalis**

On ***Setaria***
1 Conidia catenate ..... **C. fusimaculans**
Conidia solitary ..... **C. setariae**

On ***Sorghum***

1 Conidia frequently catenate, 1.5–3 µm wide ..... **C. fusimaculans**
Conidia solitary or only rarely catenate, broader, usually 2.5–5.5 µm wide 2

2 (1) Conidia consistently solitary ..... **C. sorghi** var. **sorghi** and **C. sorghicola**
Conidia mostly solitary, but occasionally in short chains ..... **C. sorghi** var. **ciccaronei**

On ***Sphenopholis*** ..... **C. agrostidis**

On ***Sporobolus*** ..... **C. seriata**

On ***Stenotaphrum*** ..... **C. fusimaculans**

On ***Triticum*** ..... ?**C. secalis**

On ***Urochloa*** ..... **C. fusimaculans**

On ***Zea***

1 Conidia catenate ..... **C. fusimaculans**
Conidia solitary 2

2 (1) Conidia acicular, narrow, < 5 µm wide ..... **C. apii s. lat.** (*C. sorghi* var. *maydis*)
Conidia broadly obclavate-cylindrical to fusiform, 4–9 µm wide 3

3 (2) Conidiophores 40–180 µm long; conidia broadly obclavate-cylindrical, 30–100 × 4–9 µm; cultures not slow-growing, forming a red pigment (cercosporin) ..... **C. zeae-maydis**
Conidiophores to about 100 µm in length; conidia broadly fusiform; cultures slow-growing, without formation of red pigment (cercosporin) [morphologically barely distinguished from *C. zeae-maydis*, but genetically clearly differentiated] ..... **C. zeina**

On ***Zizania*** ..... **C. zizaniae**

List of Cercospora species on Poaceae

Cercospora agrostidis G.F. Atk., *J. Elisha Mitchell Sci. Soc.* **8**: 44 (1892).
(Fig. 1)

Literature: Saccardo (1892: 656), Vassiljevsky & Karakulin (1937: 271), Chupp (1954: 243), Braun & Mel'nik (1997: 61).

Illustration: Braun & Mel'nik (1997: fig. 84).

Description: *Leaf spots* elliptical, about 3–5 mm long and 1–3.5 mm wide, centre ochraceous to pale brown, with a narrow to broad, purplish violet to dull reddish brown margin or halo. *Caespituli* amphigenous, punctiform, dark brown to blackish, scattered. *Mycelium* internal. *Stromata* substomatal, almost lacking or relatively small, 10–30 µm diam, brown, composed of swollen hyphal cells, 2–6 µm diam, circular to slightly irregular-angular in outline. *Conidiophores* in small to moderately large fascicles, divergent to dense, arising from stromata, through stomata, erect, straight, subcylindrical or somewhat narrowed towards the apex to slightly geniculate-sinuous, unbranched, 20–70(–125) × 3–5 µm, continuous to pluriseptate, olivaceous, yellowish to medium brown, often paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores occasionally reduced to conidiogenous cells, 10–35 µm long, conidiogenous loci conspicuous, 1–2 µm diam, slightly thickened and darkened. *Conidia* solitary or catenate, in simple chains, narrowly cylindrical-obclavate, fusiform, straight to curved, (10–)20–60 × 1.5–4 µm, (1–)2–5(–7)-septate, colourless, thin-walled, smooth, apex subobtuse to subacute in solitary conidia, conically truncate in catenate ones, base short to long obconically truncate, 1–2 µm wide, hila somewhat thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200446): **USA**: *Alabama*: Lee County, Auburn, on *Agrostis* sp., 23 Jul. 1891, *Newman* & *B. M. Duggar* 2036 (CUP-A 2036#1(AL)). *Isolectotypes*: CUP-A-2036#2(AL), CUP 40788.

Host range and distribution: *Agrostis* (*gigantea*, *perennans*, *scabra*, *Agrostis* sp.), *Sphenopholis obtusata*, *Poaceae* (*Pooideae*, *Aveneae*), ?Caucasus (Azerbaijan, Georgia), North America (USA, Alabama, Idaho, North Dakota, Oklahoma).

Notes: Due to the colourless conidia, we prefer to maintain *C. agrostidis* as a species of *Cercospora s. str.* since results of molecular sequence analyses have shown that species with thickened, darkened conidiogenous loci and conidial hila combined with colourless conidia, irrespective of whether they are formed singly or in chains, belong to *Cercospora s. str.* (Braun *et al.* 2013). Based on morphological similarity

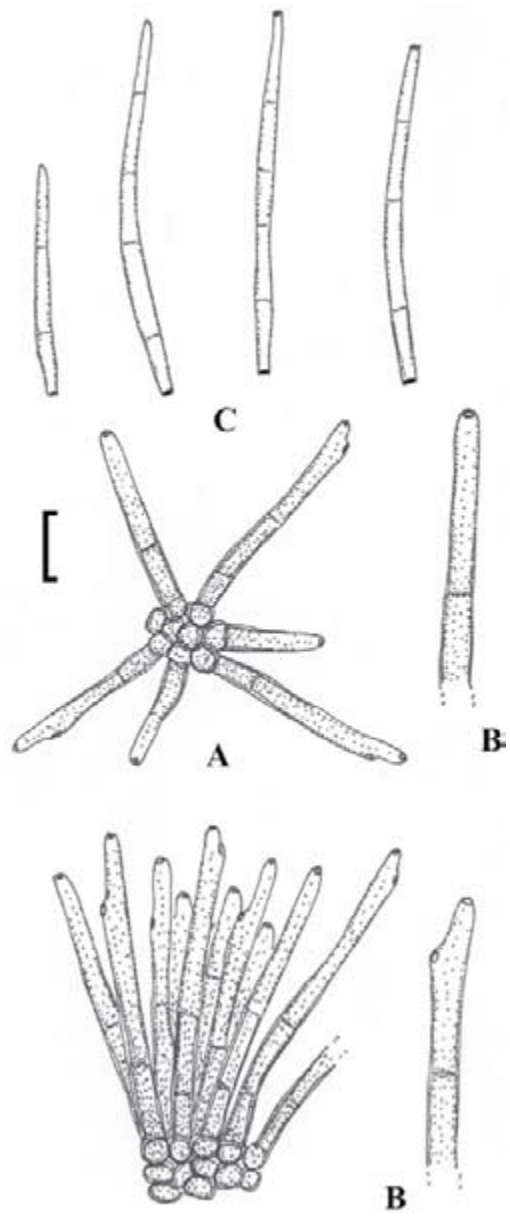

Fig. 1. *Cercospora agrostidis* (CUP-A 2036#1[AL], lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

and re-examinations of type collections, Braun & Mel'nik (1997) reduced *Cercospora agrostidis* to synonymy with *Passalora fusimaculans*. The latter species is almost circumglobal and undoubtedly confined to hosts of *Poaceae* subfam. *Panicoideae*. *Cercospora agrostidis* is confined to North America on a few species of *Agrostis* and *Sphenopholis obtusata*, two genera belonging in subfamily *Pooideae* (*Aveneae*). The two species are morphologically barely distinguishable, although *C. agrostidis* tends to have somewhat longer and wider conidia, but they are probably biologically distinct, occurring on unrelated grasses, and not conspecific. We prefer to follow Chupp (1954) and maintain two separate species. Cultures and results of molecular sequence analyses are necessary for a final taxonomic conclusion. The identity of collections from Azerbaijan and Georgia (Caucasus) are unconfirmed (Braun & Mel'nik 1997).

Cercospora apii Fresen. *s. lat.* (*sensu* Crous & Braun 2003: 35).

(A) On *Bromus inermis*.

Notes: *Cercospora* collections on *Bromus inermis* and *B. marginatus* were previously referred to as "*C. festucae*" which is incorrect. The genera *Bromus* (*Bromeae*) and *Festuca* (*Poeae*) are not closely allied and belong to distantly related tribes of the *Pooideae* (Bouchenak-Khelladi *et al*. 2008). Material on *Bromus marginatus* was not available, but two North Americal samples on *B. inermis* were examined. One of them was a typical collection morphologically assignable to *Cercospora apii s. lat.* (**USA**, *Texas*, College Station, on *Bromus inermis*, Oct. 1949*, M. D. Whitehead,* BPI 436347): Conidiophores in small to moderately large fascicles, divergent to moderately dense, arising from small stromatic hyphal aggregations, erect, straight, subcylindrical or only slightly geniculate, unbranched, 30–200 × 3–6 µm, pluriseptate, pale to medium brown throughout or tips paler, occasionally subhyaline, thin-walled, smooth; conidiogenous cells, integrated, terminal and occasionally intercalary, 10–40 µm long, with a single or only few conidiogenous loci, thickened and darkened, 2–3.5 µm diam; conidia solitary, acicular, 40–120 × 3–4 µm, 3–10-septate, hyaline, thin-walled, smooth, apex subacute, base truncate, 2–3 µm wide, thickened and darkened. The second sample is morphologically distinct (see *Cercospora* sp.).

(B) On *Zea mays*.
(Fig. 2)
Synonym: *Cercospora sorghi* var. *maydis* Ellis & Everh., *J. Mycol*. **3**: 15 (1887) [*lectotype* (**designated here**, MycoBank, MBT200447): **USA**: *Louisiana*: Rapides Parish, on *Zea mays*, 23 Jul. 1886, *A. B. Langlois* 613 (BPI 441565); *isolectotypes*: BPI 441551, NY 838620].
Cercospora sorghi f. *maydis* (Ellis & Everh.) Sacc., *Syll. Fung*. **10**: 656 (1892).

Notes: Chupp (1954) mentioned that *Cercospora sorghi* var. *maydis* from *Zea mays* is not able to infect *Sorghum* spp. and possibly represents a separate species. Results of molecular sequence analyses showed that sequences of *Cercospora sorghi* var. *maydis* from Africa and North America cluster with *C. apii* and *C. beticola*, respectively (Goodwin *et al*. 2001, Crous *et al*. 2006), i.e. *C. apii s. lat*. can be transmitted to maize. North American sequences clustered with *C. apii s. str*., i.e. *C. sorghi* var. *maydis* must be considered a synonym of the latter species, and a sequence from Africa with *C. beticola*, both belonging to *C. apii s. lat*. The differentiation between the two species is only possible on the basis of multilocal sequence analyses (Groenewald *et al*. 2006, 2010). Type material of *C. sorghi* var. *maydis* has been re-examined and is characterised as follows: Often on faded or necrotic leaves; caespituli scattered, punctiform, dark brown to blackish; mycelium internal; stromata lacking or small, brown, mostly substomatal; conidiophores in small fascicles, divergent, emerging through stomata, erect, straight, subcylindrical, not or only slightly geniculate near the apex, unbranched, 20–180 × 4–6 µm, 2- to pluriseptate,

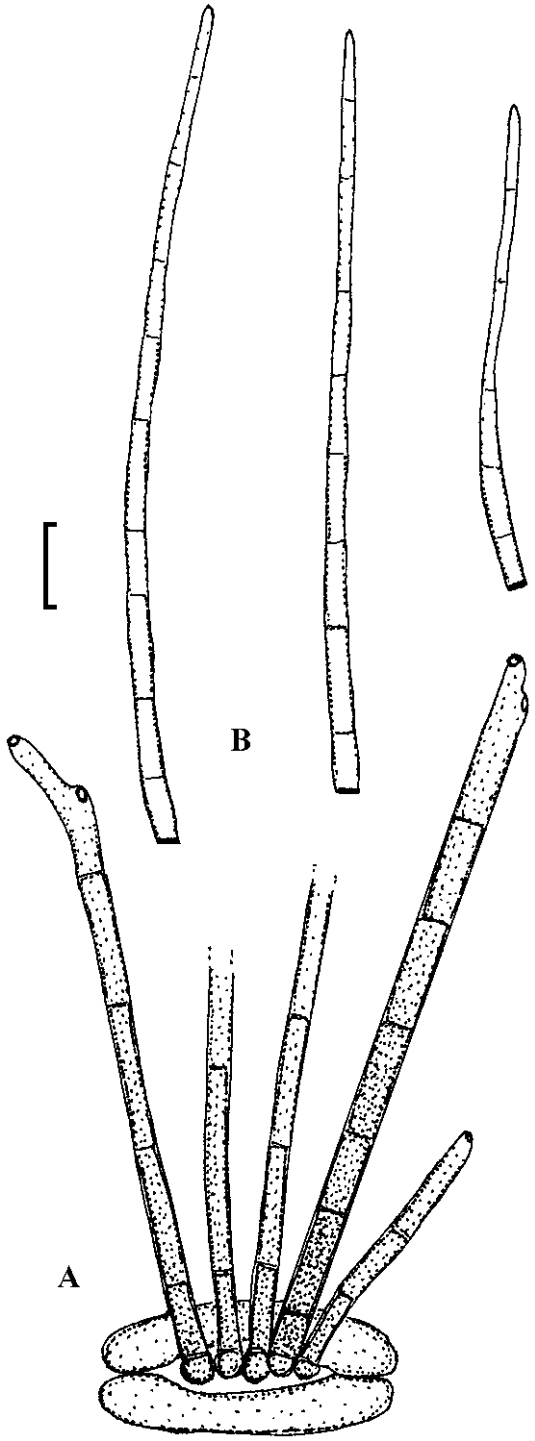

Fig. 2. *Cercospora apii* [*C. sorghi* var. *maydis*] (BPI 441565, lectotype). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

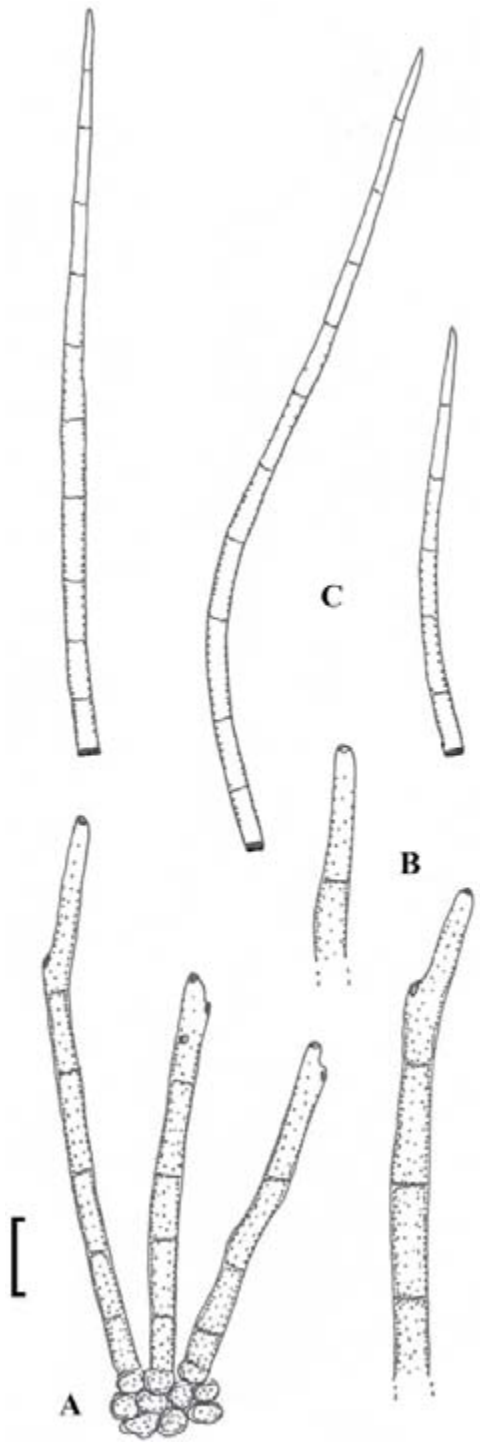

Fig. 3. *Cercospora aristidae* (CUP 39097, holotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

pale to medium brown throughout or tips somewhat paler, thin-walled, smooth; conidiogenous cells integrated, terminal, with a single or only few conidiogenous loci, 3–4 µm diam, thickened and darkened; conidia solitary, acicular, 40–120 × 2–4.5 µm, pluriseptate, hyaline, thin-walled, smooth, apex subacute, base truncate, 2–3 µm wide, hila thickened and darkened.

Cercospora aristidae Chupp, *Monograph of Cercospora*: 243 (1954).
(Fig. 3)

Literature: Braun *et al.* (2002: 118), Crous & Braun (2003: 65).

Illustration: Chupp (1954: 243, fig. 115).

Description: *Leaf spots* oval to oblong, 0.5–2 mm in length, olivaceous to brown with reddish brown margin. *Caespituli* amphigenous, but usually hypophyllous, punctiform, dark brown. *Mycelium* internal. *Stromata* substomatal, 10–50 µm diam, subglobose, brown to dark brown. *Conidiophores* in divergent fascicles, 5–20, arising from stromata, through

stomata, erect, straight to curved, subcylindrical to flexuous or geniculate-sinuous in the fertile portion, unbranched, 20–125 × 4–6 µm, pluriseptate, uniformly medium to medium dark brown, thin-walled, smooth; conidiogenous loci 2–2.5 µm diam. *Conidia* solitary, acicular or subacicular, straight to curved, 40–120 × 2.5–4 µm, pluriseptate, hyaline, thin-walled, smooth, attenuated towards a pointed tip, base truncate or only slightly attenuated at the base, about 2 µm wide, hila somewhat thickened and darkened.

Holotype: **USA**: *Alabama*: Uniontown, on *Aristida* sp., *Poaceae* (*Aristidoideae*), 4 Sep. 1894, *B. M. Duggar* (CUP 39097).

Host range and distribution: Only known from the type collection.

Note: This species belongs to the *Cercospora apii* complex.

Cercospora arthraxonis M.S. Patil & Sawant, *Indian Phytopathol*. **44**: 15 (1991).
(Fig. 4)

Literature: Crous & Braun (2003: 67), Kamal (2010: 18).

Illustration: Patil & Sawant (1991: 16, figs 1–2).

Description: *Leaf spots* circular to angular, 2–5 mm diam. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* substomatal, globose, pseudoparenchymatous, 30–45 µm diam, brown. *Conidiophores* fasciculate, divergent, arising from stromata, through stomata, erect, straight to curved, geniculate in the upper fertile portion, unbranched, 37–155 × 4.5–6 µm, narrowed and paler towards the tip, septate, brown, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci conspicuous, thickened and darkened. *Conidia* solitary, acicular, straight to curved, 15–155 × 3 µm, 4–15-septate, hyaline, thin-walled, smooth, apex subobtuse to pointed, base truncate, hila thickened and darkened.

Holotype: **India**: *Maharashtra*: Kolhapur, Amba, on *Arthraxon hispidus*, 15 Oct. 1985, *M. S. Patil* (HCIO 39889).

Host range and distribution: On *Arthraxon hispidus*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (India, Maharashtra).

Notes: This is undoubtedly a species of the *Cercospora apii s. lat*. complex. The conidia were described as “cylindric, attenuated towards the apex”, but the illustration clearly shows acicular ones.

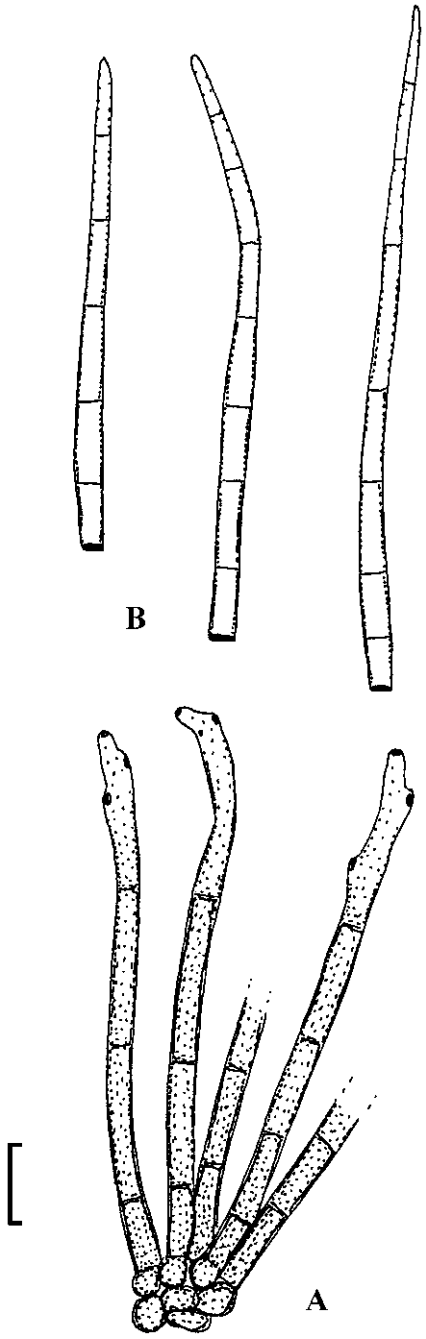

Fig. 4. *Cercospora arthraxonis* (based on Patil & Sawant 1991: 16, figs 1–2). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Cercospora barretoana (U. Braun & Crous) U. Braun & Crous, **comb. nov.**
MycoBank MB811240
(Fig. 5)

Basionym: *Passalora fusimaculans* var. *barretoana* U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 453 (2003).

Synonyms: *Cladosporium piricularioides* Dearn. & House, *Circ. New York State Mus.* **24**: 57 (1940), *nom. inval.* (Art. 39.1) [*syntypes*: **USA**: *New York*: Essex County, Newcomb, on *Panicum boreale*, 17 Aug. 1924, *H. D. House* (NYS 2365, DAOM 5741, NY 945783)].

Passalora barretoana (U. Braun & Crous) D.J. Soares, U. Braun & R.W. Barreto, in Soares & Barreto, *Australas. Pl. Pathol.* **35**: 348 (2006).

Literature: Schubert (2005b: 220), Schubert & Braun (2005: 104), Bensch *et al*. (2012: 326), Phengsintham *et al*. (2013: 100).

Illustrations: Soares & Barreto (2006: 348, fig. 1), Phengsintham *et al*. (2013: 100, fig. 46, 101, fig. 47).

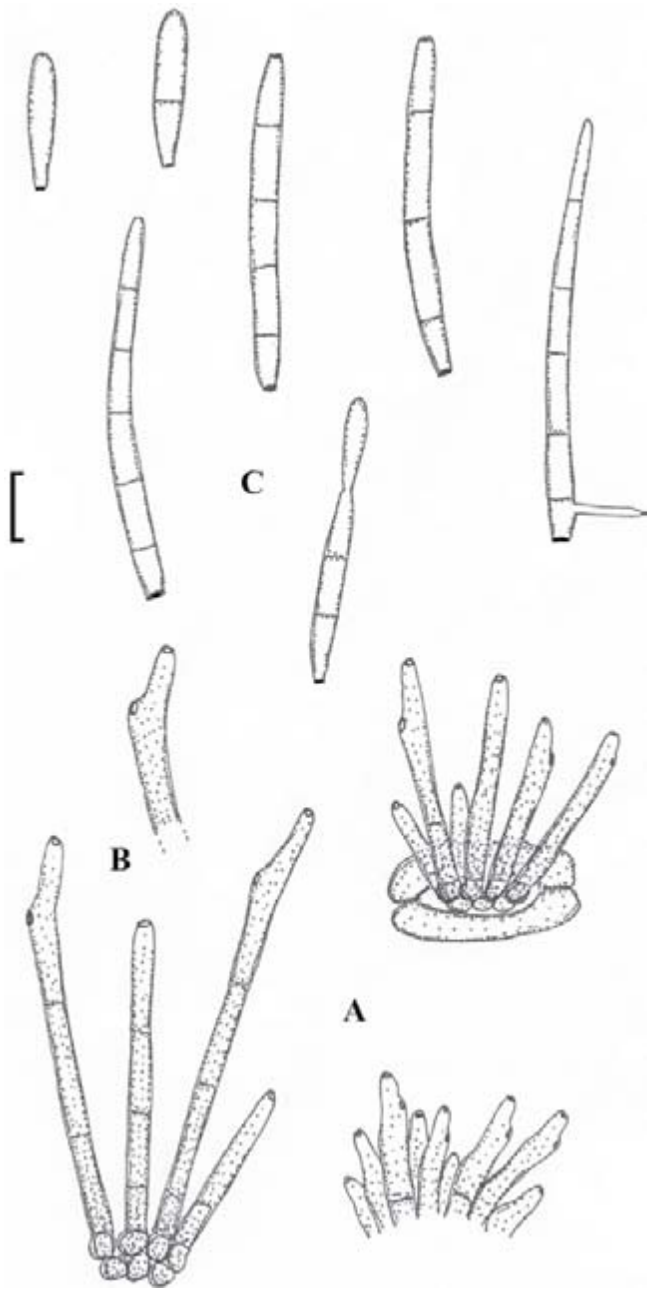

Fig. 5. *Cercospora barretoana* (K(M) 345389, holotype). **A.** Conidiophore fascicles. **B.** Conidiophore tip, **C.** Conidia. Bar = 10 µm.

Description: *Leaf spots* scattered, small, narrow, oval, fusoid to oblong, 0.5–3 mm long and to 1 mm wide, or 3–8 mm diam, yellowish brown, straw-coloured, reddish brown to dark brown, often surrounded by a pale yellowish brown to olivacous-brown halo. *Caespituli* hypophyllous, scattered, but not effuse, loose, pale brown. *Mycelium* internal, subcuticular; hyphae 2–4 µm wide. *Stromata* 10–45 µm diam, brown, composed of swollen hyphal cells, circular to angular in outline, 4–10 µm diam, pale yellowish brown, brownish, amber-coloured, smooth, walls slightly thickened. *Conidiophores* loosely fasciculate, 3–19, arising from stromata, erumpent, erect, straight to somewhat flexuous, unbranched, subcylindrical-filiform to somewhat geniculate-sinuous, 20–180 × 3–6(–9) µm, 0–6-septate, not constricted at the septa, pale brown or olivaceous-brown, yellowish brown, sometimes paler towards the apex, wall thin to somewhat thickened, 0.5–0.8 µm, smooth or almost so; conidiogenous cells integrated, terminal or intercalary, occasionally conidiophores reduced to conidiogenous cells, 10–65 µm long, conidiogenous loci conspicuous, at first terminal, later lateral, on shoulders formed by sympodial proliferation, 2–10 per cell, 1.5–2(–3) µm diam, apex truncate to slightly convex, somewhat thickened and darkened. *Conidia* solitary or in unbranched chains, fusiform, ellipsoid, subcylindrical to obclavate, 9–70 × (2.5–)3–5.5(–6) µm, 0–4(–6)-septate, not constricted at the septa, hyaline or subhyaline, wall thin or only slightly thickened, 0.3–0.5 µm, smooth, apex rounded, attenuated to truncate, base truncate, 1–2 µm diam, hila somewhat thickened and darkened.

Holotype: **Brazil**: Rio de Janeiro, Comendaolos Venaricis Reservoir, on *Echinochloa polystachya*, 13 Sep. 1989, *R. W. Barreto* (K(M) IMI 345389).

Host range and distribution: On *Echinochloa* (*esculenta*, *polystachya*), *Hymenachne amplexicaulis*, *Panicum* (*boreale*, *Panicum* sp.), *Poaceae* (*Panicoideae*, *Paniceae*), Asia (Thailand), North America (USA, New York, Wisconsin), South America (Brazil).

Notes: Due to the wider conidia, this species was originally described as a variety of *Passalora fusimaculans*. Based on several additional collections and clear morphological differences, it was later raised to species rank (Soares & Barreto 2006). Species with catenate, colourless conidia and thickened, darkened conidiogenous loci and conidial hila belong to *Cercospora s. str*. (see discussion under *C. fusimaculans*).

Cercospora bothriochloae U. Braun & Crous, *Mycotaxon* **92**: 396 (2005)
(Fig. 6)

Illustration: Braun & Crous (2005: 397, fig. 1).

Description: *Leaf spots* amphigenous, oblong, striate, usually confined by veins, to 20 mm long and 1–2 mm wide, brown, margin indefinite or occasionally with narrow purplish violet border. *Caespituli* amphigenous, punctiform, brown. *Mycelium* internal. *Stromata* substomatal, 10–30 µm diam, brown, composed of swollen hyphal cells, to 9 µm diam. *Conidiophores* in small to moderately large fascicles, loose to moderately dense, arising from stromata, emerging through stomata, erect, straight, subcylindrical to slightly geniculate-sinuous, unbranched, 10–60 × 3–6 µm, occasionally swollen at the base, to 10 µm, 0–1-septate, subhyaline to pale olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–40 µm long, conidiogenous loci conspicuous, thickened and darkened, 1.5–2.5(–3) µm diam, thickened and darkened. *Conidia* solitary, obclavate-subcylindrical, subfusiform, 15–45 × 3–4 µm, (0–)1–3(–4)-septate, colourless, thin-walled, smooth, apex obtuse, base obconically truncate, 1.5–2 µm wide, hilum somewhat thickened and darkened.

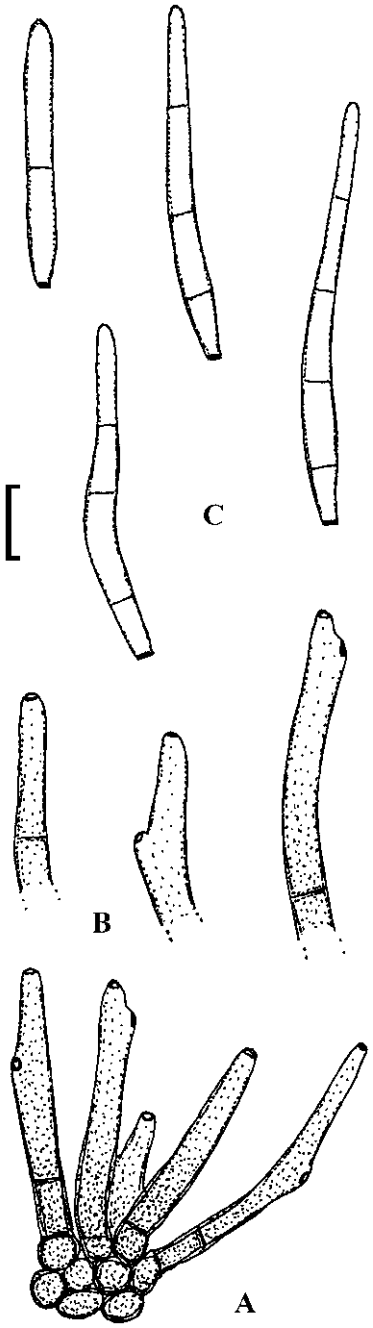

Fig. 6. *Cercospora bothryochloae* (NY 936943, holotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

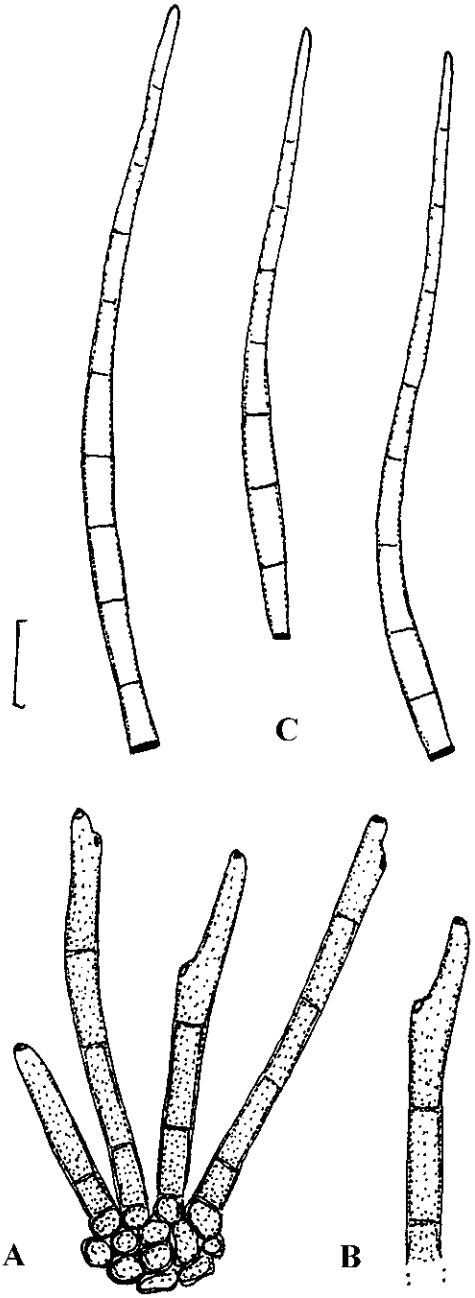

Fig. 7. *Cercospora boutelouae* (CUP 39229, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore. **C.** Conidia. Bar = 10 µm.

Holotype: **USA**: *Kansas*: Meade County, near State Lake, on leaves of *Bothriochloa saccharoides*, *Poaceae* (*Panicoideae*, *Andropogoneae*), 18 Jun. 1957, *C. T. Rogerson* R3803 (NY 936943).

Host range and distribution: Only known from the type collection.

Cercospora boutelouae Chupp & H.C. Greene, *Farlowia* **1**: 579 (1944).
(Fig. 7)

Literature: Chupp (1954: 244), Braun *et al.* (2002: 123), Crous & Braun (2003: 86).

Description: *Leaf spots* amphigenous, narrowly elliptical to oblong, 0.5–4 mm in length, pale brown to blackish, margin indefinite or with yellowish halo. *Caespituli* mainly hypophyllous, in lines, dark. *Mycelium* internal. *Stromata* lacking or small, composed of a few swollen hyphal cells, brown. *Conidiophores* fasciculate, 2–14, divergent, arising from internal hyphae or stromatic hyphal aggregations, erect, straight to curved, subcylindrical, unbranched, geniculate in the fertile apical portion, 20–100 × 3–6 µm, sparingly septate, pale to medium brown, somewhat paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, 10–30 µm long, conidiogenous loci thickened and darkened, 1.5–2 µm diam. *Conidia* solitary, acicular or subacicular to obclavate, straight to curved, occasionally sigmoid, 20–80 × 3–5 µm, 2–8-septate, hyaline

to subhyaline (pale olivaceous), thin-walled, smooth, apex obtuse to subacute, base truncate or short to long obconically truncate, about 2–2.5 µm wide, hila thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200448): **USA**: *Wisconsin*: Dane County, Madison, on *Bouteloua curtipendula* [*racemosa*], 26 Jul. 1943, *H. C. Greene* (CUP 39229). *Isolectotypes*: BPI 433803, WIS.

Host range and distribution: On *Bouteloua curtipendula*, *Chondrosus* (*gracilis* [*Bouteloua gracilis*], *hirsutus* [*Bouteloua hirsuta*]), *Poaceae* (*Chloridoideae*, *Cynodonteae*), North America (USA, Colorado, Illinois, Iowa, Oklahoma, South Dakota, Virginia, Wisconsin).

Note: A true *Cercospora s. str.* distinct from *C. apii s.lat.* by having obclavate conidia with obconically truncate base.

Cercospora chusqueae Chupp, *Monograph of Cercospora*: 245 (1954).
(Fig. 8)

Literature: Chupp (1954: 245), Crous & Braun (2003: 123).

Description: *Leaf spots* amphigenous, formed as small specks, 0.5–1 mm diam, later forming long, narrow streaks, 2–30 × 0.5–1 mm, medium to dark brown, margin indefinite, but with yellow halo, surrounding tissue often becoming necrotic, finally large leaf segments or entire leaves discoloured, straw yellow. *Caespituli* hypophyllous, punctiform to almost oblong pustulate, dark brown to blackish. *Mycelium* internal. *Stromata* variable, almost lacking to well-developed, large, oblong, 20–300 µm long, dark brown to blackish. *Conidiophores* in moderately large to large fascicles, arising from stromata, divergent to dense, erect, straight to curved, cylindrical-filiform or slightly to distinctly geniculate-sinuous, unbranched, 30–160 × 3–5.5 µm, pluriseptate throughout, pale to medium dark brown or olivaceous-brown, paler towards the tip, wall thin to somewhat thickened, smooth; conidiogenous cells integrated, terminal and intercalary, 10–40 µm long, with a single or mostly several distinct conidiogenous loci, 1.5–2 µm diam. *Conidia* solitary, subcylindrical, obclavate-cylindrical, fusiform, straight to curved, rarely sinuous, 20–50 × 3–5 µm, 1–4(–5)-septate, hyaline, thin-walled, smooth, apex obtuse to subacute, base obconically truncate, 1.5–2 µm wide, hila somewhat thickened and darkened.

Holotype: **Colombia**: Lenquazaque, Cundinamarca, on *Chusquea* sp., *Poaceae* (*Bambusoideae*, *Bambuseae*), 1 Dec. 1940, *A. Franko* (CUP 39412).

Host range and distribution: Only known from the type collection.

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.* by its small, cylindrical, obclavate-cylindrical to fusiform, 1–4(–5)-septate conidia.

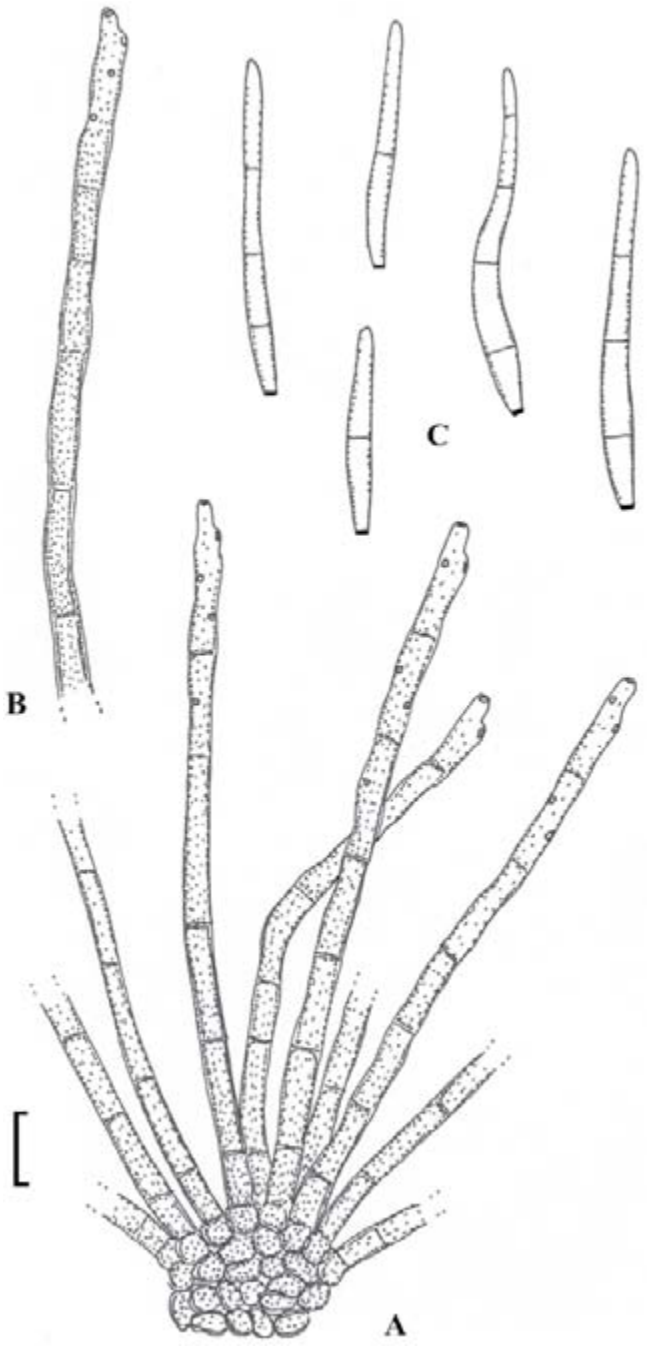

Fig. 8. *Cercospora chusqueae* (CUP 39412, holotype). **A.** Conidiophore fascicle. **B.** Conidiophore. **C.** Conidia. Bar = 10 µm.

Cercospora coicis N.D. Sharma & Mishra, *J. Indian Bot. Soc*. **56**: 131 (1977); as "*coixii*".
(Fig. 9)

Synonyms: *Cercospora coicis* M.S. Patil & Sawant, *Indian Phytopathol*. **44**: 17 (1991), *nom. illeg.* (Art. 39.1) [*holotype*: **India**: *Maharashtra*: Kolhapur, on *Coix lacryma-jobi*, 22 Nov. 1985, *M. S. Patil* (HCIO 39892)].

Cercospora coicicola Kamal, *Cercosporoid Fungi of India*: 35 (2010), *nom. nov*.

Literature: Crous & Braun (2003: 131), Kamal (2010: 35–36).

Illustrations: Sharma & Mishra (1977: 132, figs 1–2), Patil & Sawant (1991: 16, figs 3–4).

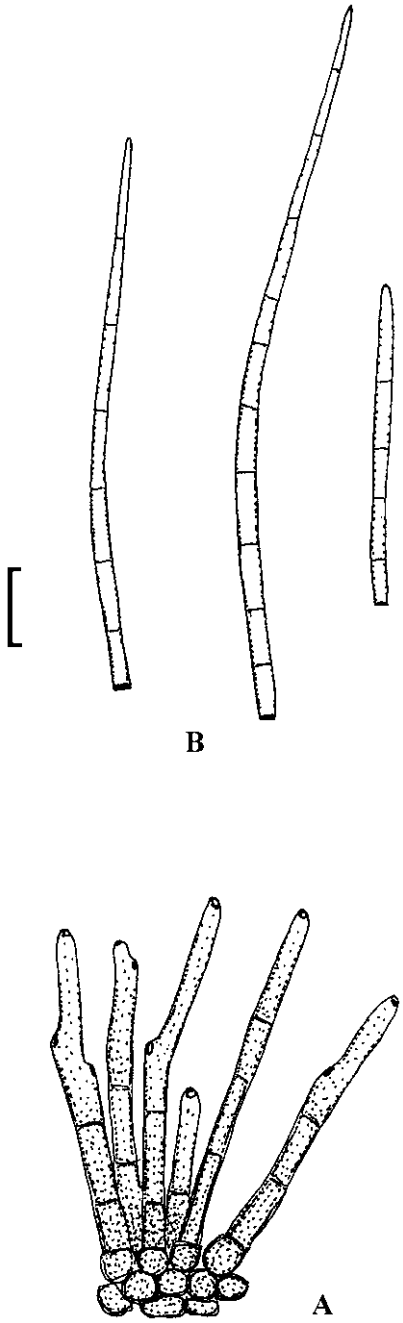

Fig. 9. *Cercospora coicis* (based on Sharma & Mishra 1977: 132, fig 1–2). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Description: *Leaf spots* amphigenous, circular to elliptical, 1–5 mm diam, with greyish brown to grey centre surrounded by a darker margin, brownish to red. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* small, a few aggregated swollen cells to prominent, substomatal, 15–35 µm diam, brown. *Conidiophores* in divergent to sometimes dense fascicles, 2–10, arising from stromata, through stomata, erect, subcylindrical to geniculate, unbranched, 15–45 × 3–5 µm, 0–3-septate, brown or olivaceous-brown, thin-walled, smooth; conidiogenous cells intergrated, terminal, occasionally intercalary or reduced to conidiogenous cells, conidiogenous loci thickened and darkened. *Conidia* solitary, acicular, shorter ones cylindrical or almost so, straight to somewhat curved, 15–125 × 3–5 µm, 3–13-septate, hyaline, thin-walled, smooth, apex pointed or subobtuse, base truncate or only slightly attenuated at the base, hila thickened and darkened.

Holotype: **India**: *Madhya Pradesh*: Jabalpur, Adhartal, on *Coix lacryma-jobi*, Sep. 1975, *N. D. Sharma* (Herbarium, Dept. of Mycol. & Pl. Pathol., J.N. Agric. Univ., Jabalpur, India, No. 22).

Host range and distribution: On *Coix lacryma-jobi* (*Panicoideae*, *Andropogoneae*), *Poaceae*, Asia (India, Madhya Pradesh, Maharashtra).

Notes: Type material was not examined, but according to the original description and illustration (Crous & Braun 2003), this species may be a true *Cercospora s. str.* close to *C. apii s. lat.* Kamal (2010) examined type material and confirmed its position as a *Cercospora* species. He emphasized that the homonymous *C. coicis* M.S. Patil & Sawant was distinct from *C. apii s. lat.* by its smaller, broader, few-celled, almost cylindrical conidia and introduced the new name *C. coicicola* for this taxon. The latter species was probably based on immature material with relatively short conidia. Young, short, more or less cylindrical conidia were also described and illustrated for *C. coicis*. The two species are probably conspecific and *Cercospora* on *Coix lacryma-jobi* is treated as a single species.

Cercospora cymbopogonicola U. Braun, **nom. nov.**
MycoBank MB811241
(Fig. 10)

Basionym: *Cercospora sorghi* var. *cymbopogonis* Govindu & Thirum., *Sydowia* **8**: 227 (1954), non *C. cymbopogonis* J.M. Yen, 1977.

Literature: Crous & Braun (2003: 382), Kamal (2010: 88).

Illustration: Govindu & Thirumalachar (1954: plate 8, figs 33–34).

Description: *Leaf spots* linear to irregular, confluent to form long stripes often extending over the whole leaf surface, medium brown or olivaceous. *Caespituli* mainly epiphyllous. *Mycelium* internal. *Stromata* composed of a few swollen hyphal cells, brown. *Conidiophores* fasciculate, straight, subcylindrical to geniculate-sinuous, unbranched, 28.5–70 × 2.5–4 µm, 1-septate, olivaceous to deep brown; conidiogenous cells integrated, terminal, conidiogenous loci thickened and darkened. *Conidia* solitary, obclavate-cylindrical, 20–50 × 2–3.5 µm, 1–10-septate, hyaline, thin-walled, smooth, apex pointed, base obconically truncate, hila thickened and darkened.

Holotype: **India**: *Karnataka*: Bangalore, Hebbal, on *Cymbopogon caesius, Poaceae* (*Panicoideae*, *Andropogoneae*), 10 Feb. 1953, *H. C. Govindu* (probably not preserved).

Host range and distribution: Only known from the type collection.

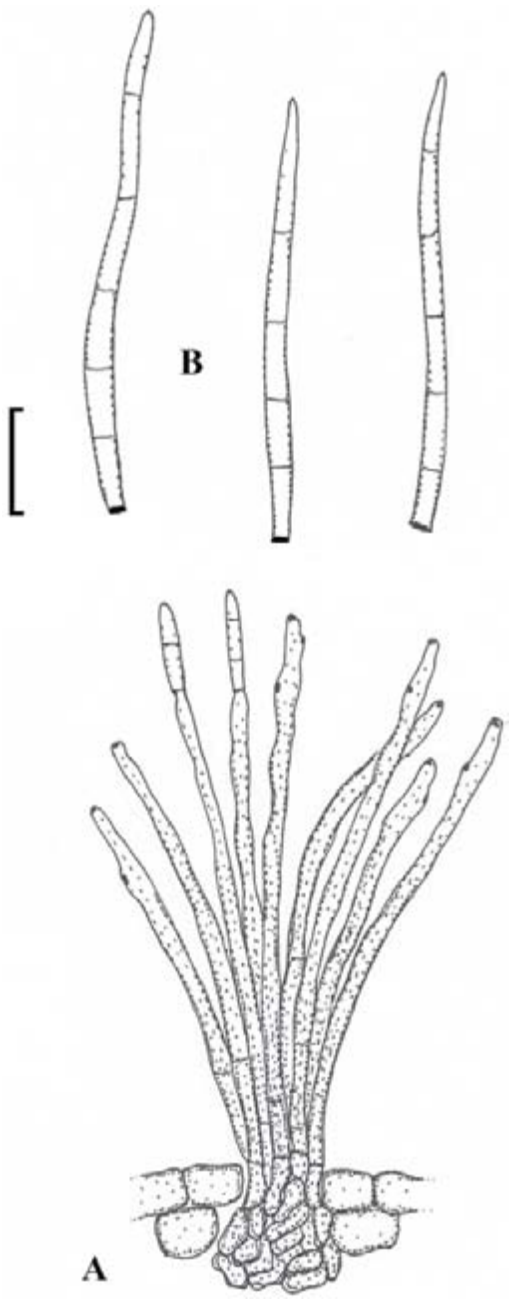

Fig. 10. *Cercospora cymbopogonicola* (based on Govindu & Thirumalachar 1954: plate 8, figs 33–34). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Notes: Type material of *Cercospora sorghi* var. *cymbopogonis* could not be traced and is probably not preserved, but based on the original description this taxon is distinct from *Cercospora sorghi* by having much shorter and narrower conidia and warrants consideration as a distinct species. The relation to collections of "*C. sorghi*" on other *Cymbopogon* spp. from other parts of the world (see "host range" under *C. sorghi*) is unclear.

Cercospora cynodontis Pavgi & R.A. Singh, *Mycopathol. Mycol. Appl*. **43**: 120 (1971).
(Fig. 11)

Literature: Crous & Braun (2003: 150), Kamal (2010: 38).

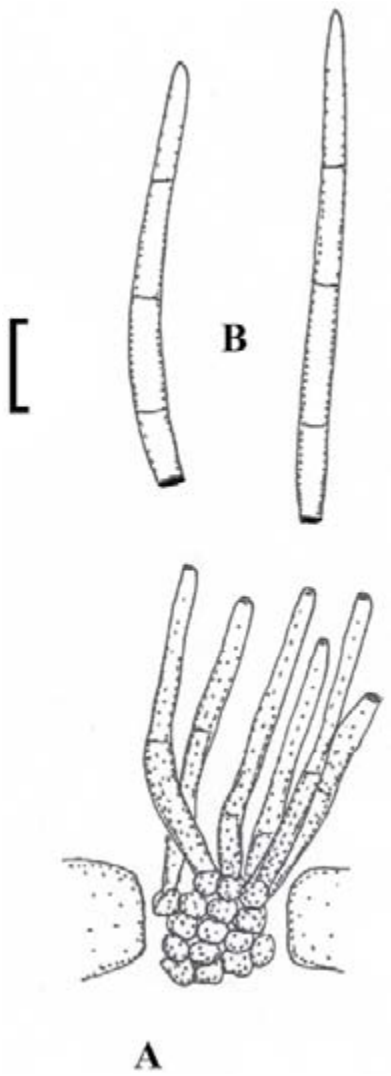

Fig. 11. *Cercospora cynodontis* (based on Pavgi & Singh 1971: 118, figs 8–10). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Illustration: Pavgi & Singh (1971: 118, figs 8–10).

Description: *Leaf spots* amphigenous, also on the leaf sheath, oblong-linear, scattered, 0.5–2 × 0.2–0.3 mm, brown, centre later grey to greyish white. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* small, poorly developed, brown. *Conidiophores* fasciculate, 2–5, loose to moderately dense, erect, straight to somewhat geniculate-sinuous, unbranched, 20–55 × 3–5 µm, 0–2-septate, olivaceous-brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, conidiogenous loci probably somewhat thickened and darkened. *Conidia* solitary, obclavate-cylindrical to cylindrical, 17.5–65(–105) × 2.5–4 µm, 0–5-septate, subhyaline, thin-walled, smooth, apex obtuse, base obconically truncate, hila probably somewhat thickened and darkened.

Types: **India:** *Uttar Pradesh*: Varanasi, on *Cynodon dactylon*, 10 Oct. 1965, *R. A. Singh*, MSP No. 344 (K(M) IMI 129666 and HCIO – syntypes).

Host range and distribution: On *Cynodon dactylon*, *Poaceae* (*Chloridoideae*, *Cynodonteae*), Asia (India, Uttar Pradesh; Malaysia).

Notes: Type material of this species held at IMI was examined and found to be in poor condition and without conidia. Only a few conidiophores, as described in the original description and illustration were found. Detailed examinations of the conidiogenous loci were impossible. Syntype material deposited at HCIO was not available. This species requires leptotypification. The colourless conidia of this species indicate it belongs to *Cercospora s. str*.

Cercospora digitariae J. Kranz, *Sydowia* **19**: 74 "1965" (1966).
(Fig. 12)

Literature: Crous & Braun (2003: 161), Kamal (2010: 41).

Illustration: Kranz (1966: 75, fig. 2).

Description: *Leaf spots* elliptical to rounded, 3–4 mm diam, brown, at first indistinct, finally often confluent. *Caespituli* amphigenous, punctiform, dark brown. *Mycelium* internal. *Stromata* substomatal, 10–30 µm diam, almost colourless to brown. *Conidiophores* in well-developed, large fascicles, 10–30, arising from stromata, through stomata, erect, straight, subcylindrical-conical to somewhat geniculate-sinuous, straight to curved, unbranched, 5–45 × 2–3 µm, usually aseptate, occasionally with a single indistinct septum, subhyaline to light brown, thin-walled, smooth; conidiophores usually reduced to conidiogenous cells, conidiogenous loci conspicuous, thickened and darkened, 1–1.5 µm diam. *Conidia* solitary, narrowly subcylindrical, subacicular to slightly cylindrical-obclavate or fusiform, straight to curved, occasionally sigmoid, 30–100 × 1–2 µm, 3–8(–11)-septate, hyaline, thin-walled, smooth, apex acute to subobtuse, base short obconically truncate, 0.5–1.5 µm wide, hila slightly thickened and darkened.

Holotype: **Guinea**: Kindia, on *Digitaria longiflora*, Jul. 1962, *J. Kranz* (K(M) IMI 95634).

Host range and distribution: On *Digitaria* (*abyssinica* [*mutica, scalarum*], *exilis, insularis*, *longiflora, stricta*, *Digitaria* sp.), *Poaceae* (*Panicoideae*, *Paniceae*), Africa (Guinea, Kenya, Nigeria, Uganda), Asia (India, Chandigarh), Oceania (New Caledonia), South America (Venezuela).

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.*

Cercospora echinochloae Davis, *Trans. Wisconsin Acad. Sci*. **18**: 106 (1915).
(Fig. 13)

Literature: Chupp (1954: 245), Pavgi & Singh (1971: 119), Crous & Braun (2003: 169), Kamal (2003: 42), Braun & Urtiaga (2013: 592).

Exsiccatae: Davis, Fungi Wiscon. Exs. 14.

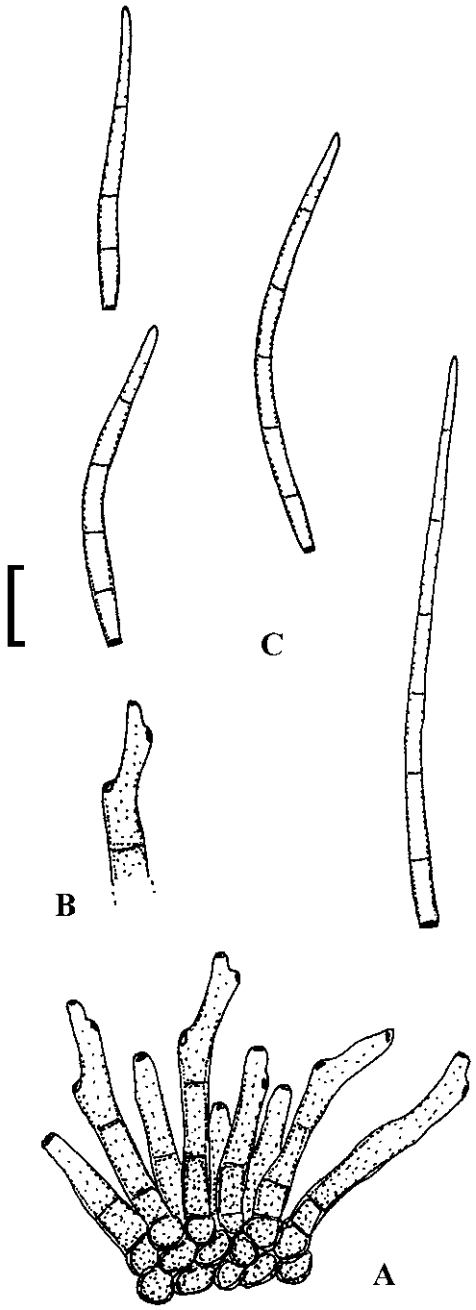

Fig. 12. *Cercospora digitariae* (K(M), IMI 95634, holotype). **A.** Conidiophore fascicle. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

Description: *Leaf spots* amphigenous, oblong, between veins, 3–19 × 0.3–0.5 mm, reddish brown, later with pale centre. *Caespituli* amphigenous, mainly hypophyllous, punctiform, delicate, dark brown, often in lines. *Mycelium* internal. *Stromata* lacking or small, substomatal, brown. *Conidiophores* in small, loose to moderately dense fascicles, 2–15, arising from stromata, emerging through stomata, erect, subcylindrical to moderately geniculate-sinuous, unbranched or occasionally with a short lateral branchlet, 10–80 × 3–7(–8) µm, 0–4-septate, yellowish, subhyaline, uniformly pale to medium olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally intercalary, occasionally conidiophores reduced to conidiogenous cells, 10–30 µm long, sympodial, with a single or several conidiogenous loci, conspicuous, somewhat

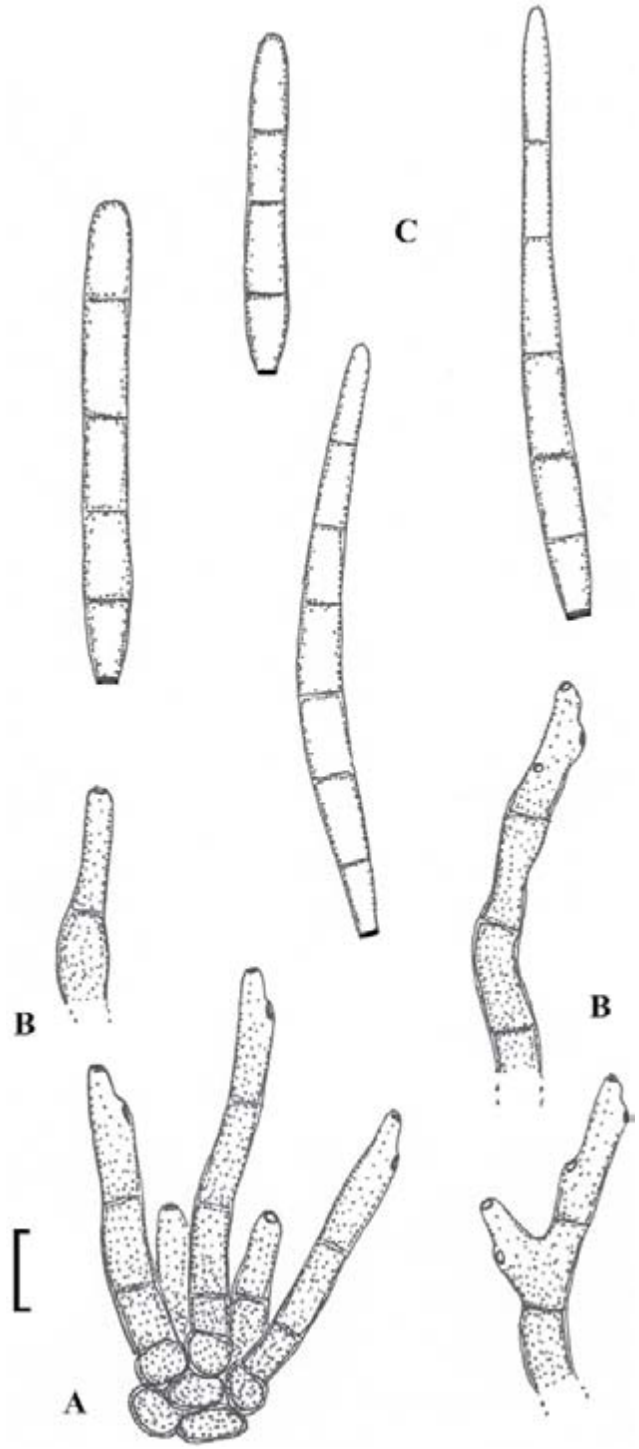

Fig. 13. *Cercospora echinochloae* (BPI 436024, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

thickened and darkened, 1.5–2 µm diam. *Conidia* solitary, obclavate-cylindrical, straight to somewhat curved, 20–65(–95) × 2–5 µm, 0–7-septate, hyaline or subhyaline, with a pale greenish tinge (i.e. wall colourless, but content of the cells pale greenish), thin-walled, smooth, apex subacute or subobtuse, base truncate 1.5–2 µm wide, hila thickened and darkened.

Lectotype (**designated here**, MycoBank MBT200449): **USA**: *Wisconsin*: Sauk County, Devil's Lake, on *Echinochloa crus-galli*, 9 Aug. 1913, *J. J. Davis* (BPI 436024). *Isolectotypes*: CUP 39736, WIS and Davis, Fungi Wiscon. Exs. 14, e.g. BPI 436026, 868177 and CUP.

Host range and distribution: On *Echinochloa* (*colona*, *crus-galli*, *polystachya*, *Echinochloa* sp.), *Poaceaea* (*Panicoideae*, *Paniceae*), Asia (India, Uttar Pradesh; Papua New Guinea), Central and South America (Panama, Venezuela), North America (USA, Iowa, Kansas, North Dakota, Wisconsin), Oceania (Fiji, New Caledonia), West Indies (Cuba).

Notes: A true *Cercospora s. str.* distinct from *C. apii s. lat.* by having consistently obclavate-cylindrical conidia. Records on *Cyperus rotundus* are doubtful. Chupp (1954) mentioned that he examined a collection on *Echinochloa crus-galli* from North Dakota, which morphologically agreed with *C. sorghi*, while other material from Venezuela deviated by longer and narrower conidia.

Cercospora eleusines Munjal, Lall & Chona, *Indian Phytopathol*. **14**: 181 (1961); as "*eleusinis*".
(Fig. 14)

Literature: Crous & Braun (2003: 173), Kamal (2010: 43).

Illustration: Munjal *et al*. (1961: 183, fig. 3).

Description: *Leaf spots* oblong, 2–8 × 0.5–2 mm, also at sheaths, centre greyish white, margin olivaceous-brown to dark brown. *Caespituli* hypophyllous. *Mycelium* internal. *Stromata* subglobose, small or to 50 µm diam, brown. *Conidiophores* in fascicles, few to numerous, divergent to dense, arising from stromata, erect, straight to curved, subcylindrical to geniculate-sinuous or subnodulose, unbranched, 25–300 × 4–5 µm, pluriseptate, brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally intercalary, 10–40 µm long, conidiogenous loci thickened and darkened, 1–1.5(–2) µm diam. *Conidia* solitary, acicular to narrowly obclavate-cylindrical, 50–260 × 3–4 µm, pluriseptate, hyaline, apex subacute to subobtuse, base truncate to obconically truncate, 1–2 µm wide, hila thickened and darkened.

Holotype: **India**: *Uttarakhand*: Nainital, Kathgodam, *Eleusine coracana*, 23 Oct. 1959, *J. N. Kapoor* (HCIO 26848).

Host range and distribution: On *Eleusine* (*coracana*, *Eleusine* sp.), *Poaceae* (*Chloridoideae*, *Eragrostideae*), Asia (India, Uttarakhand; Nepal, Thailand).

Note: This is a true *Cercospora s. str.* distinct from *C. apii s. lat.* by having smaller conidiogenous loci, 1–1.5(–2) µm wide, and acicular to narrowly obclavate-cylindrical conidia.

Cercospora eragrostidis McKenzie & Latch, *New Zealand J. Agric. Res*. **27**: 113 (1984); as "*eragrostis*".
(Fig. 15)

Literature: Crous & Braun (2003: 175).

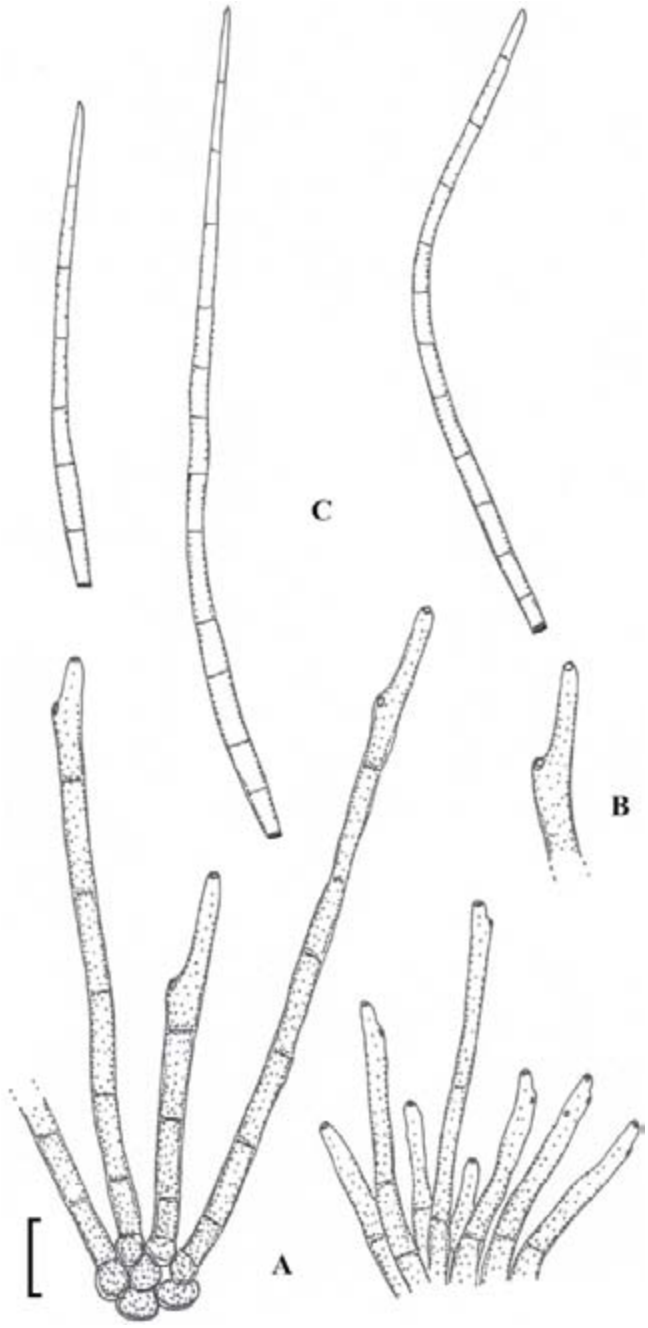

Fig. 14. *Cercospora eleusines* (based on Munjal *et al.* 1961: 183, fig. 3). **A.** Conidiophore fascicles. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

Illustration: McKenzie & Latch (1984: 114, fig. 1A).

Description: *Leaf spots* amphigenous, elliptical-linear, centre pale, margin pale brown. *Caespituli* hypophyllous. *Mycelium* internal; hyphae branched, septate, pale olivaceous, 2–3 µm wide. *Stromata* substomatal, 30–55 × 25–30 µm, medium brown. *Conidiophores* in well-developed fascicles, to 30, divergent to dense, erect, straight to flexuous, subcylindrical-conical to somewhat geniculate in the fertile portion, unbranched, 15–30(–50) × 3.5–5.5 µm, 0–1(–2)-septate, olivaceous-brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, polyblastic, sympodial,

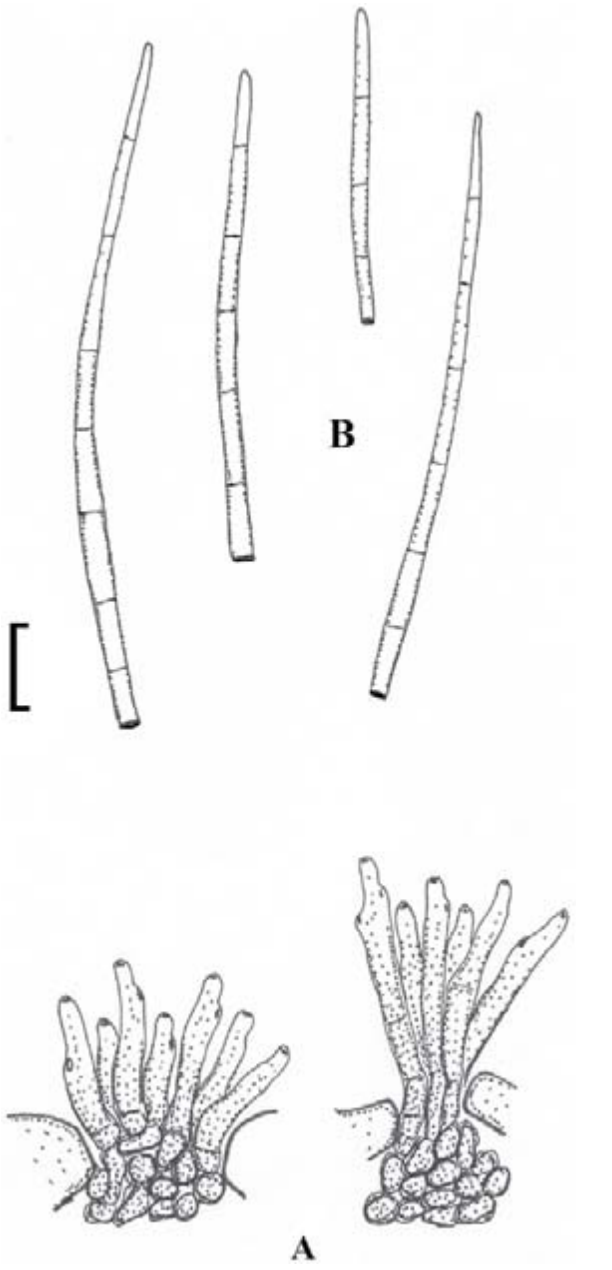

Fig. 15. *Cercospora eragrostidis* (PDD 43152, holotype). **A.** Conidiophore fascicles. **B.** Conidia. Bar = 10 µm.

conidiogenous loci thickened and darkened, slightly prominent, 1.25–2 µm diam. *Conidia* solitary, obclavate-cylindrical, straight to usually somewhat curved, 30–120 × (2–)3–3.5(–4) µm, (0–)3–6(–8)-septate, hyaline, pink in mass, thin-walled, smooth, apex rounded to subacute, base short obconically truncate, 1.25–2 µm wide, hila somewhat thickened and darkened.

Holotype: **New Zealand**: Auckland, Waitakere Range, on *Eragrostis brownei*, 22 Apr. 1975, *J. M. Dingley* (PDD 43152).

Host range and distribution: On *Eragrostis brownei*, *Poaceae* (*Chloridoideae*, *Eragrostideae*), New Zealand.

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.*

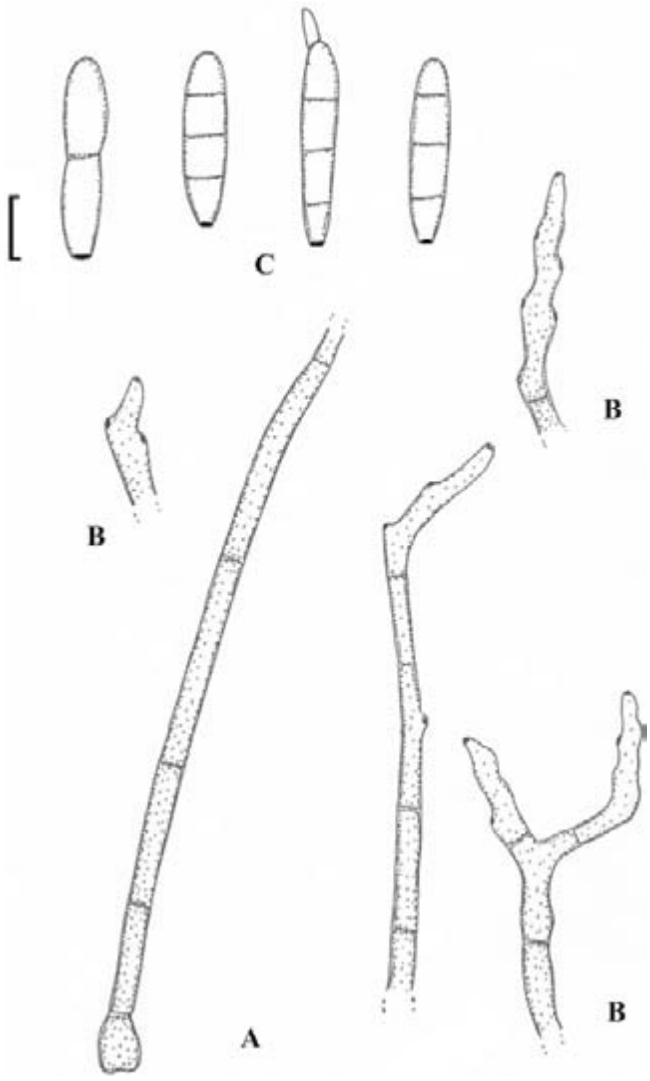

Fig. 16. *Cercospora eremochloae* (K(M) IMI 321201, isotype). **A.** Conidiophores. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Cercospora eremochloae R.G. Shivas & A.J. Young, *Persoonia* **26**: 111 (2011).
(Fig. 16)

Illustration: Shivas & Young, in Crous *et al*. (2011b: 110, plate, without number).

Description: *Leaf spots* amphigenous, narrowly elliptical, often elongated, to 7 cm long, 0.5–1.5 mm wide, smaller leaf spots vein-limited, centre orange to pale brown with darker reddish to purplish brown diffuse margin. *Caespituli* hypophyllous, punctiform or inconspicuous, dark brown. *Mycelium* internal. *Stromata* reddish brown, immersed, erumpent, usually substomatal, to 40 µm diam. *Conidiophores* in small, loose fascicles, 2–10, arising from stromata, usually through stomata, erect, geniculate-sinuous, unbranched to branched, 100–275 × 4–6 µm, somewhat attenuated towards the apex, pluriseptate (to 20), reddish brown, paler towards the tip, wall thin, smooth; conidiogenous cells integrated, terminal, sympodial, geniculate, mono- to polyblastic, conidiogenous loci thickened and darkened, 1–1.5 µm wide. *Conidia* solitary or in short branched or unbranched chains, cylindrical, ellipsoid, obovoid, obclavate, fusiform, straight or almost so, 10–35 × 3–7.5 µm, (0–)1–4(–6) septate, hyaline or subhyaline, smooth, apex rounded, base short obconically truncate, 1–1.5 µm wide, hila somewhat thickened and darkened-refractive.

Holotype: **Australia**: *Queensland*: Mareeba, on *Eremochloa bimaculata*, 30 Apr. 1987, *J. L. Alcorn* (BRIP 15782). *Isotype*: K(M) IMI 321201.

Host range and distribution: On *Eremochloa bimaculata*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Australia (Queensland).

Notes: Due to at least partly catenate conidia and short, broad conidia with few septa, this species is passalora-like and resembles former *Phaeoramularia* species. Its position in *Cercospora s. str*. (Groenewald *et al*. 2013) was determined by means of molecular sequence analyses (ITS and LSU), which provides additional proof that passalora-like species with colourless conidia belong to *Cercospora*, even in rare cases when conidia are formed in chains.

Cercospora festucae Hardison, *Mycologia* **37**: 492 (1945).
(Fig. 17)

Literature: Chupp (1954: 246), Crous & Braun (2003: 183).

Description: *Leaf spots* oval to oblong, 0.5–4 mm in length, centre grey, margin purplish. *Caespituli* amphigenous, but mainly hypophyllous. *Mycelium* internal. *Stromata* lacking or only formed as small aggregations of a few swollen hyphal cells, brown. *Conidiophores* in small to moderately large, loose to dense fascicles, mostly 3–8, arising from internal hyphae or stromatic hyphal aggregations, erect, straight, subcylindrical to somewhat geniculate-sinuous, unbranched, 20–800 × 3–5 µm, with few to numerous septa, pale to medium olivaceous-brown, paler towards the tip; conidiogenous cells integrated, terminal, conidiophores rarely reduced to conidiogenous cells, about 10–30 µm long, conidiogenous loci thickened and darkened, 2–3 µm diam. *Conidia* solitary, acicular, shorter conidia subacicular, fusoid-obclavate, straight to curved, occasionally somewhat sigmoid, 30–300 × 2–5 µm, 3- to pluriseptate, hyaline, apex pointed, base truncate, subtruncate to short obconically truncate, (1.5–)2–3 µm wide, hila thickened and darkened.

Holotype: **USA**: *Kentucky*: Fayette County, Lexington, on *Festuca arundinacea*, 23 Aug. 1943, *J. R. Hardison* (CUP 39807). *Topotype* (from July 1944): BPI 436348.

Host range and distribution: On *Festuca arundinacea* [*elatior*], *Poaceae* (*Pooideae*, *Bromeae*, *Poeae*), North America (USA, Georgia, Kentucky, Mississippi, Oklahoma, Oregon, Texas).

Notes: This is a true *Cercospora s. str.* close to *C. apii s. lat.* The lengths of the conidiophores and conidia are variable, ranging from uniformly short to long conidiophores to 800 µm, and conidia to 300 µm. Short conidia may be narrowly

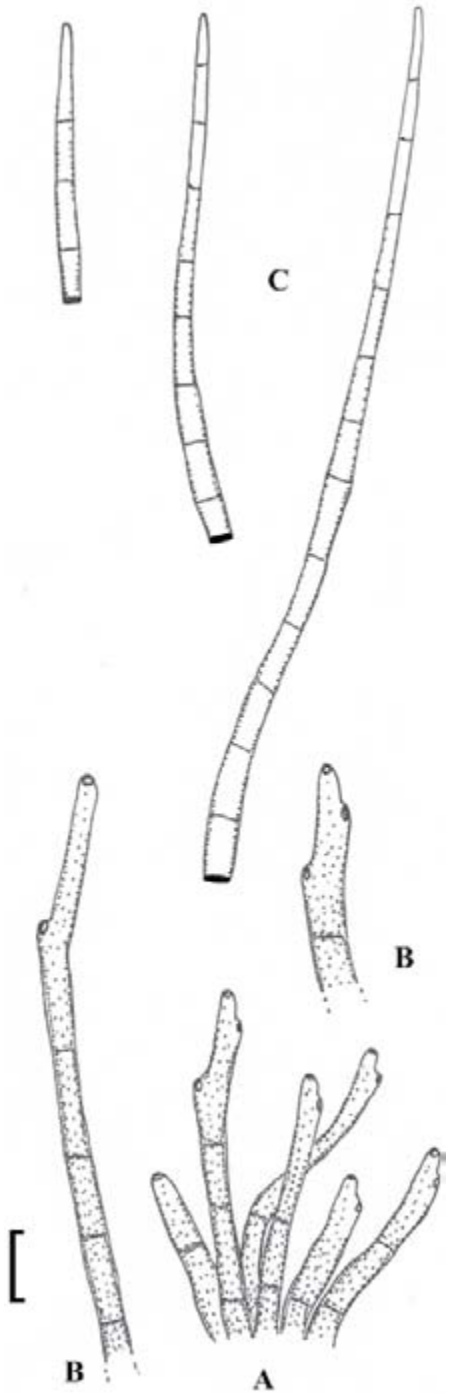

Fig. 17. *Cercospora festucae* (BPI 436348, topotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

obclavate-cylindrical, with truncate to obconically truncate bases. Collections on *Bromus inermis* and *B. marginatus* were previously referred to as *C. festucae*, which is incorrect. The genera *Bromus* (*Bromeae*) and *Festuca* (*Poeae*) are not closely allied. The two tribes belong to the *Pooideae* but they are only distantly related (Bouchenak-Khelladi *et al.* 2008). Material on *Bromus marginatus* was not available, but two collections on *B. inermis* from Texas were re-examined and found to belong to two different species, each morphologically distinct from *C. festucae* (see *Cercospora apii* [A] and *Cercospora* sp.). A record of *C. festucae* on *Bromus marginatus* from Japan (Katsuki 1966, Crous & Braun 2003) is also incorrect and can currently only be referred to as *C. apii s. lat*. Katsuki (1966) provided a description of this material: stromata none; conidiophores solitary or 2–3 stalks, medium olivaceous-brown near the base, paler and sometimes narrower toward the tip, almost straight, not branched, tips rounded, sparingly septate, 47–90 × 2–3um; conidia acicular, curved or undulate, indistinctly 2–7 septate, base truncate, tip acute, hyaline, 21–54 × 2–3 um. A part of the material concerned had been sent to C. Chupp who considered it as a collection belonging to *C. apii s. str*. A sample maintained in Japan was recently re-examined by C. Nakashima, and found to be devoid of any conidiophores and conidia.

Cercospora fusimaculans G.F. Atk., *J. Elisha Mitchell Sci. Soc*. **8**: 50 (1892).
(Fig. 18)

Synonyms: *Cercospora panici* Davis, *Trans. Wisconsin Acad. Sci*. **19**: 714 (1919) [*holotype*: **USA**: *Wisconsin*: Shiocton, on *Panicum latifolium*, 15 Aug. 1917, *J. J. Davis* (WIS)].
Cercosporina panici (Davis) Sacc., *Syll. Fung*. **25**: 904 (1931).
Cercospora panici-miliacei Sawada, *Rep. Gov. Agric. Res. Inst. Formosa* **51**: 131 (1931) [*syntype*: **Taiwan**: Taichung, on *Panicum miliaceum*, 2 Aug. 1928, *K. Sawada*; 3 Aug. 1928, *K. Sawada* (TNS-F-220504)].
Phaeoramularia fusimaculans (G.F. Atk.) X.J. Liu & Y.L. Guo, *Acta Phytopathol. Sin*. **12**: 9 (1982).
Passalora fusimaculans (G.F. Atk.) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam*.: 192 (2003).

Literature: Saccardo (1892: 655; 1931: 904), Vassiljevsky & Karakulin (1937: 271), Chupp (1954: 246), Vasudeva (1963: 112), Katsuki (1965: 33), Ellis (1976: 260), McKenzie & Latch (1984: 115), Hsieh & Goh (1990: 141–143), Crous & Braun (1996: 272), Braun & Melnik (1997: 61), Guo *et al*. (2003: 144–146), Braun & Crous (2005: 410), Kamal (2010: 120–121).

Illustrations: Chupp (1954: 243, fig. 116), Vasudeva (1963: 112, fig. 72), McKenzie & Latch (1984: 114, fig. 1D), Ellis (1976: 260, fig. 197A), Hsieh & Goh (1990: 141, fig. 109, 144, fig. 110, as *Phaeoramularia* sp.), Guo *et al*. (2003: 145, fig. 91).

Description: *Leaf spots* amphigenous, oval, elliptical, fusiform to oblong or irregular, 0.5–4 × 0.5–2 mm, when oblong or confluent to 10 mm in length, centre brownish to dingy grey, margin reddish to dark brown, sometimes entire spots uniformly brown. *Caespituli* amphigenous, often epiphyllous, delicate to distinctly punctiform, scattered, dark. *Mycelium* internal; hyphae branched, septate, 1.5–5 µm wide, subhyaline to pale olivaceous. *Stromata* lacking or almost so to developed, but not very large, immersed to substomatal, 10–35 µm diam, brown. *Conidiophores* in divergent to occasionally dense fascicles, 2–30, arising from internal hyphae or stromata, through stomata or erumpent, erect, straight, subcylindrical or somewhat attenuated towards the tip to moderately geniculate-sinuous, unbranched, 10–70(–100) × 2.5–4(–5) µm, 0–3(–4)-septate, subhyaline, pale olivaceous-brown to medium brown, pigmentation

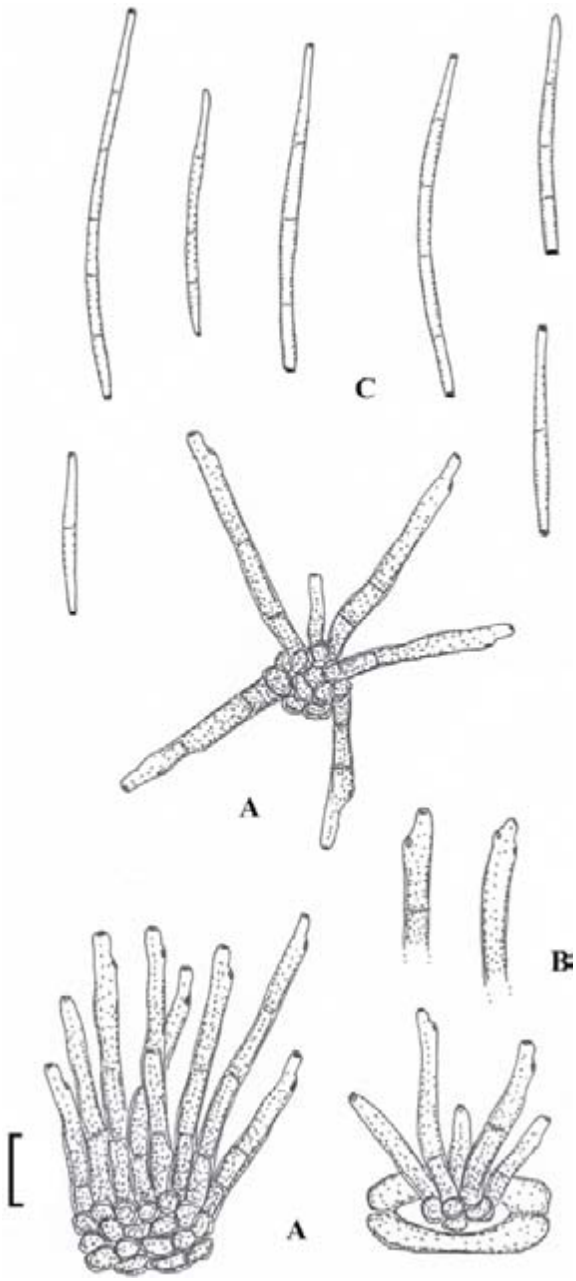

Fig. 18. *Cercospora fusimaculans* (CUP-A-205#1(AL), lectotype). **A.** Conidiophore fascicles. **B.** Conidophore tips. **C.** Conidia. Bar = 10 µm.

uniform throughout or paler towards the tip, thin-walled, smooth; conidiophores reduced to conidiogenous cells or conidiogenous cells integrated, terminal, 10–30 µm long, with conspicuous conidiogenous loci, 1–1.5(–2) µm diam, thickened and darkened. *Conidia* solitary or catenate, in simple chains, narrowly obclavate-cylindrical, subacicular, (10–)20–100 × 1.5–3 µm, 1–7-septate, colourless, thin-walled, smooth, apex subacute to subtruncate or conically truncate in catenate conidia, base subtruncate to short obconically truncate, 1–1.5 µm wide, hila slightly thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200450): **USA**: *Alabama*: Lee County, Auburn, on *Panicum dichotomum*, 15 Aug. 1891, *B. M. Duggar* 2054 (CUP-A-2054#1(AL)). *Isolectotypes*: CUP-A-2945#2(AL), CUP-A-2945#3(AL).

Host range and distribution: On *Brachiaria* (*brizantha*, *decumbens*, *dictyoneura*, *eminii*, *fasciculata*, *humidicola*, *jubata*, *reptans*, *ruziziensis*, *serrata*, *subquadripara* [*miliformia*]), *Beckeropsis* sp., *Cenchrus* (*hordeoides* [*Pennisetum hordeoides*], *pedicellatus* [*P. pedicellatum*], *polystachion* [*P. polystachyon*], *purpureus* [*P. purpureum*], *spicatus* [*P. glaucum*]), *Chasmopodium* (*caudatum*, *Chasmopodium* sp.), *Digitaria* (*cognata* [*Leptoloma cognatum*], *insularis*, *ischaemum*, *abyssinica* [*scalarum*]), *Echinochloa* (*colona, crus-galli*), *Entolasia marginata*, *Ichnanthus* sp., *Oplismenus undulatifolius*, *Panicum* (*acuminatum* [*implicatum*, *pacificum*], *antidotale*, *boscii*, *clandestinum*, *dichotomiflorum*, *dichotomum*, *laetum*, *latifolium*, *laxiflorum* [*xalepense*], *leibergii*, *maximum*, *mertensii*, *miliaceum*, *oligosanthes* [*scribnerianum*], *perlongum*, *plicatum* [*praecocius*], *portoricense* [*columbianum*], *virgatum*, *wilcoxianum*, *Panicum* spp.), *Paspalidium geminatum*, ?*Rottboellia cochinchinensis* [*exaltata*], *Setaria* (*barbata*, *homonyma* [*aequalis*, *lancea*], *plicata*, *pumila* [*pallidifusca*]), *Sorghum* (*bicolor, halepense*), *Stenotaphrum* (*pallens*, *secundatum*), *Urochloa panicoides* [*Panicum javanicum*], *Zea mays*, *Poaceae* (*Panicoideae*) [unresolved records on *Bouchloe dactyloides* [*Bouteloa dactyloides*] and *Eleusine coracana*, *Chloroideae*], Africa (Botswana, Ethiopia, Ghana, Guinea, Ivory Coast, Kenya, Malawi, Nigeria, Rwanda, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe), Asia (Brunei, China, India, Japan, Korea, Malaysia, Papua New Guinea, Philippines, Taiwan, Thailand), Australia, Caucasus (Azerbaijan, Georgia), Central and South America (Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guatemala, Guyana, Honduras, Nicaragua, Panama, Peru, Venezuela), Europe (France, Russia), New Zealand, North America (Mexico; USA, Alabama, Florida, Iowa, Idaho, Illinois, Kansas, North Carolina, North Dakota, Oklahoma, Oregon, Texas, Virginia, West Virginia, Wisconsin), Oceania (Fiji, Guam, New Caledonia, Palau, Samoa, Solomon Islands, Tonga, Vanuatu), and West Indies (Cuba, Dominican Republ., French Antilles, Guadeloupe, Jamaica, Martinique, Puerto Rico, Trinidad and Tobago, Virgin Islands).

Notes: Since the conidia of *C. fusimaculans* are colourless, we prefer to maintain this taxon as a species of *Cercospora s. str*. as results of molecular sequence analyses have shown that species with thickened, darkened conidiogenous loci and conidial hila combined with colourless conidia, irrespective of whether they are formed singly or in chains, belong to *Cercospora s. str*. (Braun *et al*. 2013). *Cercospora agrostidis* on *Agrostis* and *Sphenopholis* spp. (*Poaceae*, *Pooideae*, *Aveneae*) in North America, previously reduced to synonymy with *C. fusimaculans* (Braun & Mel'nik 1997, Crous & Braun 2003), is now at least tentatively maintained as a separate species (see comments under *C. agrostidis*). Hsieh & Goh (1990) described conidia to 200 µm long, but conidia longer than 100 µm have not been found in our examinations. *Rottboellia cochinchinensis* [*R. exaltata*] has been recorded as a host of *C. fusimaculans*. These records are doubtful and probably represent *C. rottboelliae*.

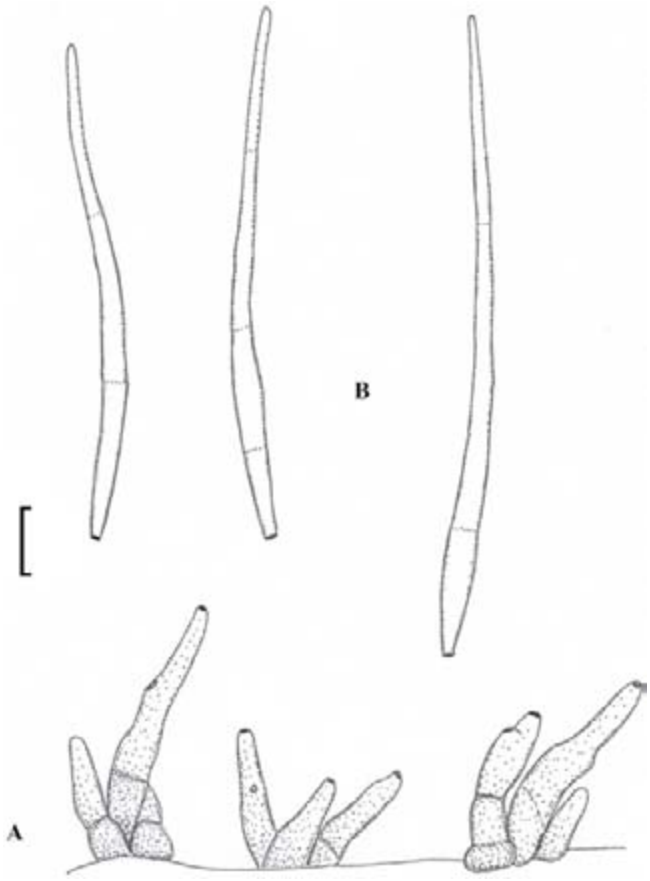

Fig. 19. *Cercospora ischaemi* (based on Shivas *et al*. 2014: 4, fig. 2). **A.** Conidiophore fascicles. **B.** Conidia. Bar = 10 µm.

Cercospora ischaemi R.G. Shivas, Marney & McTaggart, *Fungal Biol.* (2014), http://dx.doi.org/10.1016/j.funbio.2014.09.004
(Fig. 19)

Illustration: Shivas *et al*. (2014: 4, fig. 2)

Description: *Leaf spots* amphigenous, linear to narrowly ellipsoidal, bordered by parallel leaf veins, to 1 cm long and 1 mm wide, dark reddish brown to dark brown, with a narrow yellowish diffuse halo to 0.5 mm wide, scattered, of similar appearance on upper and lower leaf surfaces. *Caespituli* epiphyllous, inconspicuous. *Mycelium* internal. *Stromata* absent. *Conidiophores* erumpent through the cuticle, in loose fascicles of 2–5, erect, subcylindrical, sometimes geniculate, 10–40 × 3–5 µm, subhyaline to pale brown, thin-walled, smooth; conidiogenous cells terminal, subcylindrical, sympodial, hyaline, smooth, polyblastic; conidiogenous loci conspicuous, flat, circular, thickened and darkened, 1.5–2.0 µm wide. *Conidia* solitary, obclavate, with a narrowly obconically truncate base and then attenuated towards the apex, 60–120 × 4–5 µm, 1–3-septate, hyaline, smooth, hila thickened and darkened-refractive, 1.5–2.0 µm wide.

In vitro: (in the dark, 23°C, after 4 wk): *Colonies* on potato-dextrose agar 5 cm diam, flat with scarce aerial mycelium, pale mouse grey with irregular pale and darker patches, margin irregularly crenate; reverse fuscous-black and paler towards the margin. On oatmeal agar 2.5 cm diam, flat with scarce aerial mycelium, pale mouse grey, zonate, faintly rosy-vinaceous towards the margin, reverse fuscous-black; on malt extract agar 3 cm diam, flat, radially wrinkled, margin entire, grey-olivaceous, reverse black.

Holotype: **Australia**: *Northern Territory*: Victoria River Downs, S 15º 36' 05", E 131º 12' 49", on leaves of *Ischaemum australe*, 20 Apr. 2012, *R.G. Shivas* (BRIP 56010, including ex-type strain).

Host range and distribution: On *Ischaemum australe*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Australia (Northern Territory, Western Australia).

Notes: *Cercospora ischaemi* is known from the type collection and a second sample from Western Australia (BRIP 51367). A specimen (BRIP 4473) on *Ischaemum australe* from Queensland had comparable symptoms to *C. ischaemi*, but according to Shivas *et al.* (2014) morphological examination indicated the fungus differed and warranted further study. *Cercospora ischaemi*, together with *C. eremochloae*, are recently described species from native Australian tropical grasses (Crous *et al.* 2011). *Cercospora coniogrammes* (JX143583) on *Coniogramme* (*Pteridaceae*) from Australia had the highest genetical identity (96%, 496/518 identical base pairs) to *C. ischaemi* in a BLAST search of the ITS region of rDNA.

Cercospora janseana (Racib.) O. Constant., *Cryptog. Mycol*. **3**: 63 (1982).
(Fig. 20)

Basionym: *Napicladium janseanum* Racib., *Parasitische Algen und Pilze Javas* **2**: 41 (1900).

Synonyms: *Passalora janseana* (Racib.) U. Braun, *Schlechtendalia* **5**: 39 (2000).

Cercospora oryzae Miyake, *Bot Mag. Tokyo* **23** (267): 139 (1909) [*holotype*: **Japan**: *Ehime*: Agricultural Experiment Station, on *Oryza sativa*, Sep. 1907, *I. Miyake* (not traced, probably not preserved)].

Sphaerulina oryzina Hara, *Diseases of the rice plant* (Japan): 144 (1918) [*holotype*: **Japan**: *Gifu*: Kawaue, on *Oryza sativa*, 25 Oct. 1917 (not traced, probably not preserved)].

Cercospora oryzae var. *rufipogonis* R.A. Singh & Pavgi, *Sydowia* **21**: 176 "1967" (1968) [*syntypes*: **India**: *Uttar Pradesh*: Varanasi, on *Oryza rufipogon*, 1 Nov. 1964, *R. A. Singh* (HCIO, MSP no. 348].

Literature: Saccardo (1913: 1431), Vassiljevsky & Karakulin (1937: 272), Chupp (1954: 249), Vaduseva (1963: 156), Mulder & Holliday (1974c), Ellis (1976: 262), Sivanesan (1984: 271), Hsieh & Goh (1990: 135), Teng (1996: 546), Crous & Braun (1996: 280, 299), Braun & Sivapalan (1999: 5), Crous & Braun (2003: 231), Guo *et al*. (2003: 91–92), Kamal (2010: 70, 124).

Illustrations: Mulder & Holliday (1974c, fig., unnumbered), Ellis (1976: 261, fig. 198B), Constantinescu (1982: 64, fig. 1), Sivanesan (1984: 271, fig. 152), Hsieh & Goh (1990: 137, fig. 104), Guo *et al*. (2003: 92, fig. 58).

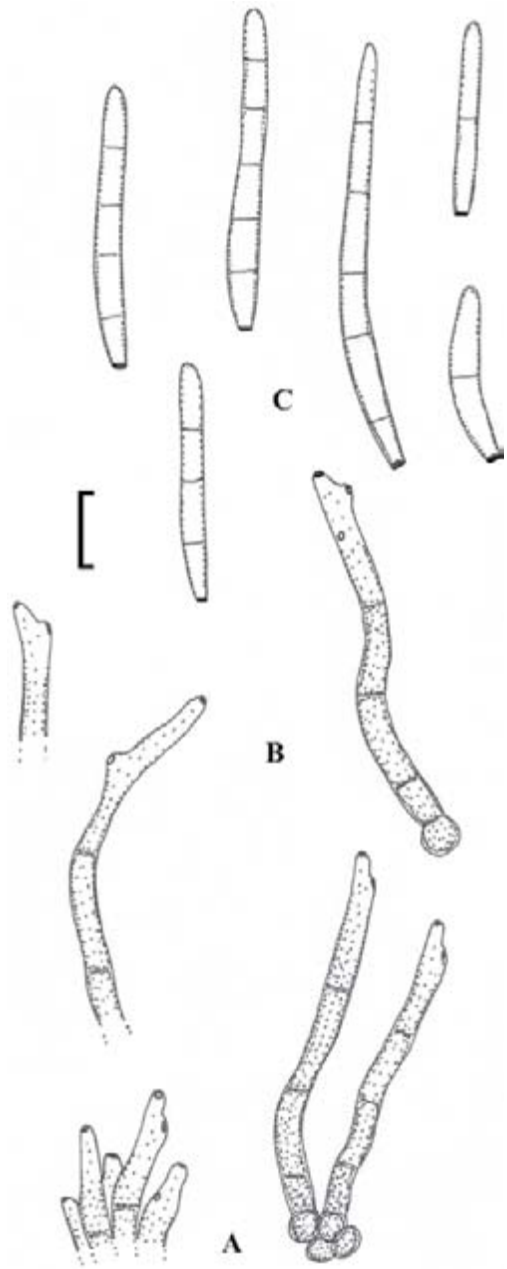

Fig. 20. *Cercospora janseana* (P [PS 60-114]). **A.** Conidiophore fascicles. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Description: *Leaf spots* amphigenous, linear, oval or elliptical, 2–15 × 0.5–3 mm, pale to dark brown, paler towards the periphery or centre paler, margin indefinite or darker. *Caespituli* amphigenous, mainly hypophyllous, between veins. *Mycelium* internal. *Stromata* lacking or small, about 10–20 µm diam, substomatal, brown. *Conidiophores* solitary or in small, loose fascicles, about 2–15, arising from internal hyphae or stromata, through stomata, erect, straight to curved, subcylindrical to geniculate-sinuous, sometimes strongly curved to sinuous, unbranched, length variable, occasionally uniformly short, 10–140(–160) × 3–6(–7) µm, continuous to pluriseptate (0–12), pale to medium brown, rarely darker, sometimes paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally reduced to conidiogenous cells, about 10–40 µm long, conidiogenous loci somewhat thickened and darkened, 0.5–1.5 µm diam. *Conidia* solitary, cylindrical to obclavate, straight to curved, (10–)15–65(–85) × 3–6.5 µm, (1–)3–5(–12)-septate, hyaline or subhyaline, thin-walled, smooth, apex obtuse to subacute, base obconically truncate, 1–2 µm wide, hilum somewhat thickened and darkened.

Sexual morph: *Ascomata* scattered to gregarious, immersed, 60–100 µm diam. *Asci* cylindrical-clavate, 50–60 × 10–13 µm, 8-spored. *Ascospores* fusoid, 20–33 × 4–5 µm, 3-septate, colourless.

Lectotype (designated by Constantinescu 1982): **Indonesia**: *Java*: Bogor, on *Oryza sativa*, 1900, *M. Raciborski* (KRA). *Isolectotypes*: BUCM 59761, ZT.

Host range and distribution: On *Oryza* (*barthii*, *latifolia*, *sativa*, *rufipogon*), *Poaceae* (*Ehrhartoideae*, *Oryzeae*), widely distributed, Africa (Angola, Chad, Congo, Gabon, Gambia, Ghana, Kenya, Madagascar, Malawi, Mozambique, Niger, Nigeria, Somalia, South Africa, Sudan, Tanzania, Togo, Zambia, Zimbabwe), Asia (Afghanistan, Bangladesh, Brunei, Cambodia, China, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Syria, Taiwan, Thailand, Vietnam), Australia, Central and South America (Argentina, Bolivia, Brazil, Colombia, Costa Rica, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Panama, Suriname, Venezuela), North America (Mexico; USA, Alabama, Arkansas, Florida, Louisiana, South Carolina, Texas), Oceania (Fiji, Solomon Islands), and West Indies (Cuba, Dominican Republ., Haiti, Puerto Rico, Trinidad and Tobago, Virgin Islands).

Notes: Reports of this species on *Leptochloa mucronata* [*filiformis*] (*Chloridoideae*, *Eragrostideae*), *Cenchrus purpureus* [*Pennisetum purpureum*], *Coix lacryma-jobi*, *Imperata cylindrica*, *Panicum maximum* and *P. repens* (*Panicoideae*) are not conspecific with *Cercospora janseana* and probably belong to other *Cercospora* species with obclavate-cylindrical conidia. Type material of *Sphaerulina oryzina* could not be traced, but several other collections are deposited at NIAES.

Cercospora longipes E.J. Butler, *Mem. Dept. Agric. India*, *bot. ser*. **1**: 41 (1906).
(Fig. 21)

Literature: Chupp (1954: 248), Ellis (1976: 261), Yen & Sun (1978: 394), Deighton (1979: 22), Hsieh & Goh (1990: 134), Crous & Braun (2003: 255), Guo *et al*. (2005: 121–122), Kamal (2010: 60).

Illustrations: Ellis (1976: 261, fig. 198A), Yen & Sun (1978: 395, fig. 1D–E), Hsieh & Goh (1990: 135, fig. 102), Guo *et al*. (2005: 122, fig. 83).

Description: *Leaf spots* amphigenous, oval to linear, at first narrowly oval and reddish, later elongated, with brown centre and yellowish halo, about 1–8 × 0.5–2 mm, sometimes confluent, forming larger reddish brown blotches, to 14 mm in length. *Caespituli* amphigenous, but mainly hypophyllous.

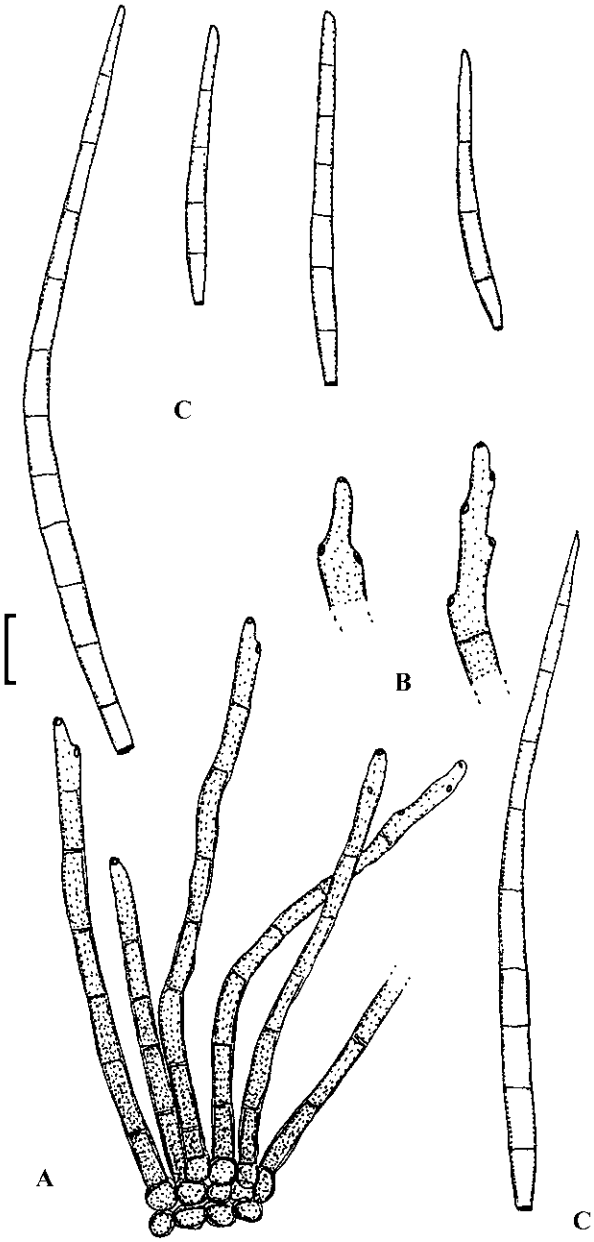

Fig. 21. *Cercospora longipes* (BPI 437895, neotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Mycelium internal. *Stromata* lacking or small aggregations of swollen hyphal cells, 10–25 µm diam, brown. *Conidiophores* in small to moderately large fascicles, to 18, usually divergent, arising from stromata, erect, straight, subcylindrical, geniculate, simple or rarely branched , 30–280 × 3–7 µm, pluriseptate, pale to medium dark brown throughout or paler towards the tip, wall thin to slightly thickened, smooth; conidiogenous cells integrated, terminal and intercalary, 10–50 µm long, with a single to mostly several conidiogenous loci, thickened and darkened, 1–2.5 µm diam. *Conidia* solitary, obclavate, straight to curved, 30–120 × 3–6(–7) µm, 3–10-septate, hyaline, thin-walled, smooth, apex subacute, base obconically truncate, 1.5–2 µm wide, hila thickened and darkened.

[*Holotype*: **India**: on *Saccharum officinarum*, *E. J. Butler* (not preserved)]. *Neotype* (**designated here**, MycoBank, MBT200451): **India**: *Bihar*: Pusa, on *Saccharum officinarum*, 11 Dec. 1922, *M. Taslim* (BPI 437895).

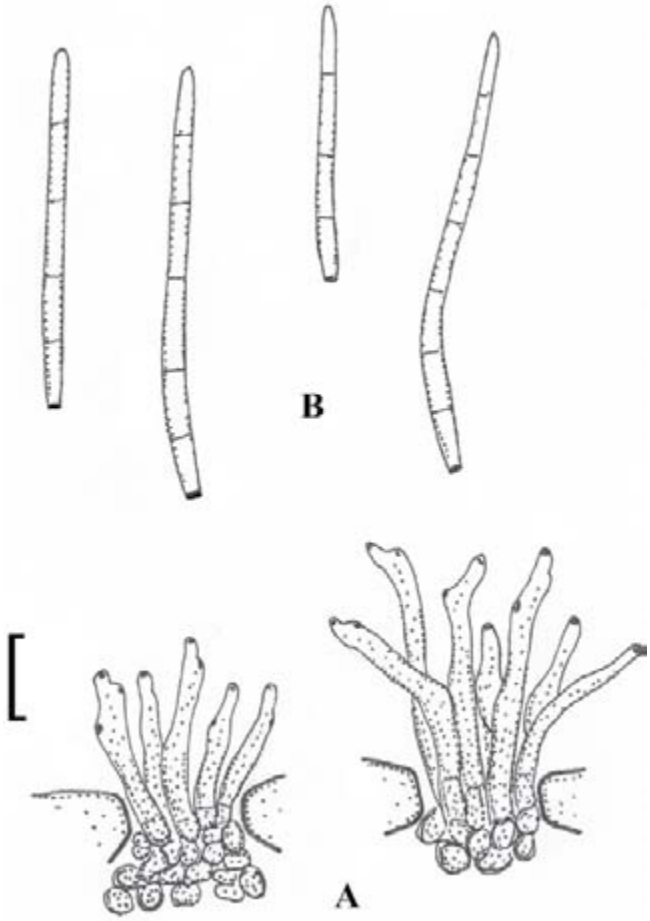

Fig. 22. *Cercospora microlaenae* (PDD 43153, holotype). **A.** Conidiophore fascicles. **B.** Conidia. Bar = 10 µm.

Host range and distribution: On *Saccharum* (*officinarum*, *spontaneum*), *Poaceae* (*Panicoideae*, *Andropogoneae*), widely distributed, Africa (Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Somalia, South Africa, Tanzania, Uganda, Zambia, Zimbabwe), Asia (Afghanistan, Bangladesh, India, Indonesia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Taiwan, Thailand), Central and South America (Argentina, Brazil, Colombia, Costa Rica, Nicaragua, Panama), North America (Mexico; USA, Alabama, Florida, Louisiana), Oceania (Hawaii, Solomon Islands), and West Indies (Cuba, Dominican Republ., Jamaica, Puerto Rico, Virgin Islands).

Notes: Chupp (1954) reduced *Cercospora longipes* to synonymy with *C. koepkei*, but according to Deighton (1979: 22), *C. koepkei* is not the same as *C. longipes*. The latter species is a true *Cercospora s. str.* distinct from *C. apii s. lat.*

Cercospora microlaenae McKenzie & Latch, *New Zealand J. Agric. Res.* **27**: 115 (1984).
(Fig. 22)

Literature: Crous & Braun (2003: 274).

Illustration: McKenzie & Latch (1984: 114, fig. 1B).

Description: *Leaf spots* amphigenous, sometimes also on the leaf sheath, linear, forming black streaks, often vein-limited, becoming chlorotic around the spots, chlorosis may spread to cover the whole width of leaves, often dying from the tip downwards. *Caespituli* amphigenous. *Mycelium* internal; hyphae mainly composed of swollen cells, 2–5 mm wide, hyaline to pale brown, smooth. *Stromata* substomatal, 15–60 × 15–50 µm, pale to dark brown. *Conidiophores* in well-developed fascicles, to 30, divergent, arising from stromata, through stomata, erect, straight to flexuous, subcylindrical, fertile portion geniculate-sinuous, unbranched, 15–30(–40) × (3–)3.5–4 µm, 0(–1)-septate, pale olivaceous-brown, paler towards the tip, thin-walled, smooth; conidiophores usually reduced to conidiogenous cells, conidiogenous loci thickened and darkened, slightly prominent, 1.25–1.75 µm diam. *Conidia* solitary, obclavate-cylindrical, straight to curved, (20–)30–50(–70) × 2–2.5(–3) µm, (1–)4–6(–8)-septate, colourless, thin-walled, smooth, apex rounded, base short obconically truncate, 1–1.5 µm wide, hila thickened and darkened.

Holotype: **New Zealand**: Auckland, Mt. Albert, on *Ehrharta stipoides* [*Microlaena stipoides*], 1 Dec. 1982, *E. H. C. McKenzie* (PDD 43153).

Host range and distribution: On *Ehrharta stipoides*, *Poaceae* (*Ehrhartoideae*, *Ehrharteae*), New Zealand.

Note: A true *Cercospora* distinct from the *C. apii s. lat.* complex by having obclavate-cylindrical conidia with obconically truncate base.

Cercospora miscanthi Goh & W.H. Hsieh, *Trans. Mycol. Soc. Republ. China* **2**: 127 (1987).
(Fig. 23)

Synonym: *Cercospora miscanthi* Sawada, *Rep. Gov. Agric. Res. Inst. Taiwan* **87**: 83 (1944), *nom. inval*. (Art. 39.1) [*syntypes*: **Taiwan**: Taichung, on *Miscanthus floridulus*, 8 Oct. 1910, *K. Sawada* (NTU-PPE, hb. Sawada; TNS-F-220475].

Literature: Chupp (1954: 249), Hsieh & Goh (1990: 134), Crous & Braun (2003: 277), Guo *et al*. (2005: 123–124).

Illustrations: Hsieh & Goh (1990: 136, fig. 103), Guo *et al*. (2005: 123, fig. 84).

Description: *Leaf spots* amphigenous, elliptical, 3–20 mm diam, grey with purplish brown border. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* lacking to well-developed, to 80 µm diam, dark brown. *Conidiophores* in divergent fascicles, (0–)2–20, arising from internal hyphae or stromata, erect, subcylindrical, unbranched, geniculate, (15–)40–120 × 4–6 µm, 1–7-septate, brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal and intercalary, with conspicuous conidiogenous loci, thickened and darkened. *Conidia* solitary, obclavate, straight to mostly curved at the apex, 40–100 × 3–4.5(–5) µm, 3–7-septate, hyaline, thin-walled, smooth, apex acute, base obconically truncate.

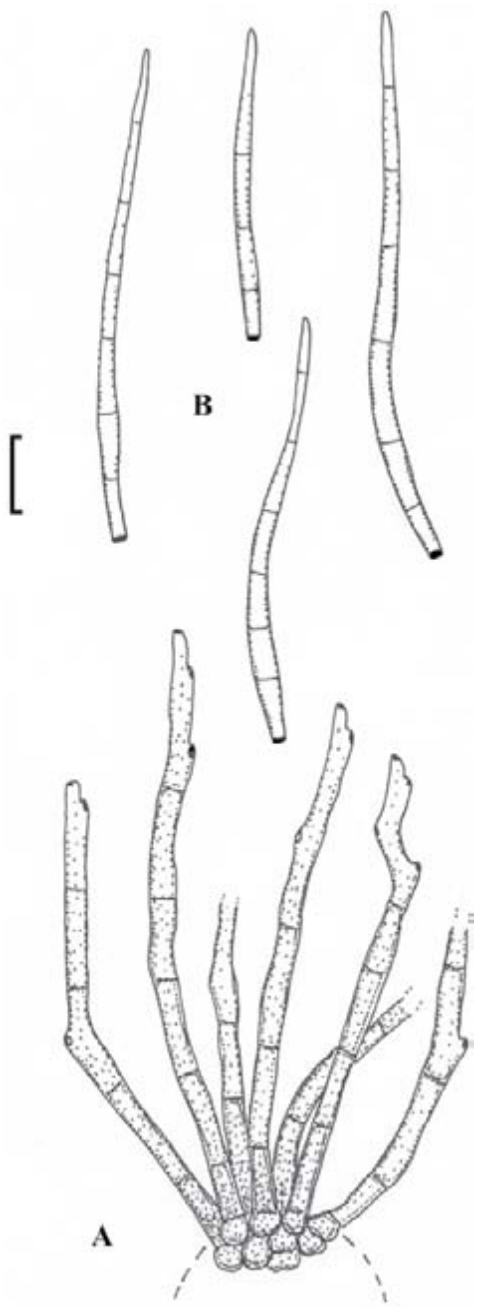

Fig. 23. *Cercospora miscanthi* (NTU-PPE, holotype). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Holotype: **Taiwan**: Taichung, on *Miscanthus floridulus*, 8 Oct. 1910, *K. Sawada* (NTU-PPE [hb. Sawada]). *Isotype*: TNS-F-220475.

Host range and distribution: On *Miscanthus floridulus* [*japonicus*], *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (Taiwan).

Cercospora oplismeni Lall, H.S. Gill & Munjal, *Indian Phytopathol*. **14**: 117 (1962).
(Fig. 24)

Literature: Crous & Braun (2003: 299), Kamal (2010: 70).

Illustration: Lall *et al*. (1962: 119, fig. 3).

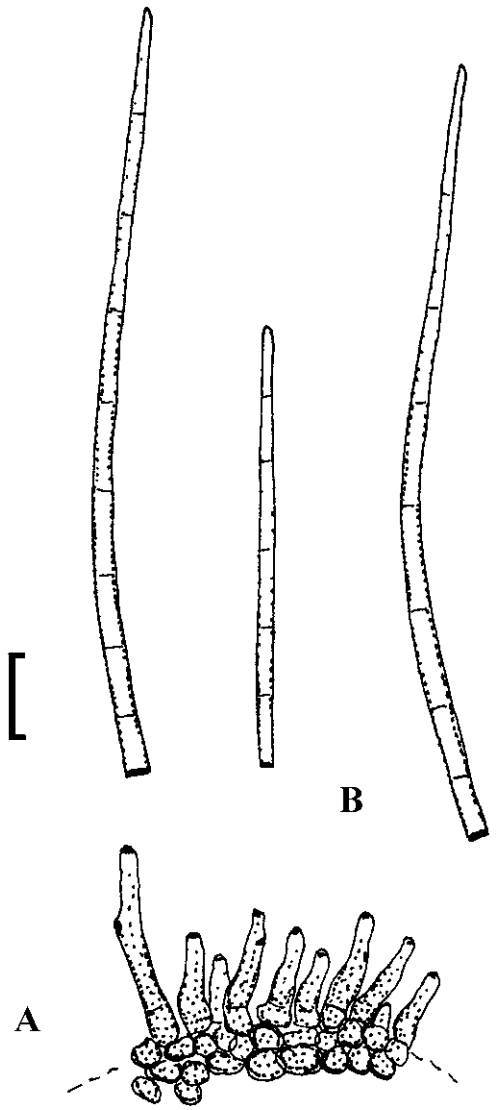

Fig. 24. *Cercospora oplismeni* (based on Lall *et al.* 1962: 119, fig. 3). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Description: *Leaf spots* linear, 1–5 mm long, sometimes confluent, tan. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* subglobose, dark brown, to about 45 µm diam. *Conidiophores* in small to larger, loose to dense fascicles, somewhat geniculate, irregular in width, unbranched, short, 6–28 × 3–6 µm, septate, pale olivaceous-brown; conidiogenous loci small, thickened and darkened. *Conidia* solitary, acicular, straight to curved, 30–130 × 2–3 µm, pluriseptate, hyaline, apex pointed, base truncate, hila thickened and darkened.

Holotype: **India**: *Himachal Pradesh*: Shimla (Simal), on *Oplismenus* sp., 7 May 1960, *G. Lall* (HCIO 27097).

Host range and distribution: On *Oplismenus* sp., *Poaceae* (*Panicoideae*, *Paniceae*), Asia (India, Himachal Pradesh).

Notes: A *true Cercospora* distinct from common *C. apii s. lat*. by uniformly short conidiophores and narrowly acicular conidia. Type material was not available for re-examination.

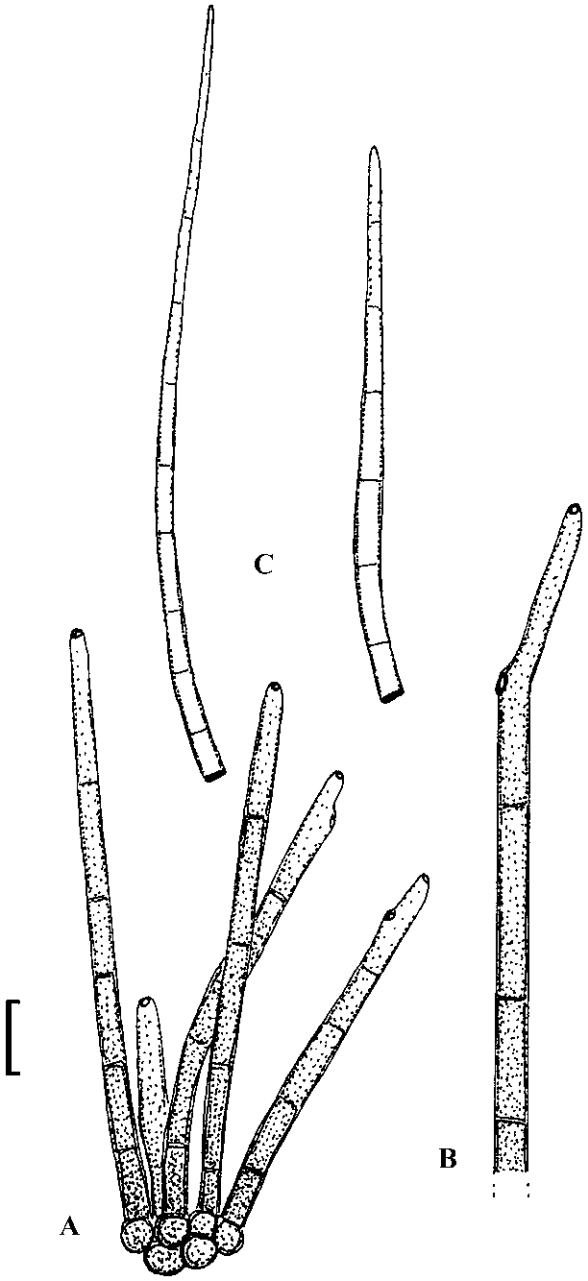

Fig. 25. *penniseti* (CUP 40492, holotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Cercospora penniseti Chupp, *Monograph of Cercospora*: 250 (1954).
(Fig. 25)

Literature: Crous & Braun (2003: 313), Kamal (2010: 72).

Illustration: Chupp (1954: 250, fig. 117).

Description: *Leaf spots* at first small, more or less elliptical, medium to dark brown, later larger and sometimes confluent, finally often large leaf segments or almost entire leaves discoloured. *Caespituli* mainly hypophyllous, fine, dark brown. *Mycelium* internal. *Stromata* lacking or small, subglobose, dark brown to blackish brown. *Conidiophores* in small to moderately large fascicles, 2–20, arising from internal hyphae or stromata, through stomata or erumpent, erect,

straight, subcylindrical, usually not or only once geniculate, unbranched, 50–250 × 4–6 µm, pluriseptate, distance between septa 10–25 µm, uniformly medium brown to dark olivaceous-brown, wall thin to slightly thickened, smooth; conidiogenous cells integrated, terminal, 10–30 µm long, conidiogenous loci thickened and darkened, with a single terminal locus or two, rarely several loci, 2.5–4 µm diam. *Conidia* solitary, acicular, straight to curved, 30–240 × 2–5 µm, pluriseptate, hyaline, thin-walled, smooth, apex acute or subacute, base truncate, 2–4 µm wide, hila thickened and darkened.

Holotype: **USA**: *Georgia*: Tift County, Tifton, on *Cenchrus spicatus* [*Pennisetum glaucum*], 19 Aug. 1943, *C. L. Lefebvre* (CUP 40492). *Isotype*: K(M) IMI 103707 (slide). *Topotypes*: BPI 439320, CUP 40493.

Host range and distribution: On *Cenchrus* (*distachyus* [*Pennisetum distachyum*], *spicatus* [*Pennisetum glaucum*, *typhoides*, *Setaria glauca*], *orientalis* [*Pennisetum orientale*], *purpureus* [*Pennisetum purpureum*]), *Poaceae* (*Panicoideae*, *Paniceae*), Africa (Malawi), Asia (India, Tamil Nadu, Uttar Pradesh; Japan), Central America (Costa Rica), and North America (USA, Georgia).

Notes: This species is part of the morphological *Cercospora apii s. lat.* compex. Material on *Cenchrus distachyus* from Costa Rica refers to an unpublished collection deposited as BPI 439319. *Cercospora typhoides*, described from India on *Pennisetum glaucum*, differs in having shorter, 0–1-septate conidia and mainly obclavate-cylindrical conidia. The identity of Indian records of *C. penniseti* is unclear. It is possible that all of them belong to *C. typhoides*. Indian material was not available for examination. The record of *C. penniseti* from Japan on *Pennisetum glaucum* (Katsuki 1966) is uncertain as material could not be traced. Katsuki's (1966) description agrees with this species, except for much larger stromata, 48–60 × 30–48 µm.

Cercospora rottboelliae J. Kranz, *Sydowia* **19**: 80 "1965" (1966).
(Fig. 26)

Synonyms: *Passalora rottboelliae* (J. Kranz) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 358 (2003).

Cercospora rottboelliae J.M. Yen & Gilles, in Yen, *Cah. Maboké* **9**: 114 "1971" (1973), *nom. illeg*. (Art. 53.1) [*holotype*: **Gabon**: Libreville, on *Rottboellia cochinchinensis*, 2 May 1971, *G. Gilles* 120 (PC); *isotype*: K(M) IMI 183413].

Cercospora rottboelliicola J.M. Yen, *Bull. Soc. Mycol. France* **91**: 103 (1975), as *nom. nov*. for *C. rottboelliae* J.M. Yen & Gilles 1973, non Kranz 1966.

Illustrations: Kranz (1966: 81, fig. 7), Yen (1973: 113, fig. 6).

Description: *Leaf spots* amphigenous, elliptical-fusiform to irregular, 1–6 mm diam, at first pale brown, later darker brown, centre finally grey to greyish white, margin indefinite. *Caespituli* amphigenous, but more abundant on the lower surface, indistinct or fine, dark to blackish brown. *Mycelium* internal. *Stromata*

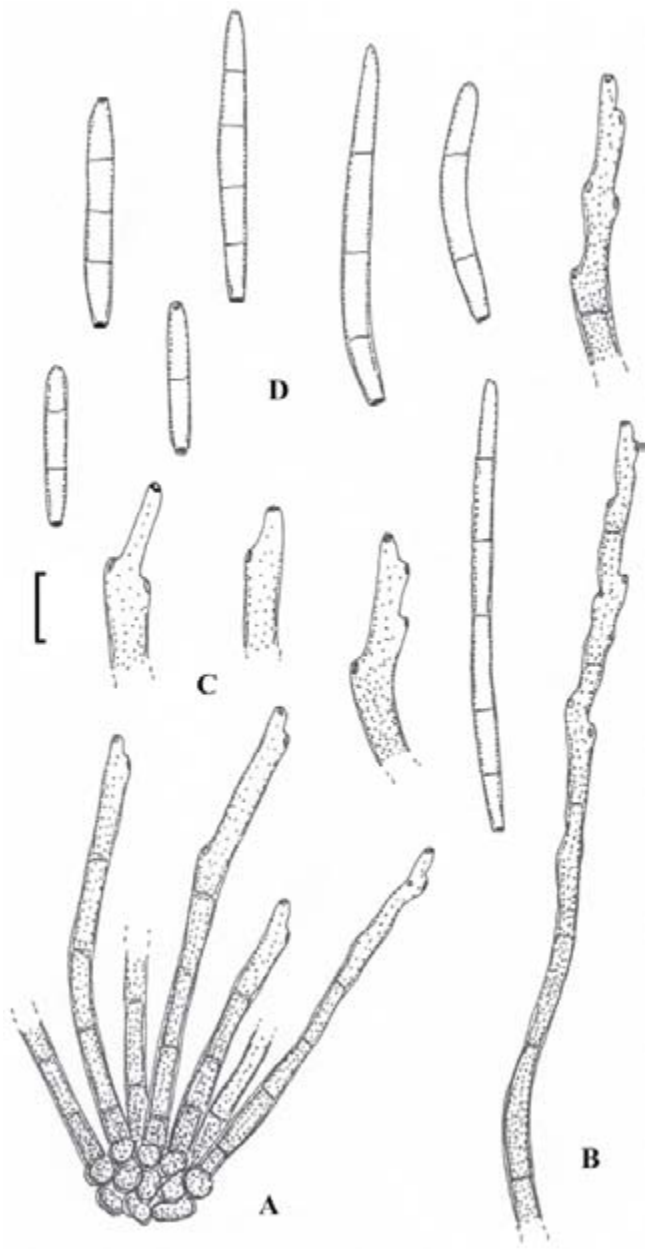

Fig. 26. *Cercospora rottboeliae* (K(M) IMI 102274, holotype). **A.** Conidiophore fascicle. **B.** Conidiophore. **C.** Conidiophore tips. **D.** Conidia. Bar = 10 µm.

lacking or almost so, sometimes with small substomatal aggregations of a few swollen hyphal cells, brown. *Conidiophores* in loose fascicles, 2–8, arising from internal hyphae or swollen hyphal cells, through stomata, erect to decumbent, straight to distinctly geniculate-sinuous, unbranched, 25–215 × 3–5 µm, 0–7-septate, pale to medium brown, sometimes paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally intercalary, about 10–30 µm long, sometimes distinctly subdenticulate, conidiogenous loci thickened and darkened, 2–2.5 µm diam. *Conidia* catenate, in simple chains, cylindrical, subcylindrical to obclavate-cylindrical, straight to somewhat curved, 15–55 × 2–4.5 µm, 1–7-septate, hyaline, thin-walled, smooth, ends obtuse, rounded, truncate to short obconically truncate, 1.5–2.5 µm wide, hila somewhat thickened and darkened.

Holotype: **Guinea**: Kindia, on *Rottboellia cochinchinensis*, Aug. 1963, *J. Kranz* (K(M) IMI 102274).

Host range and distribution: On *Rottboellia cochinchinensis* [*exaltata*], *Poaceae* (*Panicoideae*, *Andropogoneae*), Africa (Gabon, Guinea, Ivory Coast).

Notes: The conidiogenous loci are thickened and darkened, and, due to the catenate conidia, this species was considered phaeoramularia-like and assigned to *Passalora s. lat*. (Crous & Braun 2003). Results of molecular sequence analyses has shown that passalora-like species with colourless conidia belong to *Cercospora* (Groenewald *et al.* 2013), which also applies to species with catenate conidia as recently demonstated for *C. eremochloae* (see Shivas & Young, in Crous *et al*. 2011). *Cercospora rottboelliae* is at present better maintained as species of *Cercospora*, although sequence data is not yet available for this fungus. *Cercospora rottboelliae* is morphologically close to *C. fusimaculans*, which has also been recorded on *Rottboellia* spp., but differs in having longer conidiophores and shorter, broad conidia.

Yen (1975) introduced the new name *Cercospora rottboelliicola* as replacement for *C. rottboelliae* J.M. Yen & Gilles, non Kranz, and cited material from the Ivory Coast. This material was preserved and has been re-examined (Ivory Coast, Abidjan, on *Rottboellia cochinchinensis*, 16 Feb. 1974, *G. Gilles* 101, PC).

Cercospora rottboelliigena Y.L. Guo & Y. Jiang, *Mycosystema* **19**: 447 (2000); as "*rottboelligina*". (Fig. 27)

Literature: Guo & Jiang (2000: 447), Crous & Braun (2003: 358), Guo *et al*. (2005: 124), Braun & Urtiaga (2013: 593).

Illustrations: Guo & Jiang (2000b: 447, fig. 2), Guo *et al*. (2005: 125, fig. 85).

Description: *Leaf spots* amphigenous, circular to oblong or irregularly shaped, 2–10 × 1–4 mm or confluent and larger, centre brown, on the upper side with darker brown border, paler below. *Caespituli* amphigenous, fine, brown. *Mycelium* internal. *Stromata* lacking or only formed as small stromatic aggregations of a few swollen hyphal cell, 10–20 µm diam, substomatal to intraepidermal, brown, cells to 6 µm diam. *Conidiophores* in small to moderately large fascicles, 2–15, arising from internal hyphae or stromatic hyphal aggregations, through stomata or erumpent, erect, straight, subcylindrical to strongly geniculate-sinuous, unbranched, (10–)25–160 × 3.5–6.5 µm, (0–)1–5-septate, medium brown, paler towards the tip, wall thin to slightly thickened, smooth; conidiogenous cells integrated, terminal and intercalary, 10–50 µm long, conidiogenous loci solitary to several, conspicuous, thickened and darkened, 1.5–2 µm diam. *Conidia* solitary, acicular or almost so to narrowly obclavate-subcylindrical, straight to somewhat curved, 40–235 × 2.5–4.5 µm, 3- to pluriseptate, hyaline, thin-walled, smooth, apex obtuse to subacute, base subtruncate to obconically truncate, 1.5–2 µm wide, hila thickened and darkened.

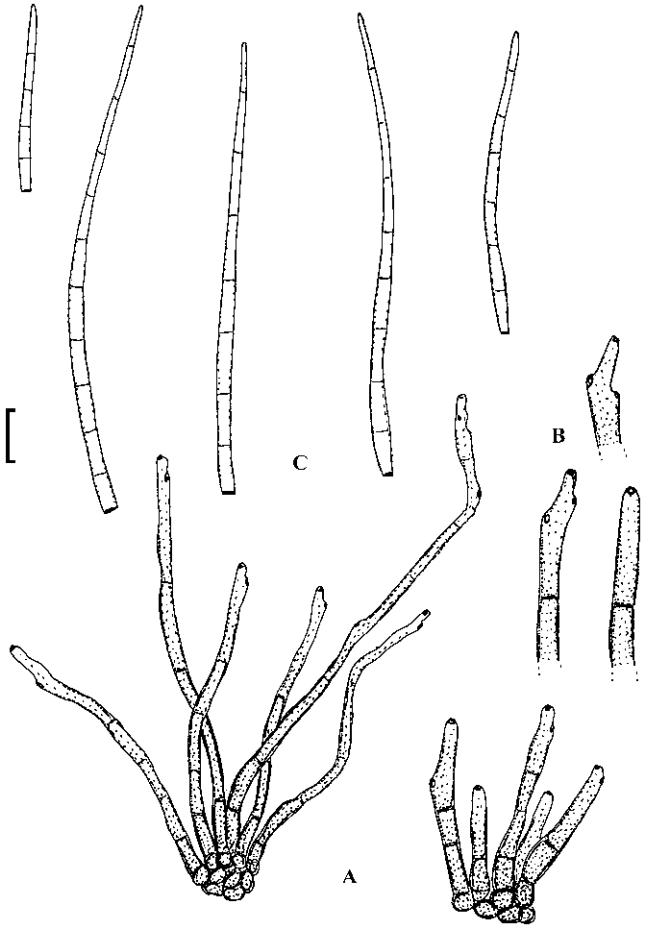

Fig. 27. *Cercospora rottboeliicola* (HMAS 78800, holotype). **A.** Conidiophore fascicles. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Holotype: **China**: *Guangxi Province*: Ningming, on *Rottboellia cochinchinensis*, Oct. 1958, *Z. C. Liang* 1056 (HMAS 78800).

Host range and distribution: On *Rottboellia cochinchinensis* [*exaltata*], *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, Guangxi), South America (Venezuela).

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.* by having acicular to obclavate-cylindrical conidia with obconically truncate, narrower bases.

Cercospora secalis Chupp, *Monograph of Cercospora*: 252 (1954). (Fig. 28)

Literature: Chupp (1954: 252), Crous & Braun (2003: 371).

Description: *Leaf spots* oblong, narrow lines, 0.5 mm wide or larger lesions to 35 × 3 mm, pale to dark brown, sometimes with yellowish halo. *Caespituli* amphigenous, punctiform, blackish, scattered, mostly arranged in lines. *Mycelium* internal. *Stromata* small to medium in size, mainly substomatal, 10–50 µm diam, sometimes oblong, to 80 µm, brown, composed of swollen hyphal cells, circular to somewhat angular-irregular in outline, 2–7 µm

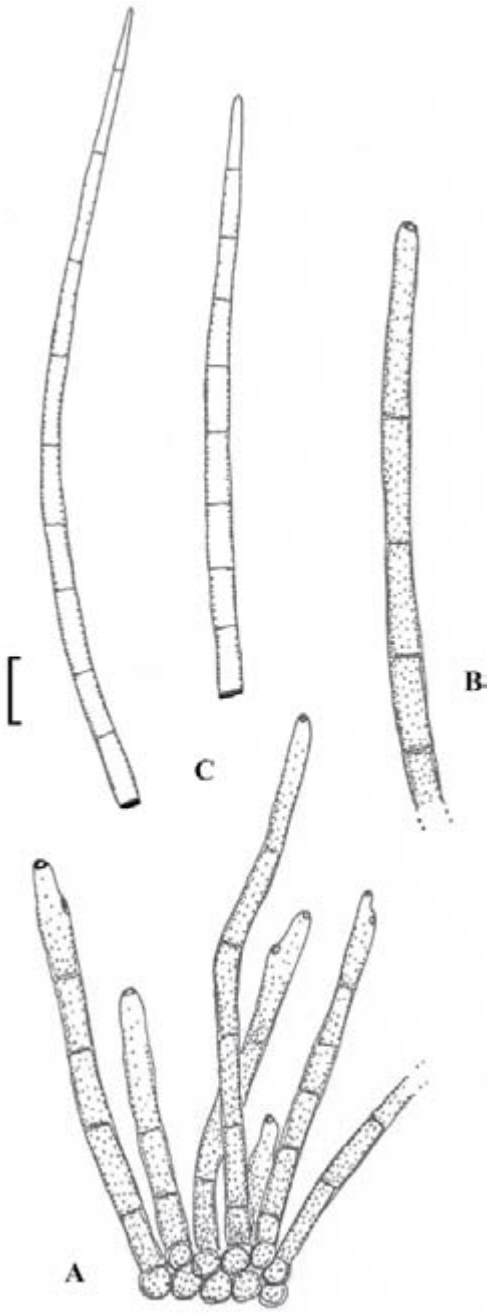

Fig. 28. *Cercospora secalis* (CUP 41181, holotype). **A.** Conidiophore fascicle. **B.** Conidiophore. **C.** Conidia. Bar = 10 µm.

diam, brown, wall somewhat thickened. *Conidiophores* in small to moderately large fascicles, 2–25, divergent to moderately dense, arising from stromata, through stomata, divergent, erect, straight, subcylindrical to somewhat geniculate, unbranched, (15–)20–70(–100) × 3–5 µm, sparingly septate, uniformly pale to medium brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores recuded to conidiogenous cells, 10–40 µm long, conidiogenous loci conspicuous, thickened and darkened, (1.5–)2–3 µm wide. *Conidia* solitary, acicular, shorter conidia sometimes subcylindrical, straight to somewhat curved, 20–105 × 3–4.5 µm, pluriseptate, hyaline, thin-walled, smooth, apex subobtuse, base truncate to somewhat obconically truncate, (1.5–)2–2.5(–3) µm wide, hila thickened and darkened.

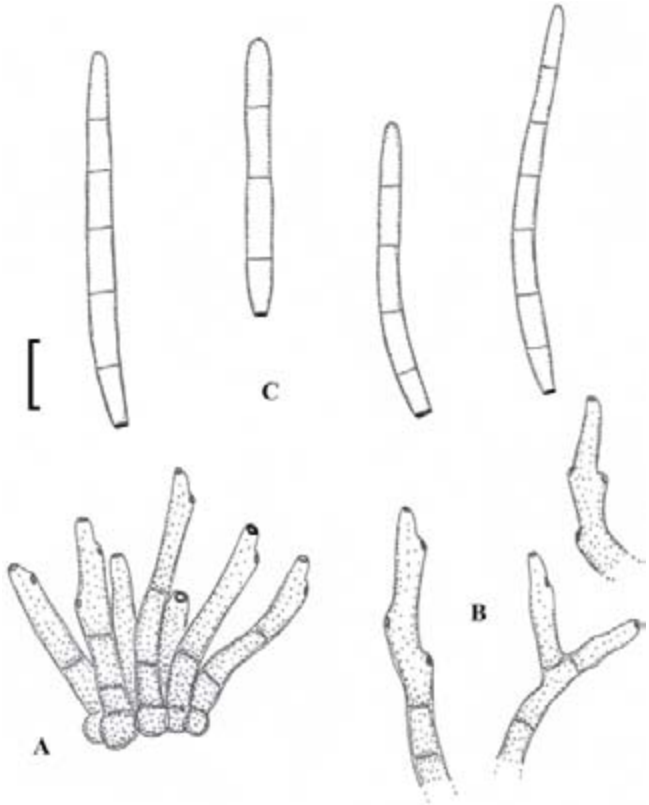

Fig. 29. *Cercospora seriata* (CUP-A 2009#1, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Holotype: **USA**: *Virginia*: Fredericksburg Sherwood Forest Farm, on *Secale cereale*, 9 Jun. 1947, *C. L. Lefebvre* & *A. G. Johnson* (CUP 41183). *Isotype*: BPI 441070.

Host range and distribution: On *Secale cereale*, *Poaceae* (*Pooideae*, *Triticeae*), North America (USA, Illinois, Virginia).

Notes: This species belongs to the *Cercospora apii s. lat.* complex (Crous & Braun 2001: 330). The identity of records from Malawi and Papua New Guinea on *Triticum* spp., and reports on *Avena sativa*, *Hordeum vulgare*, and *Triticum* spp. from North America (USA, Illinois) (Crous & Braun 2003) are doubtful.

Cercospora seriata G.F. Atk., *J. Elisha Mitchell Sci. Soc.* **8**: 59 (1892).
(Fig. 29)

Literature: Saccardo (1892: 657), Chupp (1954: 252), Crous & Braun (2003: 374).

Leaf spots amphigenous, irregularly oblong, 1–3 × 0.5–1 mm, yellowish brown to dingy grey, margin usually darker, brown, sometimes with yellowish halo, finally sometimes entire leaves turning brown, necrotic. *Caespituli* amphigenous, punctiform, in lines, dark brown to blackish. *Mycelium* internal. *Stromata* small, 10–30 µm diam, substomatal to immersed, brown. *Conidiophores* in small to moderately large fascicles, loose to moderately dense, arising from stromata, through stomata or erumpent, erect, straight, subcylindrical or attenuated towards the tip to moderately geniculate-

sinuous, unbranched or rarely once branched, 10–50 × 2–5 µm, 0–3-septate, pale to medium brown throughout or mostly paler towards the tip, occasionally subhyaline at the very tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–30 µm long, conidiogenous loci thickened and darkened, 1.5–2 µm diam. *Conidia* obclavate-cylindrical, straight to somewhat curved, 20–65(–70) × 2–4 µm, 2–6-septate, hyaline, thin-walled, smooth, apex obtuse, base short obconically truncate, 1.5–2.5 µm wide, hila thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200452): **USA**: *Alabama*: Auburn, on *Sporobolus asper*, 7 Aug. 1891, *Duggar & Newman* 2009 (CUP-A 2009#1). Former *syntype*: CUP-A 2009#2 (from 24 Jul. 1891). *Topotypes*: CUP 41196, OSC 9905.

Host range and distribution: On *Sporobolus* (*clandestinus* [*compositus* var. *clandestinus*], *compositus* [*asper*], *cryptandrus*), *Poaceae* (*Chloridoideae*, *Eragrostideae*), North America (USA, Alabama, Oklahoma, Wisconsin).

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.* by having obclavate-cylindrical conidia.

Cercospora setariae G.F. Atk., *J. Elisha Mitchell Sci. Soc.* **8**: 50 (1892).
(Fig. 30)

Synonyms: *Cercosporina setariae* (G.F. Atk.) Hori, *J. Pl. Prot.* (Tokyo) **4**: 1 (1917).

Cercospora setariicola Tehon & E.Y. Daniels, *Mycologia* **19**: 128 (1927) [*holotype*: **USA**: *Illinois*: McDonough County, Macomb, on *Paspalum glauca*, 16 Aug. 1924, *P. A. Young* 11542 (ILLS 11542); *isotypes*: CUP 41211, NY 945705; *paratype*: ILLS 7905].

Cercospora paspali W.W. Ray, *Mycologia* **36**: 173 (1944) [*holotype*: **USA**: *Oklaoma*: Perkins, on *Paspalum stramineum*, 26 Aug. 1942 (CUP 33134); *isotypes*: BPI 439257, CUP 40469, MICH 15347, NY 937110].

Literature: Saccardo (1892: 655; 1972: 1384), Vassiljevsky & Karakulin (1937: 271–272), Chupp (1954: 253), Katsuki (1965: 34), McKenzie & Latch (1984: 115), Hsieh & Goh (1990: 136–137), Crous & Braun (2003: 375–376), Guo *et al*. (2005: 125–127), Kamal (2010: 85).

Illustrations: Chupp (1954: 250, fig. 118), McKenzie & Latch (1984: 114, fig. 1C), Hsieh & Goh (1990: 138, fig. 105), Guo *et al*. (2005: 126, fig. 86).

Description: *Leaf spots* amphigenous, oval to elliptical, 1–12 × 0.5–2 mm, dark reddish brown or brown, later with grey centre, often confluent. *Caespituli* amphigenous, but mainly hypophyllous. *Mycelium* internal. *Stromata* small, substomatal, brown. *Conidiophores* in divergent fascicles, 2–15, arising from stromata, through stomata, erect, straight, subcylindrical to somewhat geniculate-sinuous, unbranched, 8–45 × 2–5 µm, rarely longer, continuous to septate, yellowish olivaceous to medium olivaceous-brown, often paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, about 5–25 µm long, conidiogenous loci conspicuous, somewhat thickened and darkened, 1–2 µm diam. *Conidia* solitary, narrowly obclavate-cylindrical, longer ones sometimes almost subacicular, straight to somewhat curved or slightly sigmoid, (20–)30–100(–150) × (1.5–)2–5(–6) µm, 1–13-septate, hyaline, thin-walled, smooth, apex subacute or subobtuse, base subtruncate to usually short to long obconically truncate, 1–2 µm wide, somewhat thickened and darkened.

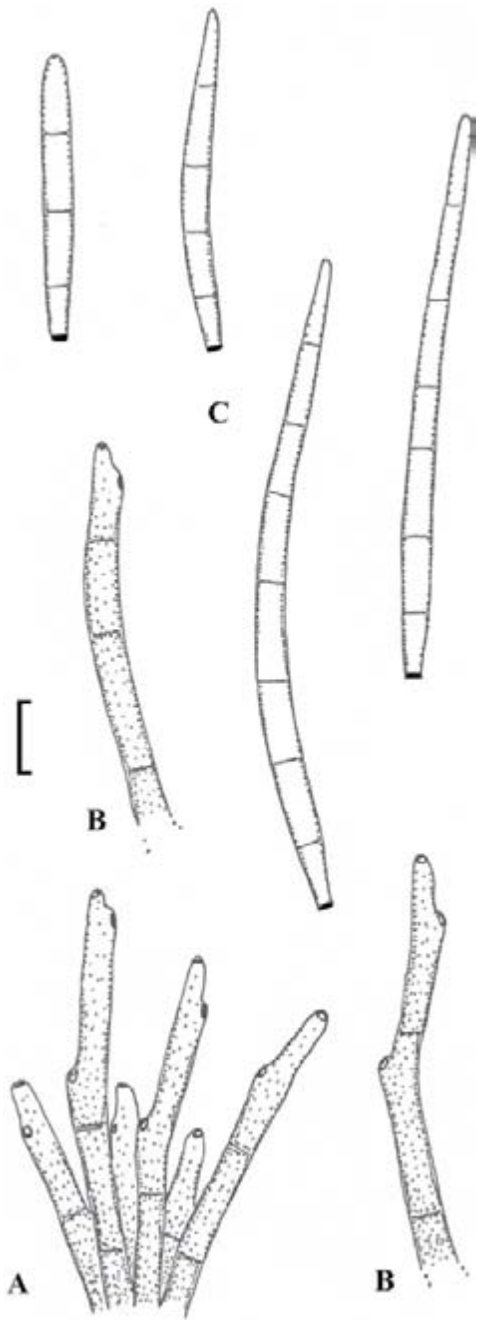

Fig. 30. *Cercospora setariae* (CUP-A 2120, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Lectotype (**designated here**, MycoBank, MBT200453): **USA**: *Alabama*: Auburn, on *Paspalum glaucum* [*Setaria glauca*], 17 Sep. 1891, *B. M. Duggar* (CUP-A 2120). *Isolectotype*: CUP 41208.

Host range and distribution: On *Paspalum* (*conjugatum*, *dilatatum*, *glaucum* [*lutescens*, *Setaria glauca*], *scrobiculatum*, *stramineum*), *Setaria* (*italica*, *palmifolia*, *parviflora* [*geniculata*], *poiretiana*, *pumila*, *sphacelata*, *viridis*), *Poaceae* (*Panicoideae*, *Paniceae*), Africa (Guinea, Mauritius, Uganda), Asia (China, India, Japan, Korea, Russia, Taiwan), Caucasus (Georgia), Central and South America (Argentina, Brazil, Guatemala, Panama), Europe (Poland, Romania, Russia, Ukraine), New Zealand, North America (USA, Alabama, Florida, Iowa, Illinois, Kansas, Kentucky, Maryland, Michigan, Minnesota, New Hampshire, North Dakota, New York, Oklahoma, Pennsylvania, Texas, Virginia, West Virginia, Wisconsin).

Notes: A true *Cercospora s. str.* distinct from *C. apii s. lat.* in having obclavate-cylindrical conidia. Records of *C. setariae* on *Sporobolus cryptandrus* from North America refer to *C. seriata*.

Cercospora sorghi Ellis & Everh., *J. Mycol*. **3**: 15 (1887).
(Fig. 31)
var. **sorghi**

Synonym: ? *Cercospora andropogonis* Sawada, *nom. inval*. (Art. 38.1), according to Sawada (1959: 226) and Hsieh & Goh (1990: 137), see notes under *Passalora fujikuroi*.

Literature: Saccardo (1892: 656), Vassiljevsky & Karakulin (1937: 270), Chupp (1954: 253), Sun (1955: 138), Vasudeva (1963: 187), Katsuki (1965: 35), Mulder & Holliday (1974b), Ellis (1976: 260), Hsieh & Goh (1990: 137), Crous & Braun (1996: 308; 2003: 382), Okori *et al*. (2004), Guo *et al*. (2005: 127), Kamal (2010: 88), CMI Distribution Map No. 338.

Illustrations: Chupp (1954: 250, fig. 119), Sun (1955: 138, fig. 1), Mulder & Holliday (1974b: fig., unnumbered), Ellis (1976: 260, fig. 197B), Guo *et al*. (2005: 128, fig. 87).

Description: *Leaf spots* amphigenous, mostly oblong, 2–16 × 0.5–5 mm, at first mostly dark purple to reddish, later with tan to brown centre, occasionally definite leaf spots lacking. *Caespituli* amphigenous. *Mycelium* internal. *Stromata* absent or almost so to well-developed, 10–50 µm diam, subglobose, brown to dark brown. *Conidiophores* fasciculate, 3–20, arising from internal hyphae or stromata, erect, straight, subcylindrical to geniculate-sinuous in the upper half, width sometimes somewhat irregular, unbranched, (10–)20–150(–220) × (2.5–)3–6.5(–7) µm, pluriseptate, medium dark brown or olivaceous-brown, somewhat paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, 10–65 µm long, conidiogenous loci conspicuous, thickened and darkened, 1.5–3 µm diam. *Conidia* solitary, acicular to obclavate or obclavate-cylindrical, straight to somewhat curved, (15–)25–120(–320) × (1.5–)2.5–5.5(–7) µm, 1–20-septate, hyaline, thin-walled, smooth, apex subacute, base truncate to obconically truncate, 1.5–3 µm wide, hila thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200454): **USA**: *Louisiana*: Rapides Parish [Plaquemides County], on

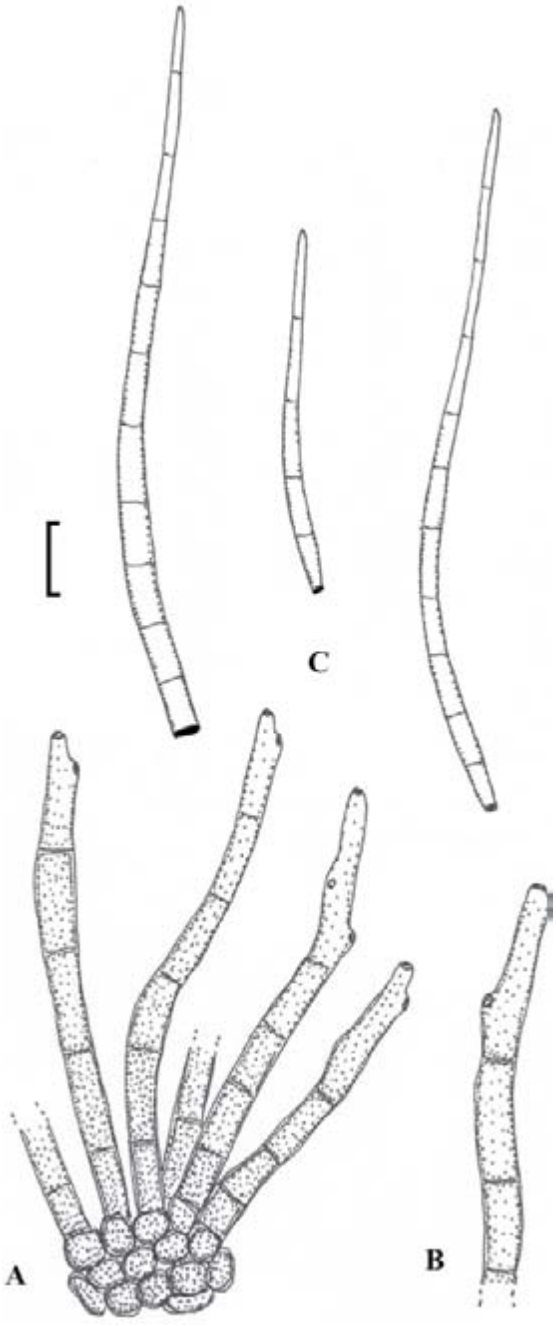

Fig. 31. *Cercospora sorghi* (NY 838621, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore. **D.** Conidia. Bar = 10 µm.

Sorghum halepense, 1 Aug. 1886, *A. B. Langlois* 543 (NY 838621). *Isolectotype*: BPI 441532. *Topotypes*: NY 838618, 838619.

Host range and distribution: On *Sorghum* (×*almum*, *arundinaceum* [*verticilliflorum*], *bicolor* [*dochna*, *roxburghii*, *vulgare*], *drummondii* [×*sudanense*], *halepense*, *propinquum*), *Poaceae* (*Panicoideae*, *Andropogoneae*), widely distributed in the tropics and subtropics, Africa (Benin, Burkina Faso, Burundi, Cameroon, Central African Republ., Chad, Congo, Ethiopia, Gabon, Gambia, Ghana, Ivory Coast, Kenya, Malawi, Mauritius, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe), Asia (Bangladesh, Bhutan, Brunei,

Cambodia, China, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Taiwan, Thailand, Yemen), Australia, Caucasus (Armenia, Azerbaijan, Georgia), Central and South America (Argentina, Brazil, Colombia, El Salvador, Guatemala, Guyana, Honduras, Panama, Peru, Suriname, Venezuela), Europe (Italy, Russia), North America (Mexico; USA, Alabama, Florida, Georgia, North Dakota, Nebraska, Iowa, Indiana, Kansas, Louisiana, Missouri, Mississippi, Nebraska, North Carolina, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia), Oceania (American Samoa, Cook Islands, Fiji, New Caledonia, Niue, Samoa, Solomon Islands, Tonga, Vanuatu), and West Indies (Cuba, Dominican Republ., Jamaica, Puerto Rico, Trinidad and Tobago, Virgin Islands).

Notes: A true *Cercospora s. str.* distinct from *C. apii s. lat.* in the at least partly obclavate or obclavate-cylindrical conidia. Records of collections on other hosts than *Sorghum* spp. [*Bothriochloa pertusa* [*Amphilophis pertusa*, *Andropogon pertusus*], *Cymbopogon* (*nardus* [*afronardus*, *validus*], *caesius* [*excavatus*], *citratus*, *schoenanthus*), *Echinochloa* (*crus-galli*, *hispidula*, *pyramidalis*), *Holcus lanatus, Hyparrhenia rufa*, *Panicum miliaceum*, *Cenchrus* (*spicatus* [*Pennisetum glaucum*, *typhoides*], *purpureus* [*P. purpureum*]), *Setaria geniculata*, *Sporobolus* sp., *Thelepogon* sp., *Zea mays* (see Crous & Braun 2003)] are doubtful and unproven and seem to belong to other species. Records on *Echinochloa* spp. belong undoubtedly to *C. echinochloae*, collections on *Cenchrus* (including *Pennisetum*) spp. to *C. penniseti* and those on *Setaria geniculata* and *Sporobolus* sp. to *C. setariae*. Records on *Zea mays* refer to *Cercospora sorghi* var. *maydis*, which is not conspecific with *C. sorghi* (see *C. apii*). Available molecular sequence analyses support *C. sorghi* as a species of its own (Goodwin *et al*. 2001, Crous *et al*. 2006). Okori *et al*. (2004) examined populations of *C. sorghi* in Africa by molecular methods and showed that collections from wild and cultivated *Sorghum* spp. are indistinguishable based on AFLP and ITS data. They postulated that *Cercospora* on wild *Sorghum* spp. might be sources of inoculum to cultivated species. *Cercospora sorghicola* is a cryptic species described from Iran, which is morphologically barely distinguishable from *C. sorghi*, but genetically distinct (discussion see *C. sorghicola*).

Ellis & Everhart (1887) introduced *Cercospora sorghi* var. *maydis.* Chupp (1954) emphasized that this *Cercospora* from *Zea mays* does not infect *Sorghum* spp. and possibly represents a separate species, which is supported by results of molecular sequence analyses (Goodwin *et al*. 2001, Crous *et al*. 2006). Sequences of *Cercospora sorghi* var. *maydis* from Africa and North America cluster with *C. apii* and *C. beticola* (Crous *et al*. 2006), i.e. *C. apii s. lat*. can be transmitted to maize.

var. **ciccaronei** (N. Pons) U. Braun, *Schlechtendalia* **5**: 48 (2000).

Basionym: *Phaeoramularia ciccaronei* N. Pons, *Fitopatol. Venez*. **6**: 2 (1993).

Literature: Crous & Braun (2003: 382).

Illustration: Pons (1993: 5, fig. 2).

Description: Conidia solitary and in short chains, otherwise agreeing with var. *sorghi*.

Holotype: **Venezuela**: Borburata, Edo. Carabobo, on *Sorghum arundinaceum*, 18 Feb. 1992, *C. Rincones* (VIA 5696). *Isotype*: K(M) IMI 364371.

Host range and distribution: On *Sorghum arundinaceum* [*verticilliflorum*], *Poaceae* (*Panicoideae*, *Andropogoneae*), South America (Venezuela).

Cercospora sorghicola M. Bakhshi, Babai-ahari, Crous & U. Braun, *Persoonia* **34**: 81 (2015).
(see Fig. 31)

Illustration: Bakhshi *et al*. (2015: 82, fig. 9).

Description: *Leaf spots* amphigenous, at first forming dark purple spots that gradually enlarge into linear-oblong lesions with dark purple centre and dark red-purple border, 5–35 mm long. *Caespituli* amphigenous, brown. *Mycelium* internal. *Stromata* well-developed, substomatal or intraepidermal, to 50 µm diam, brown. *Conidiophores* in loose to dense fascicles, 5–40, arising from stromata, through stomata or erumpent, erect, straight, subcylindrical to flexuous-geniculate as result of sympodial proliferation, almost uniform in width, unbranched, (45–)70–80(–100) × 4–5.5 µm, 1–8-septate, pale brown to brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, 20–40 µm long, with a single to several conidiogenous loci, thickened and darkened, terminal and lateral, protuberant, 2–4 µm diam. *Conidia* solitary, acicular, obclavate to obclavate-cylindrical, straight to curved, (20–)80–100(–150) × 3–4(–5) µm, (3–)8–13(–17) µm, hyaline, thin-walled, smooth, apex subacute to subobtuse, base truncate to obconically truncate, 1.5–2.5 µm wide, hila thickened and darkened.

Holotype: **Iran**: *Guilan Province*: Kiashahr, on *Sorghum halapense*, Aug. 2012, *M. Bahkshi* (IRAN 16457 F). *Ex-type culture*: CCTU 1173 = CBS 136448.

Host range and distribution: On *Sorghum halapense*, *Poaceae*, Asia (Iran).

Notes: *C. sorghicola* is morphologically almost indistinguishable from *C. sorghi*, yet genetically distinct, at least from a North American *C. sorghi* ITS sequence considered to be correctly identified. *Cercospora sorghi* as currently circumscribed is widespread in cultivated sorghum. The actual distribution of *C. sorghicola* is unknown, since molecular sequence data from different parts of the world are lacking, although a wider distribution in Asia is likely.

Cercospora sp.
(Fig. 32)

Material examined: **USA**: *Texas*: College Station, on *Bromus inermis*, *Poaceae* (*Pooideae*, *Bromeae*), 1953, *M. Whitehead* (BPI 436346).

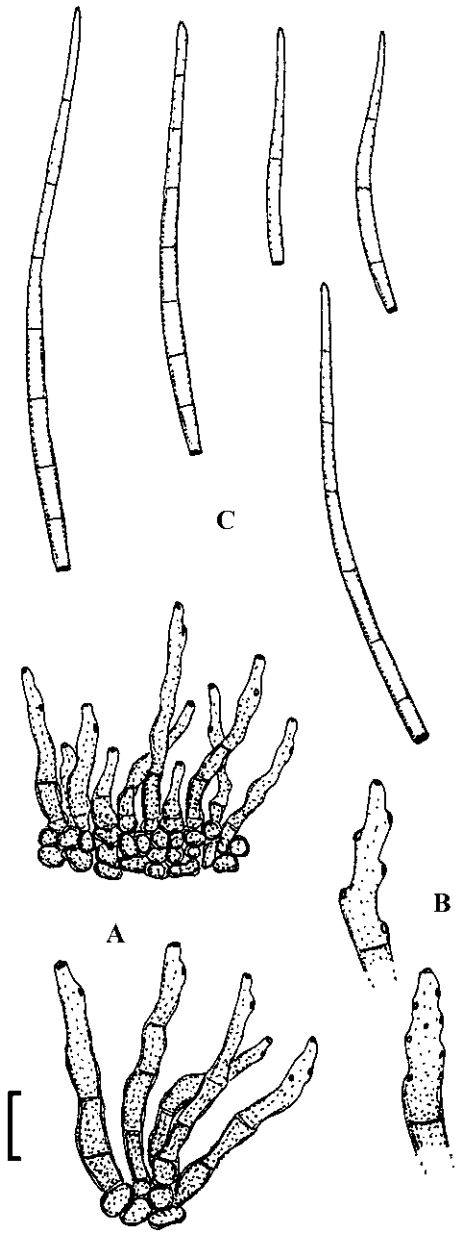

Fig. 32. *Cercospora* sp. on *Bromus* (BPI 436346). **A.** Conidiophore fascicles. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Notes: *Cercospora* collections on *Bromus* were previously assigned to *C. festucae*, which is incorrect. A sample of "*C. festucae*" on *Bromus inermis* from Texas was examined and found to be distinct from the latter species as well as from another collection on this host morphologically assigned to *C. apii s. lat.* The first collection differed from *C. apii* and *C. festucae* in having shorter, strongly geniculate conidiophores and narrower conidia, mostly obclavate with obconically truncate base, 1–2.5 µm wide: Lesions variable, ranging from small brown spots to often oblong to large discoloured patches, brownish to dingy grey, finally large leaf segments or almost entire leaves discoloured, necrotic; caespituli amphigenous, punctiform, scattered, dark brown; mycelium internal; stromata small or oblong, to 40 × 10 µm, substomatal, brown; conidiophores in small to moderately large fascicles, loose to dense, arising from stromata, through stomata, erect, straight to usually distinctly geniculate, often strongly so, unbranched, 10–40 × 3–6 µm, 0–1(–2)-septate, pale to medium olivaceous, brownish to yellowish brown, darker in mass, conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, usually with several conidiogenous loci, often aggregated near the apex, 1–2 µm diam, thickened and darkened; conidia solitary, narrowly obclavate to acicular, shorter conidia sometimes fusiform, 20–100 × 1–3.5 µm, shorter conidia usually 1–4-septate, longer ones pluriseptate, hyaline, thin-walled, smooth, apex acute to subobtuse, base truncate to short obconically truncate, 1–2 µm wide, thickened and darkened. This fungus is well characterized, but as it is currently only known from a single collection we refrain from introducing a formal description of this fungus as new species here.

Cercospora tessellata G.F. Atk., *J. Elisha Mitchell Sci. Soc.* **8**: 59 (1892).
(Fig. 33)

Literature: Saccardo (1892: 656), Vassiljevsky & Karakulin (1937: 273), Chupp (1954: 255), Crous & Braun (2003: 400).

Description: *Leaf spots* oblong, 3–5 × 0.5–1 mm, dark brown to blackish, sometimes with bluish tinge. *Caespituli* hypophyllous, pustulate, arrangement linear. *Mycelium* internal. *Stromata* well-developed, substomatal, 20–50 µm diam, dark olivaceous-brown, composed of swollen hyphal cells, circular to slightly angular-irregular in outline. *Conidiophores* in small to moderately large fascicles, mostly dense, arising from stromata, through stomata, erect, straight, subcylindrical to conical, non-geniculate, unbranched, short, 5–20 × 2–4 µm, aseptate, rarely with a single basal septum, pale to dark olivaceous-brown, thin-walled, smooth; conidiophores usually reduced to conidiogenous cells, with 1–2(–3) conspicuous conidiogenous loci, 1–1.5 µm diam, thickened and darkened. *Conidia* solitary, filiform-acicular, straight to curved, 30–90 × 1.5–2.5 µm, indistinctly 3- to pluriseptate, hyaline, thin-walled, smooth, apex subacute, base truncate to somewhat obconically truncate, 1–1.5 µm wide, hila slightly thickened and darkened.

Lectotype (**designated here**, MycoBank MBT200455): **USA**: *Alabama*: Auburn, on *Dactyloctenium aegyptium*, 6 Nov. 1891, *G. F. Atkinson* (CUP-A 2306). *Isolectotype*: CUP 41393.

Host range and distribution: On *Dactyloctenium aegyptium* [*Eleusine aegyptia*], *Eleusine* (*coracana*, *jaegeri*), *Poaceae* (*Chloridoideae*, *Eragrostideae*), Africa (Ethiopia, Kenya, Nigeria), North America (USA, Alabama).

Note: A true species of *Cercospora s. str.* distinct from *C. apii s. lat.* by having short conidiophores and narrow conidia.

Cercospora typhoides O.P. Sharma & A.C. Jain, *J.N.K.V.V. Res. J.* **1**: 83 (1967).

Literature: Crous & Braun (2003: 414), Kamal (2010: 96).

Description: *Leaf spots* amphigenous, at first visible as minute dark brown spots, later circular or elliptical, 1.5–4.5 ×

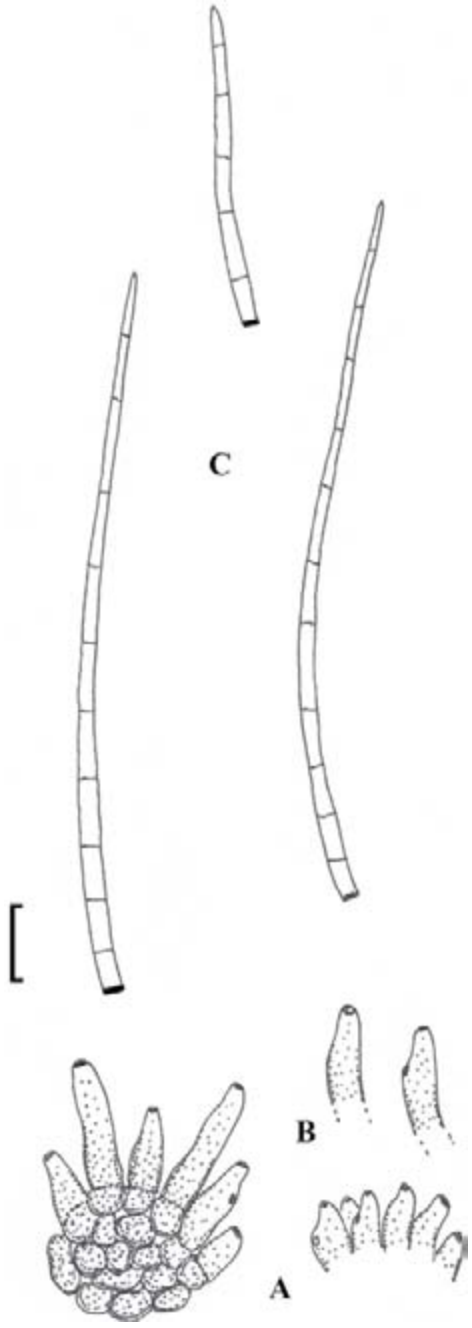

Fig. 33. *Cercospora tesselata* (CUP-A 2306, lectotype). **A.** Conidiophore fascicles. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

0.5–2 mm, longer axis parallel to veins, centre grey, margin purplish to brown. *Caespituli* amphigenous, punctiform, in parallel rows. *Mycelium* internal. *Stromata* lacking or small, substomatal, to 35 µm diam, dark brown. *Conidiophores* in fascicles, arising from internal hyphae or stromata, through stomata, erect, straight to somewhat geniculate, unbranched, 17–67 × 3–5 µm, 0–1-septate, uniformly brown, tips conically truncate; conidiogenous cells integrated, conidiogenous loci thickened and darkened. *Conidia* solitary, cylindrical-obclavate, narrowly obclavate, longer conidia almost acicular, straight to slightly curved, 25.6–140 × 2.5–5 µm, 0–14-septate, hyaline, thin-walled, smooth, hila thickened and darkened.

Holotype: **India**: *Madhya Pradesh*: Gwalior, on *Cenchrus spicatus* [*Pennisetum glaucum*, *P. typhoides*], *Poaceae* (*Panicoideae*, *Paniceae*), 10 Oct. 1961, *O. P. Sharma* (Hb. of Plant Pathology Department, Jawaharlal Nehru Krishni Vishwa Vidyalaya, Jabalpur, India).

Host range and distribution: Only known from the type collection.

Notes: According to the original description, *Cercospora typhoides* differs from *C. penniseti* in having shorter, 0–1-septate conidiophores and usually cylindrical-obclavate conidia. Type material was not available and it is unclear if this material is preserved at all. Due to its acicular conidia, *Cercospora penniseti* is part of the *C. apii* complex. This species was also recorded from India, but material was not available for examination. It remains unclear if these Indian records indeed belong to *C. penniseti* or *C. typhoides*. The citation of HCIO 26616 as type material (Crous & Braun 2003, Kamal 2010) is doubtful and unverified, but that collection is not the holotype.

Cercospora zeae-maydis Tehon & E.Y. Daniels, *Mycologia* **17**: 248 (1925).
(Fig. 34)

Literature: Chupp (1954: 256), Vassiljevsky & Karakulin (1937: 270), Saccardo (1972: 1388), Crous & Braun (2003: 433), Kamal (2010: 99), Crous *et al*. (2006: 194), Groenewald *et al*. (2013: 166).

Illustration: Crous *et al*. (2006: 194, fig. 4).

Description: *Leaf spots* oblong, forming linear lesions parallel to the midrib, sometimes irregularly shaped, size variable, brownish to greyish, often with a brown marginal line or narrow border. *Caespituli* amphigenous, mostly hypophyllous, punctiform to subeffuse, brown. *Mycelium* internal. *Stromata* lacking or small, with a few substomatal swollen hyphal cells, brown. *Conidiophores* in small to moderately large fascicles, 3–14, divergent, arising from internal hyphae or stromatic hyphal aggregations, emerging through stomata, erect, straight, subcylindrical, occasionally subclavate to flexuous, distinctly geniculate-sinuous, unbranched, 40–180 × 4–8 µm, (0–)1–8-septate, uniformly pale olivaceous to medium brown, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally intercalary, 10–40 µm long, often subclavate when terminal, conidiogenous loci conspicuous, thickened and darkened, 2–3 µm wide. *Conidia* solitary, broadly obclavate-subcylindrical, 30–100 × 4–9 µm, 1–10-septate, hyaline, thin-walled, smooth, apex obtuse, base obconically truncate, 2–3 µm wide, hila thickened and darkened.

In vitro: Colonies on PDA reaching 15–25 mm diam after 3 wk, forming ample spermatia. Colonies on MEA erumpent, with sparse aerial mycelium, margin smooth, but irregular, surface olivaceous-grey with irregular patches of white to smoke-grey, reverse iron-grey, colonies fertile. On OA colonies spreading with moderate aerial mycelium, margin smooth but irregular, surface red with patches

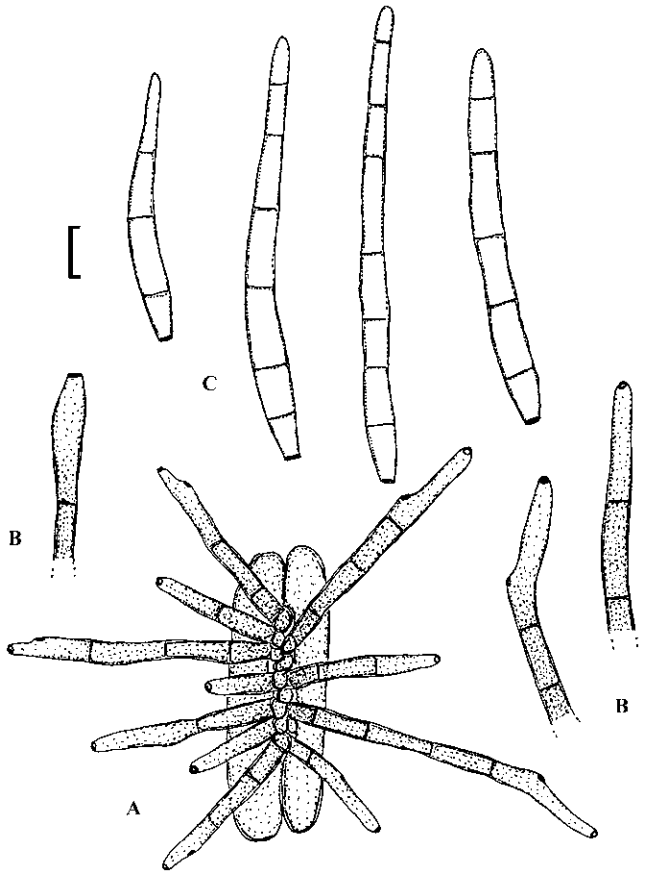

Fig. 34. *Cercospora zeae-maydis* (BPI 442569, isotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

of white and pale olivaceous-grey, fertile. Formation of cercosporin (red pigment) observed (Goodwin *et al*. 2001, Crous *et al*. 2006).

Holotype: **USA**: *Illinois*: Alexander County, McClure, on *Zea mays*, 29 Aug. 1924, *P. A. Young* (ILLS 4276). *Isotype*: BPI 442569. *Epitype* (designated by Crous *et al*. 2006): **USA**: *Wisconsin*: Janesville, on *Zea mays*, 2002, *B. Fleener* (CBS H-17774). *Ex-epitype culture*: CBS 117757.

Host range and distribution: On *Zea mays*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Africa (Cameroon, Congo, Ethiopia, Kenya, Malawi, Mozambique, Nigeria, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe), Asia (India, China), Caucasus (Azerbaijan, Georgia), Central and South America (Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Panama, Peru, Venezuela), West Indies (Trinidad and Tobago), and North America (Canada, Mexico; USA, Alabama, Colorado, Delaware, Iowa, Illinois, Kansas, Kentucky, Maryland, Minnesota, North Carolina, Ohio, Pennsylvania, South Dakota, Tennessee, Virginia, Wisconsin, West Virginia).

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.* by its broadly obclavate-cylindrical conidia, and molecularly established as separate species (Goodwin *et al*. 2001, Crous *et al.* 2006, Groenewald *et al*. 2013).

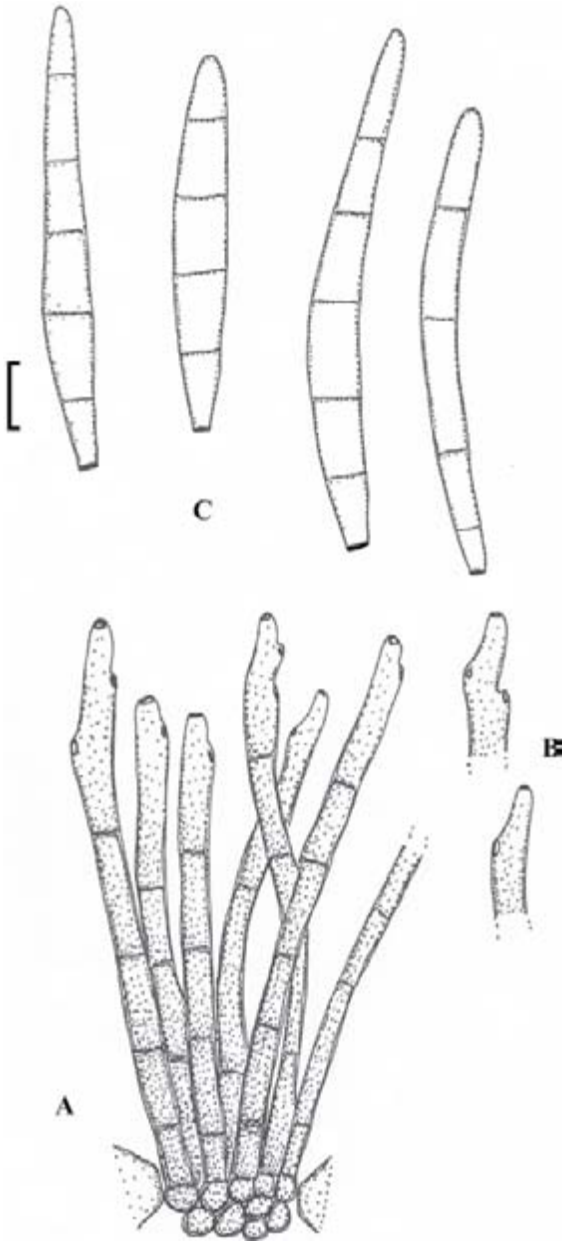

Fig. 35. *Cercospora zeina* (CBS H-17775, holotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Cercospora zeina Crous & U. Braun, *Stud. Mycol.* **55**: 194 (2006).
(Fig. 35)

Literature: Liu & Xu (2013), Berger *et al*. (2014).

Illustration: Crous *et al*. (2006: 195, fig. 5).

Description: *Leaf spots* amphigenous, vein-limited, length variable, 5–40 mm, width 2–3 mm, later confluent, pale grey to pale brown, margin indistinct, chlorotic in younger leaf spots. *Caespituli* amphigenous, punctiform to subeffuse, on leaves grey to brown. *Mycelium* internal; hyphae branched, septate, 3–4 µm wide, pale brown, thin-walled, smooth. *Stromata* lacking or only formed as small substomatal aggregations of swollen hyphal cells, to 30 µm diam, brown. *Conidiophores* in small to moderately large fascicles, loose

to dense, arsing from internal hyphae or stromata, emerging through stomata, erect, straight, subcylindrical to flexuous, distinctly geniculate-sinuous, unbranched or occasionally branched above, 40–100 × 5–7 µm, 1–5-septate, uniformly pale olivaceous to medium brown, thin-walled, smooth; conidiogenous cells integrated, terminal, 40–60 × 5–6 µm, with several conspicuous conidiogenous loci, thickened and darkened-refractive, 2–3 µm diam. *Conidia* solitary, broadly fusiform, (40–)60–75(–100) × (6–)7–8(–9) µm, (1–)3–5(–10)-septate, hyaline, thin-walled, apex subobtuse, base subtruncate to obconically truncate, 2–3 µm wide, hila thickened and darkened-refractive.

In vitro: Colonies on PDA reaching 10–15 mm after 3 wk, forming spermogonia. On MEA erumpent, with sparse aerial mycelium, margin smooth, but irregular, surface olivaceous-grey with irregular patches of white or iron-grey, reverse iron-grey, colonies fertile. On OA colonies spreading with moderate whitish aerial mycelium, margin smooth but irregular, olivaceous-grey, fertile.

Holotype: **South Africa**: *KwaZulu-Natal*: Pietermaritzburg, on *Zea mays*, 2005, *P. Caldwell* (CBS H-17775). *Ex-type culture*: CBS 118820.

Host range and distribution: On *Zea mays*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Africa (Kenya, Rwanda, South Africa, Uganda, Zambia, Zimbabwe), Asia (China), North America (USA, North Carolina, New York, Ohio, Virginia).

Notes: Besides obvious genetic differences, this species differs from *Cercospora zeae-maydis* in having shorter conidiophores, to about 100 µm in length, broadly fusiform conidia, and slow-growing cultures without formation of red pigments (cercosporin), but the differentiation between the two species just based on morphology is difficult. *Cercospora zeae-maydis* is the most common species on maize in North America, although *C. zeina* also occurs in the USA. Unambiguous identification requires molecular sequence analyses.

Cercospora zizaniae Thirum. & Govindu, *Sydowia* **7**: 49 (1953).
(Fig. 36)

Literature: Vasudeva (1963: 217), Crous & Braun (2003: 434), Kamal (2010: 100).

Illustration: Thirumalachar & Govindu (1953: pl. II, figs 9–10).

Description: *Leaf spots* linear, short to very long, to about 1 mm wide, to irregular, yellowish to brown, later confluent, forming long stripes or almost entire leaves becoming necrotic, margin infefinite. *Caespituli* mainly epiphyllous, finely punctiform to effuse, dark brown to blackish. *Mycelium* internal. *Stromata* lacking or only with aggregations of a few swollen hyphal cells, brown. *Conidiophores* in small fascicles, divergent, arising from internal hyphae or stromatic hyphal aggregations, erect, divergent, straight, geniculate, unbranched, 20–180 × (2–)3–5(–6) µm, 1–10-septate, light brown, paler towards the apex, tips sometimes subhyaline, thin-walled, smooth; conidiogenous cells integrated, terminal and intercalary, 10–50 µm long, conidiogenous loci conspicuous, thickened and darkened, 1.5–2.5 µm diam. *Conidia* solitary, obclavate-cylindrical to subacicular, straight to curved, (25–)30–60 × 3–4 µm, 1–6-septate, hyaline, thin-walled, smooth, apex subacute or subobtuse, base truncate, subtruncate to mostly obconically truncate, 1.5–2 µm wide, hila thickened and darkened.

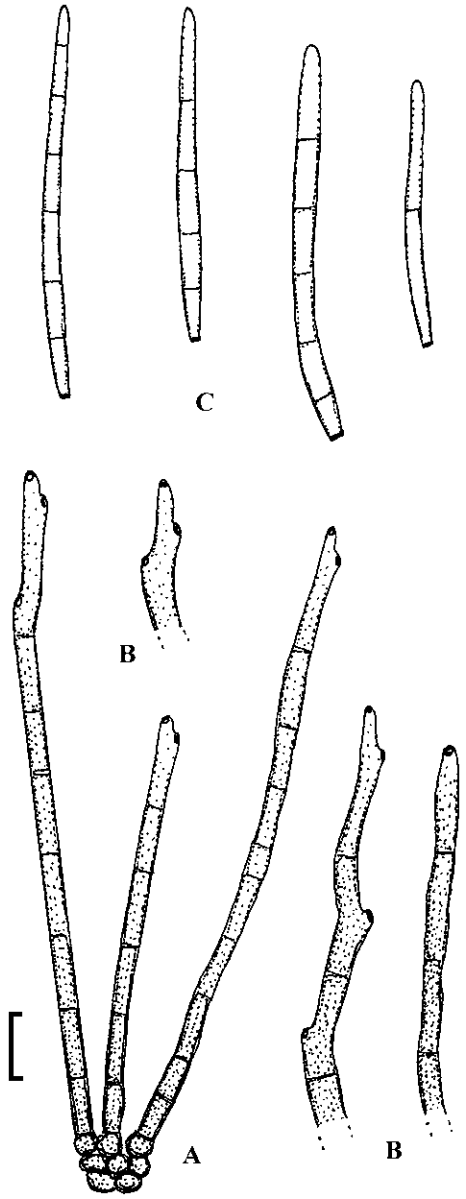

Fig. 36. *Cercospora zizaniae* (BPI 442670, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Lectotype (**designated here**, MycoBank MBT200456): **India**: *Bihar*: Patna, on *Zizania aquatica*, *Poaceae* (*Ehrhartoideae*, *Oryzeae*), 4 Oct. 1952, *M. J. Thirumalachar* (BPI 442670). *Isolectotypes*: CUP 40775, HCIO, K(M) IMI 55519.

Host range and distribution: Only known from the type collection.

Note: A true *Cercospora s. str.* distinct from *C. apii s. lat.* in the relatively short conidia at least partly with an obconically truncate base.

Doubtful, excluded and insufficiently known species

Cercospora acerosa Dickhoff & Arendsen-Hein, *Arch. Java Suikerindustr*. 1901: 1009 (1901).

Literature: Saccardo (1906: 611), Chupp (1954: 243), Crous & Braun (2003: 41–42).

Host range and distribution: On *Saccharum* (*officinarum, Saccharum* spp.), *Poaceae*, Africa (Madagascar), Asia (Indonesia, Philippines).

Note: Not a *Cercospora fide* Chupp (1954). The status of this species is unclear. The original description is meagre and type material is not preserved.

Cercospora bromi R. Sprague, *Mycologia* **29**: 204 (1937).

Synonyms: ***Ramulispora bromi*** (R. Sprague) R. Sprague, *Diseases of cereals and grasses in North America*: 418 (1950).

Ansatospora bromi (R. Sprague) R. Sprague, *Mycologia* **38**: 61 (1946).

Centrospora bromi (R. Sprague) A.G. Newhall, *Phytopathology* **36**: 895 (1946).

Centrospora bromi (R. Sprague) Vienn.-Bourg., *Rev. Mycol.*, n.s. **10**: 130 "1945" (1946), *nom. illeg.* (Art. 52.1).

Literature: Chupp (1954: 244), Braun (1995: 201), Braun & Crous (2003: 89).

Illustration: Braun (1995: 204, Fig. 197).

Holotype: USA: *Oregon*: Wasco Co., near Tumwater, on *Bromus rigidus*, 13 Mar. 1935, *R. Sprague* (OSC 10405). *Isotypes*: BPI 433860, CUP 39251, NY 936944).

Host range and distribution: On *Bromus* (*rigidus*, *secalinus*, *vulgaris*, *Bromus* sp.), *Poaceae*, Asia (Russia, Asian part), North America (USA, Illinois, Oregon, Washington).

Cercospora eleusines Henn., *in herb*.

Material examined: **Japan**: *Kōchi* (*Tosa*): Inomachi, on *Eleusine indica*, *Poaceae*, *Yoshinaga* (B).

Note: An unidentified helminthosporioid fungus with broad, distoseptate conidia possibly identical with *Drechslera nodulosa* (Berk. & M.A. Curtis ex Sacc.) Subram. & B.L. Jain.

Cercospora elymi Rostr., *Bot. Tidsskr*. **22**: 276 (1899). (Fig. 37)

Synonym: ***Cladosporium elymi*** (Rostr.) U. Braun, **comb. nov.**

MycoBank MB811242

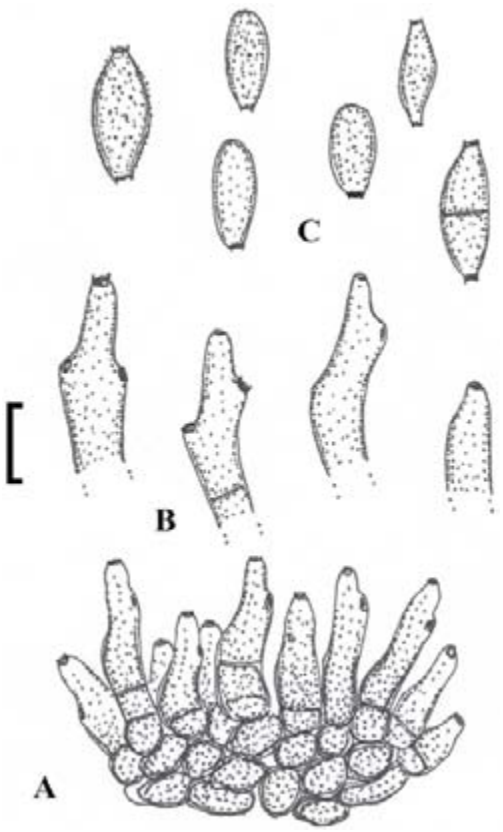

Fig. 37. *Cladosporium elymi* (C-F-92454, holotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Basionym: *Cercospora elymi* Rostr., *Bot. Tidsskr*. **22**: 276 (1899).

Literature: Saccardo (1902: 1074), Lindau (1910: 87), Vassiljevsky & Karakulin (1937: 273), Chupp (1954: 246), Crous & Braun (2003: 173).

Description: *Leaf spots* oblong, formed as narrow streaks between veins, 1–5 × 0.5–1 mm, sometimes confluent, pale to medium dark brown, margin indefinite. *Caespituli* amphigenous, mostly hypophyllous, scattered, punctiform, dark brown to blackish. *Mycelium* internal. *Stromata* globular to irregular, small aggregations of a few swollen hyphal cells to large stromata, 10–80 µm diam, substomatal to immersed, dark brown, composed of swollen hyphal cells, rounded to somewhat angular-irregular in outline, 2–7 µm diam, walls somewhat thickened. *Conidiophores* in small to mostly large, usually dense fascicles, arising from stromata, erect, straight, subcylindrical-conical to moderately geniculate in the upper half, unbranched, 10–30 × 2–5 µm, 0–1(–2)-septate, pale olivaceous to olivaceous-brown, slightly paler towards the tip, dark brown in mass, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, conidiogenous loci coronate, darkened-refractive, 1–2 µm diam. *Conidia* catenate, usually in simple chains, broadly ellipsoid-ovoid, obovoid, occasionally limoniform, straight, 5–15 × 3–7 µm, 0–1-septate, pale olivaceous to olivaceous-brown, thin-walled, smooth or faintly and irregularly verruculose, apex of primary conidia obtuse,

broadly rounded or conically truncate in catenate conidia, base subtruncate to short obconically truncate, 1–2 µm wide, hila cononate, somewhat darkened-refractive.

Holotype: **Denmark**: Tisvilde, on *Leymus arenarius*, *Poaceae* (*Pooideae*, *Triticeae*), 29 Jun. 1898, *E. Rostrup* (C-F-92454).

Host range and distribution: Only known from the type collection.

Notes: The original description is confused and based on heterogeneous elements. The described conidiophores pertain to a *Cladosporium*. Abundant pigmented conidia with hila agreeing with the coronate (cladosporioid) scar type of the conidiogenous cells are present in the type material. The described hyaline conidia, which Rostrup interpreted as conidia of *Cercospora elymi*, were also found in the recently re-examined type collection, but they do not belong to the described conidiophores. The conidiogenesis of these colourless, mostly 20–30 × 3–4 µm and 3-septate, fusarioid conidia, is unclear, but they were definitely not formed by the described conidiophores. The hila are rounded to truncate, unthickened and not darkened-refractive. The application of the name *C. elymi* is herewith confined to the *Cladosporium* element in the type material. This species is biotrophic. Based on the recently published monograph of *Cladosporium* (Bensch *et al.* 2012), all biotrophic and saprobic species of this genus have been compared with *C. elymi* and were morphologically distinguishable.

Cercospora muhlenbergiae G.F. Atk., *Cornell Univ. Sci. Bull*. **3**: 46 (1897).
(Fig. 38)

Literature: Saccardo (1899: 1106), Chupp (1954: 249), Crous & Braun (2003: 285).

Description: *Leaf spots* on leaves and the leaf sheath, forming small straw-coloured to brown discolorations, later confluent and extending, finally sometimes entire leaves discoloured, necrotic. *Caespituli* amphigenous, punctiform, dark brown. *Mycelium* internal. *Stromata* usually well-developed, 20–60 µm diam, brown, composed of swollen hyphal cells, rounded to somewhat angular-iregular in outline. *Conidiophores* in small to very large, loose to mostly dense fascicles, occasionally almost coremioid, arising from stromata, erect, straight, subcylindrical, geniculate-sinuous in the upper half or sometimes throughout, unbranched, 40–200 × 3–6 µm, pluriseptate, pale to medium olivaceous-brown throughout or somewhat paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, 10–60 µm long, subdenticulate to denticulate, denticles subcylindrical to conical, 1.5–2 µm diam, wall of the conidiogenous loci neither thickened nor darkened or somewhat refractive, in front view visible as minute circle (only rim distinct, content not darkened). *Conidia* solitary, fusiform to short obclavate, 20–35 × 3–5.5 µm, 1–3-septate, hyaline or subhyaline, thin-walled, smooth, apex obtuse, base short obconically truncate, 1.5–2 µm wide, hila unthickened or refractive to slightly darkened-refractive.

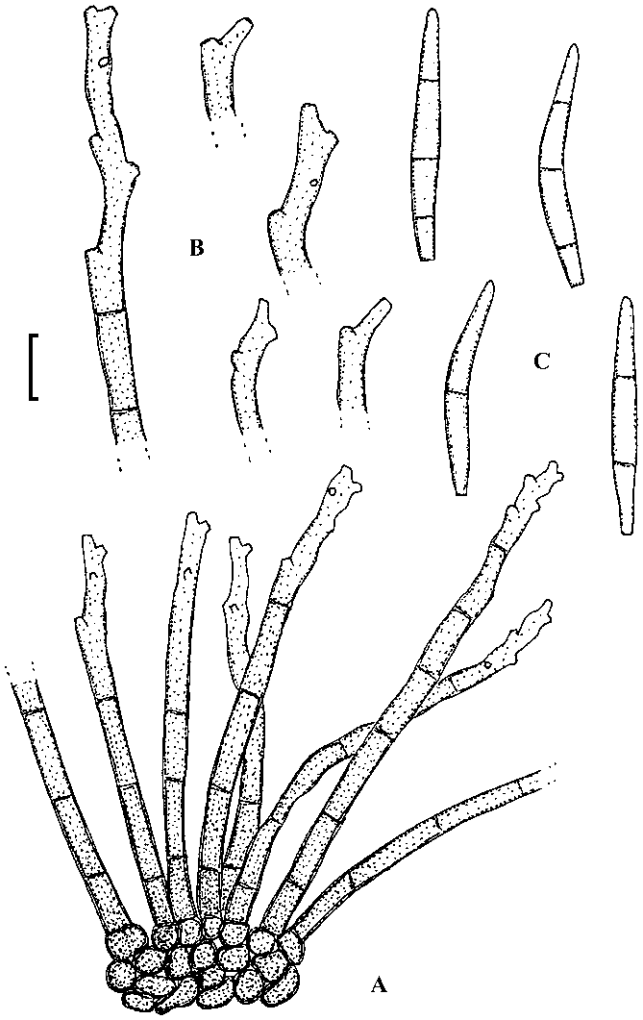

Fig. 38. *Cercospora muhlenbergiae* (CUP-A 33, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

Lectotype (**designated here**, MycoBank, MBT200457): **USA**: *Alabama*: Lee County, Auburn, on *Muhlenbergia diffusa*, 3 Oct. 1891, *G. F. Atkinson* (CUP-A 33). *Isolectotype*: CUP 40345.

Host range and distribution: On *Muhlenbergia* (*glomerata*, *mexicana* [*foliosa*], *racemosa*, *schreberi* [*diffusa*], *sylvatica*, *tenuifolia*, *Muhlenbergia* sp.), *Poaceae*, North America (USA, Alabama, Iowa, Kansas, North Dakota, Nebraska, New York, Wisconsin).

Notes: Chupp (1954) excluded this species from *Cercospora* since the conidia are often 1-septate. Crous & Braun (2003) called the affinity of this species to cercosporoid genera into question and, due to the denticle-like conidiogenous loci, supposed a possible relation to the *Dactylaria* complex. The phylogenetic affinity of this species is unknown.The general habit is not dactylarioid but cercosporoid. The small, 0–3-septate conidia arising from subdenticulate to denticle-like conidiogenous loci are similar to those of *Denticularia* spp. (Deighton 1972, Ellis 1976, Braun *et al.* 2013). *Cercospora muhlenbergii* differs in having hyaline conidia formed singly (cf. pigmented catenate conidia in *Denticularia)*. Denticle-like conidiogenous loci are

common in *Pseudocercospora* species, whereas colourless conidia as well as amero- to phragmosporous conidia are uncommon. The conidiogenous loci are unthickened, but at least partly darkened by being refractive or even slightly darkened-refractive, i.e. somewhat intermediate between *Passalora* and *Pseudocercospora*. The structure of the conidiogeneous loci and colourless conidia do not indicate *Passalora* as currently circumscribed. Conidiogenous loci and conidia are also reminiscent of species of *Distocercospora*, although the conidia are euseptate. The generic affinity of *C. muhlenbergii* is unclear, and possibly a new genus is required pending molecular sequence analyses.

Cercospora poae Baudyš & Picb., *Prace Morav. Přír. Společn*. **1**: 304 (1924).

Literature: Chupp (1954: 251), Vassiljevsky & Karakulin (1937: 272), Saccardo (1972: 1381), Crous & Braun (2003: 329).

Description: *Leaf spots* amphigenous, often covering the entire leaf furface, reddish. *Caespituli* mainly hypophyllous, brown, minute, numerous. *Conidiophores* in fascicles, arising from stromata, erect, curved, geniculate, wider towards the apex, 66–89 × 6–7 µm, septate, grey-brown, paler towards the tip. *Conidia* usually fusiform, about 20–40 × 4–6 µm [according to Chupp's (1954) estimation], 1–3-septate, greenish to pale brownish, base broad, obconically truncate, apex attenuated to rounded.

Holotype: **Czech Republic**: near Prague, Strasnice, on *Poa palustris* [*fertilis*], *Poaceae*, 13 May 1911, *Ed. Baudys*.

Host range and distribution: Only known from the type collection.

Notes: Not a *Cercospora fide* Chupp (1954). Type material of this species was not available for re-examination. Based on the original description, *C. poae* is probably a synonym of *Passalora graminis,* which is known on *Poa* spp. as hosts, but the identity has not yet been proven on the basis of type material.

Cercospora sacchari Breda de Haan, *Meded. Proefstat. Suikerried. W. Java, Kagok-tegal* **3**: 15 (1892).

Synonyms: *Helminthosporium sacchari* E.J. Butler, *Mem. Dept. Agric. India*, *Bot. Ser.*, **6**: 207 (1913).

Bipolaris sacchari (E.J. Butler) Shoemaker, *Canad. J. Bot*. **37**: 884 (1959).

Bipolaris sacchari (Breda de Haan) Subram., *Hyphomycetes – An Account of Indian Species except Cercosporae*: 769 (1971).

Literature: Saccardo (1895: 629), Chupp (1954: 251), Crous & Braun (2003: 361).

Type: **Indonesia**: *Jawa Barat* (West-Java), on *Saccharum officinarum* (probably not preserved).

Host range and distribution: On *Brachiaria fasciculata* [*Panicum fasciculatum*], *Cenchrus* (*clandestinus* [*Pennisetum clandestinum*], *purpureus* [*P. purpureum*]), *Cymbopogon citratus*, *Cynodon dactylon*, *Digitaria insularis*, *Echinochloa colona*, *Leptocoryphium lanatum*, *Panicum maximum*, *Saccharum officinarum*, *Zea mays*, *Poaceae*, Africa (Malawi, Mauritius, Nigeria, Sierra Leone, Senegal, South Africa, Uganda), Asia (India, Indonesia, Malaysia, Papua New Guinea, Philippines, Sri Lanka, Taiwan), Australia, Central and South America (Brazil, Guatemala, Venezuela), North America (Mexico; USA, Alabama, Florida, Georgia, Gulf states, Louisiana), Oceania (Fiji, Hawaii, Solomon Islands), and West Indies (Barbados, Cuba, Dominican Republ., Haiti, Jamaica, Puerto Rico, Virgin Islands).

Cercospora seminalis Ellis & Everh., *J. Mycol*. **4**: 4 (1888).

Synonyms: *Sporidesmium seminalis* (Ellis & Everh.) U. Braun, *Cryptog. Mycol*. **20**: 175 (1999).

Porocercospora seminalis (Ellis & Everh.) Amaradasa, Amundsen, Madrid & Crous, *Mycologia* **106**: 81 (2014).

Literature: Saccardo (1892: 656), Chupp (1954: 252).

Illustrations: Braun (1999: 172, fig. 20), Amaradasa *et al*. (2014: 83, fig. 2).

Lectotype (**designated here**, MycoBank MBT200458): **USA**: *Kansas*: Manhattan, on seeds of *Buchloë dactyloides*, Jul. 1887, *W. T. Swingle* (BPI 441093B). *Isolectotype*: CUP 41186. *Topotypes* (from 8 Jun. 1888): BPI 441088, MICH 15365. *Epitype* (designated by Amaradasa *et al*. 2014): **USA**: *Nebraska*: Mead, on seeds of *Buchloë dactyloides*, 5 Sep. 2011, *B. S. Amaradasa* (CBS H-21149). *Ex-epitype culture*: CBS 134906.

Host range and distribution: On *Buchloë dactyloides*, *Cynodon dactylon*, *Poaceae*, Central America (Guatemala), and North America (USA, Colorado, Iowa, Kansas, North Dakota, Nebraska, Oklahoma, South Dakota, Texas, Wisconsin).

Note: Type material was indicated as deposited at NY, but was not found there, but two duplicates (isotypes) were located which are used for lectotypification here.

Cercospora striiformis G. Winter, *Hedwigia* **25**: 103 (1886); as "*striaeformis*".

Literature: Saccardo (1886: 383), Vassiljevsky & Karakulin (1937: 270), Chupp (1954: 254), Crous & Braun (2003: 390).

Description (based on Winter 1886 and Chupp 1954): *Leaf spots* linear, brown. *Caespituli* hypophyllous, punctiform. *Mycelium* internal. *Conidiophores* in compact fascicles, unbranched, slightly torulose, 120 × 4.5 µm, pluriseptate, pale to medium brown. *Conidia* solitary, obclavate-cylindrical, straight to curved, 45 × 1.5 µm, 3–5-septate, hyaline, base subtruncate, apex obtuse.

Holotype: **São Tomé e Príncipe**: on an unknown member of *Poaceae* (not preserved).

Host range and distribution: Only known from the type collection.

Notes: Application of the name *Cercospora striiformis* remains uncertain as the identity of the type host of this species is not known. The record of this species from Georgia on *Elymus elongatiformis* [*Elymus repens* subsp. *elongatiformis*, *Elytrigia repens* subsp. *elongatiformis*] is doubtful (Braun & Mel'nik 1997). Type material could not be located. According to Chupp (1954), this species is morphologically close to *Cercospora agrostidis*, which also has short and narrow conidia with few septa. Without type material the identity of *C. striiformis* remains unclear.

Cercospora subulata (R. Sprague) R. Sprague, *Mycologia* **29**: 202 (1937).
Basionym: *Cercosporella subulata* R. Sprague, *Mycologia* **29**: 202 (1937).
Synonym: ***Spermospora subulata*** (R. Sprague) R. Sprague, *Mycologia* **40**: 308 (1948).

Literature: Chupp (1954: 254), Braun (1995: 241), Crous & Braun (2003: 393).

Illustration: Braun (1995: 242, fig. 224).

Holotype: **USA**: *Oregon*: Main Divide Trail, Ochoco National Forest, on *Melica subulata*, 21 Aug. 1916, *Ingram* 606 (OSC 10.669). *Isotype*: NY 1042813). *Topotype material*: BPI 420956 (from 21 May 1916).

Host range and distribution: On *Arrhenatherum elatius*, *Bromus* (*inermis*, *marginatus*, *vulgaris*), *Calamagrostis* (*rubescens*, *canadensis* [*scribneri*]), *Danthonia compressa*, *Deschampsia cespitosa*, *Festuca rubra*, *Melica* (*bulbosa*, *smithii*, *spectabilis*, *subulata*), *Oryza sativa*, *Poa nemoralis* [*Agrostis alba*], *Puccinellia hauptiana*, *Sphenopholis obtusata* [*Festuca obtusata*], *Trisetum spicatum*, *Poaceae*, Caucasus (Armenia), Europe (UK, Scotland), North America (Canada; USA, Idaho, Montana, Oregon, Virginia, Washington, Wyoming), and West Indies (Dominican Republic).

Note: The name *Cercospora subulata* is valid (alternative names published before 1 Jan. 1953 are not invalid; Art. 36.2). This is most probably a North American species as records on *Festica rubra* from Armenia (Simonyan 1981, botanical garden) and Scotland (Foister 1961) as well as *Oryza sativa* from the Dominican Republic (Ciferri 1961) are unconfirmed.

Passalora

Key to Passalora species on Poaceae

1 Superficial hyphae with solitary conidiophores *in vivo* developed (mycovellosiella-like) 2
Superficial hyphae with solitary conidiophores *in vivo* lacking 7

2 (1) Stromata present, 15–35 µm diam; conidiophores short, 9–37 µm; conidia long and narrow, 30–118 × 2.5–4 µm, hyaline; on *Arthraxon hispidus* ..... **P. arthraxonis**
Stromata absent; and/or conidiophores much longer and conidia much shorter and wider, at least faintly pigmented 3

3 (2) Conidiophores *in vivo* consistently solitary, arising from superficial hyphae; conidia subhyaline and narrow, 10–30 × 1–3 µm, 0–1-septate; on *Sorghum bicolor* ..... **P. fujikuroi**
Conidiophores *in vivo* fasciculate and solitary, arising from superficial hyphae, and/or conidia wider, at least slightly pigmented 4

4 (3) Conidiophores 20–200 µm long; on *Miscanthus*, *Saccharum* and *Sorghum* spp. 5
Conidiophores shorter, 10–75 µm long; on *Hystrix* and *Imperata* spp. 6

5 (4) Stromata well-developed, large, 10–75 µm diam; conidiophores strictly solitary, arising from superficial hyphae; conidiogenous loci small, 1–1.5 µm diam; on *Saccharum* spp. ..... **P. vaginae**
Stromata lacking or small, 10–20 µm diam; conidiophores in small fascicles and solitary; conidiogenous loci larger, 1.5–2 µm diam; on *Miscanthus*, *Saccharum* and *Sorghum* spp. ..... **P. koepkei**

6 (4) Conidiophores consistently solitary, arsing from superficial hyphae, 6–8 µm wide; conidia 4–6 µm wide, hyaline; on *Imperata cylindrica* ..... **P. imperatae**
Conidiophores solitary as well as in small, loose fascicles, 3–6 µm wide; conidia 3–5 µm wide, subhyaline to pale olivaceous; on *Hystrix patula* ..... **P. asprellae**

7 (1) Conidia in chains 8
Conidia solitary 14

8 (7) Stromata large, 30–350 µm diam; conidiophores short, 5–15 × 3–6 µm, aseptate; conidia 15–60 × 4–6.5 µm, 1–4-septate; on *Paspalum clavuliferum* ..... **P. paspalicola**
Stromata smaller, 10–60 µm diam; and/or conidiophores much longer and septate 9

9 (8) Conidia short and broad, 11–23 × 5–11 µm, aseptate 10
Conidia longer and/or narrower, septate, at least 1-septate 11

10 (9) Conidiogenous loci 1–2 µm diam; on *Phragmites australis* ..... **P. maculicola**
Conidiogenous loci larger, (1–)1.5–2.5(–3) µm diam; on *Phalaris arundinacea* ..... **P. phalaridis**

11 (9) Stromata large, 30–100 µm diam; conidiophores long, 80–160 µm; conidia 3.5–7 µm wide; on *Cenchrus bambusiformis* [*Pennisetum bambusiforme*] ..... **P. tungurahuensis**
Stromata smaller, to 50 µm diam; conidiophores shorter, 10–90 µm; conidia narrower, 1.5–5 µm wide 12

12 (11) Conidia narrow, 18–38 × 1.5–2 µm; on *Agrostis* sp. ..... **P. agrostidicola**
Conidia much wider, 2–5 µm wide 13

13 (12) Conidiophores in small fascicles of to 10, 15–45 µm long; conidia often in branched chains; on *Dichanthium annulatum* ..... **P. dichanthii-annulati**
Conidiophores in larger fascicles of 13–25, 30–90 µm long; conidia mostly in unbranched chains; on *Digitaria diagonalis* ..... **P. digitariae**

14 (7) Stromata well-developed, large, 100–500 µm diam; conidiophores long, 40–150 µm; conidia narrow, 20–65 × 1.5–4 µm, mostly 1-septate; on *Chloris* and *Eustachys* spp. ..... **P. caespitosa**
Stromata lacking or smaller, 10–130 µm diam and/or conidia much broader, 3–8 µm; on other hosts 15

15 (14) Stromata large, 50–150 µm diam; conidiophores 50–300 µm long; conidia 20–55 × 5–8 µm, (1–)3(–4)-septate; on *Arundinaria* spp. ..... **P. compacta**
Stromata lacking or smaller, usually < 100 µm; conidiophores mostly < 100 µm in length; conidia 0–2-septate or broader, (5–)6–12(–14) µm 16

16 (15) Conidia 3–6 µm wide 17
Conidia broader, 5–14 µm wide 18

17 (16) Stromata absent; conidiophores solitary or in loose groups; conidia subhyaline; on *Brachyelytrum erectum* ..... **P. brachyelytri**
Stromata present, small, 10–25 µm diam; conidiophores distinctly fasciculate; conidia subhyaline to olivaceous-brown; on *Leersia oryzoides* ..... **P. ramularioides**

18 (16) Stromata variable in shape and size, 20–130 µm diam; conidia (15–)20–50(–60) × (5–)6–12(–14) µm, smooth or almost so; on a wide range of grasses ..... **P. graminis**
Stromata applanate to oblong, to 60 × 20 µm; conidia 12–38 × 5–10.5 µm, verruculose; on *Milium effusum* ..... **P. milii**

Tabular key to Passalora species on Poaceae

The species are listed in form of a tabular key based on host genera in alphabetical order.

×Agrohordeum ..... **P. graminis**

Agropyron ..... **P. graminis**

×Agrositanion ..... **P. graminis**

Agrostis
1 Conidia formed singly, 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**
Conidia solitary and in chains, 18–38 × 1.5–2 µm, 3–4-septate ..... **P. agrostidicola**

Alopecurus ..... **P. graminis**

Ammophila ..... **P. graminis**

Anthoxanthum ..... **P. graminis**

Arctagrostis ..... **P. graminis**

Arrhenatherum ..... **P. graminis**

Arthraxon ..... **P. arthraxonis**

Arundinaria
1 Conidia (0–)1(–3)-septate ..... **P. graminis**
Conidia (1–)3(–4)-septate ..... **P. compacta**

Avena ..... **P. graminis**

Beckmannia ..... **P. graminis**

Brachyelytrum ..... **P. brachyelytri**

Bromus ..... **P. graminis**

Calamagrostis ..... **P. graminis**

Cenchrus (incl. *Pennisetum*)
1 Conidia solitary and in chains, 15–60 × 3.5–7 µm, (0–)1–4(–5)-septate ..... **P. tungurahuensis**
Conidia solitary, 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**

Chloris ..... **P. caespitosa**

Cinna ..... **P. graminis**

Cynodon ..... **P. graminis**

Cynosurus ..... **P. graminis**

Dactylis ..... **P. graminis**

Danthonia ..... **P. graminis**

Deschampsia ..... **P. graminis**

Dichanthium ..... **P. dichanthii-annulati**

Digitaria
1 Conidia formed singly, 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**
Conidia solitary and in chains, 20–55 × 2.5–3 µm, 1–5-septate ..... **P. digitariae**

×Elyhordeum ..... **P. graminis**

Elymus ..... **P. graminis**

×Elysitanion ..... **P. graminis**

Eragrostis ..... **P. graminis**

Eustachys ..... **P. caespitosa**

Festuca ..... **P. graminis**

Glyceria ..... **P. graminis**

Helictotrichon ..... **P. graminis**

Hierochloe ..... **P. graminis**

Homalotrichon ..... **P. graminis**

Hordeum ..... **P. graminis**

Hystrix

1 Mycelium *in vivo* internal; stromata developed; conidia 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**
Mycelium *in vivo* internal and external; stromata lacking or almost so; conidia 20–75 × 3–5 µm, 2–6-septate ..... **P. asprellae**

Imperata ..... **P. imperatae**

Koeleria ..... **P. graminis**

Leersia ..... **P. graminis**

Leucopoa ..... **P. graminis**

Leymus ..... **P. graminis**

Lolium ..... **P. graminis**

Leersia ..... **P. ramularioides**

Melica ..... **P. graminis**

Milium

1 Conidia verruculose ..... **P. milii**
Conidia smooth or almost so ..... **P. graminis**

Miscanthus

1 Mycelium *in vivo* internal and external; solitary conidiophores arising from superficial hyphae; conidia 20–65 × 4–6.5 µm ..... **P. koepkei**
Mycelium *in vivo* internal; solitary conidiophores lacking; conidia 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**

Muhlenbergia ..... **P. graminis**

Nassella ..... **P. graminis**

Oryzopsis ..... **P. graminis**

Panicum ..... **P. graminis**

Pennisetum, see ***Cenchrus***

Phalaris

1 Conidia solitary, 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**
Conidia catenate, 12–23 × 5–10.5 µm, aseptate ..... **P. phalaridis**

Phleum ..... **P. graminis**

Phragmites
1 Conidia solitary, 15–60 × 5–14 µm, (0–)1(–3)-septate ..... **P. graminis**
Conidia catenate, 11–23 × 5–11 µm, aseptate ..... **P. maculicola**

Poa ..... **P. graminis**

Pseudosclerochloa ..... **P. graminis**

Puccinellia ..... **P. graminis**

Paspalum ..... **P. paspalicola**

Saccharum
1 Stromata well-developed, large, 10–75 µm diam; conidiophores strictly solitary, arising from superficial hyphae; conidiogenous loci small, 1–1.5 µm diam ..... **P. vaginae**
Stromata absent or small, 10–20 µm diam; conidiophores in small fascicles and solitary; conidiogenous loci larger, 1.5–2 µm diam ..... **P. koepkei**

Secale ..... **P. graminis**

Sorghum
1 Conidiophores 15–50 × 3–5 µm; conidia 10–30 µm long, 1–3 µm wide at the ends, 0–1-septate, subhyaline ..... **P. koepkei**
Conidiophores longer, 30–200 × 4–7 µm; conidia 20–65 × 4–6.5 µm, 1–7-septate, almost colourless to olivaceous-brown ..... **P. fujikuroi**

Spartina ..... **P. graminis**

Stenotaphrum ..... **P. graminis**

Stipa ..... **P. graminis**

Syagrus ..... **P. graminis**

Torreyochloa ..... **P. graminis**

Trisetum ..... **P. graminis**

Triticum ..... **P. graminis**

List of Passalora species on Poaceae

Passalora agrostidicola Phengs. & U. Braun, **sp. nov.**
MycoBank MB811239
(Fig. 39)

Literature: Phengsintham *et al*. (2013: 103), as *Passalora fusimaculans*.

Illustration: Phengsintham *et al*. (2013: 103, figs 50–51), as *Passalora fusimaculans*.

Diagnosis: Distinguished from all species of *Passalora* on grasses by the much narrower conidia (1.5–2 µm wide), except for *P. fujikuroi,* which is mycovellosielloid, i.e. *in vivo* with solitary conidiophores arising from superficial hyphae.

Description: *Leaf spots* circular to irregular, 1–5 mm diam, reddish to medium brown in the centre, margin brown to dark brown. *Caespituli* amphigenous, scattered. *Mycelium* internal, inconspicuous. *Stromata* well-developed, substomatal, subglobose, 20–50 µm diam, brown to dark brown, composed of swollen hyphal cells, oval, ellipsoid to angular in outline, wall 0.3–0.5 µm wide. *Conidiophores* fasciculate, 6–24, arising from substomatal stromata, emerging through stomata, or arising from almost superficial stromatic hyphal aggregations, erect, straight to curved, unbranched, subcylindrical or slightly narrowed towards the tip, 10–52 × 3–5 µm, 0–1-septate, pale to moderately olivaceous-brown, wall 0.3–0.5 µm wide, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–30 µm long, 3–5 µm wide below and 1.5–2 µm above, conidiogenous loci conspicuous, thickened and darkened, 1.5–2 µm diam. *Conidia* solitary or catenate, in simple chains, cylindrical or subcylindrical, straight

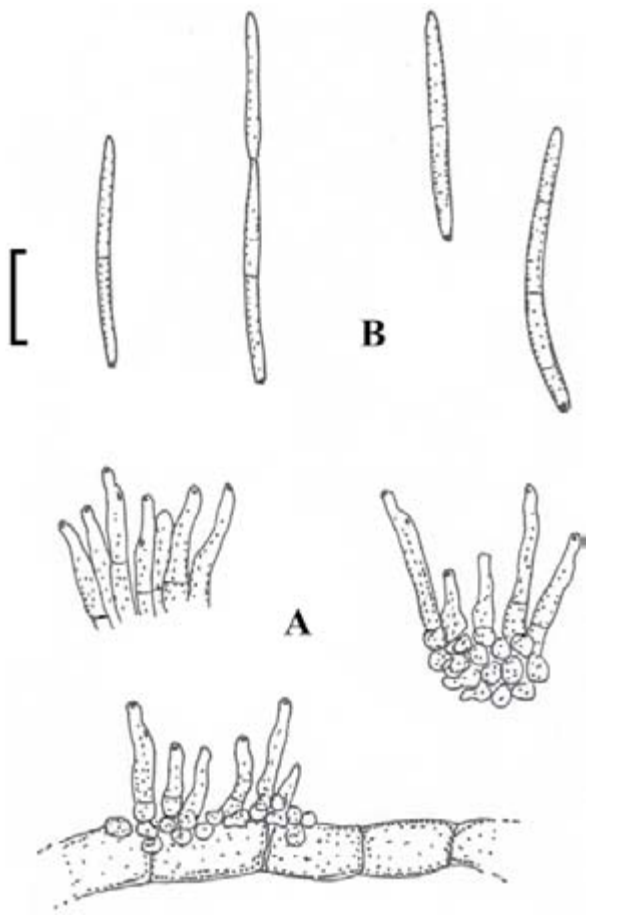

Fig. 39. *Passalora agrostidicola* (MFLU10-0317, holotype). **A.** Conidiophore fascicles. **B.** Conidia. Bar = 10 µm.

to somewhat curved, 18–38 × 1.5–2 µm, 3–4-septate, slightly constricted at the septa, pale olivaceous, wall thin (0.2–0.3 µm), smooth to finely verruculose, both ends subtruncate when catenate, apex bluntly rounded in solitary and primary conidia, apical hila 0.5–0.8 µm wide, basal hila 0.5–1.5 µm wide, somewhat thickened and darkened.

Holotype: **Thailand**: *Chiang Rai Province*: Doi Tung National Park, on living leaves of *Agrostis* sp., *Poaceae* (*Pooideae*, *Aveneae*), 18 Aug. 2009, *P. Phengsintham* (MFLU10-0317).

Host range and distribution: Only known from the type collection.

Notes: Phengsintham *et al*. (2013) identified the type collection of this species as *Passalora fusimaculans*, including *Cercospora agrostidis* as a synonym, which is now treated as separate species. *Passalora agrostidicola* is distinguished from *C. agrostidis* by its circular to irregular leaf spots, larger stromata, 0–1-septate conidiophores, and shorter and narrower, olivaceous, partly verruculose, cylindrical to subcylindrical conidia. The collection on *Agrostis* from Thailand is not conspecific with *C. agrostidis* (as well as *C. fusimaculans s. lat.*). Based on its pigmented conidia, the fungus from Thailand is better placed in *Passalora*. *Cercospora agrostidis* and *C. fusimaculans* are now treated as species of *Cercospora s. str*. due to their colourless conidia.

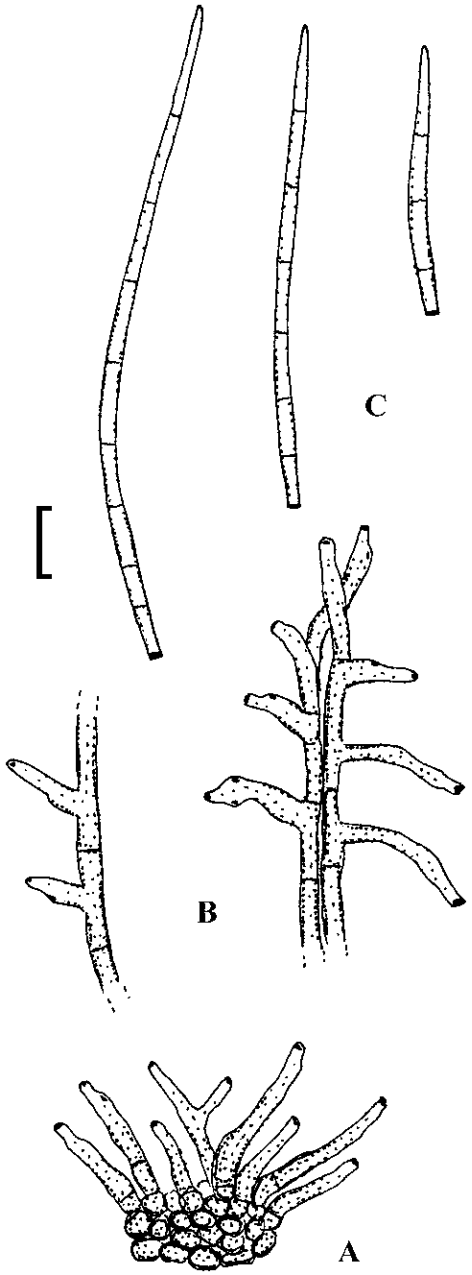

Fig. 40. *Passalora arthraxonis* (HMAS 51952, holotype). **A.** Conidiophore fascicle. **B.** Solitary conidiophores arising from superficial hyphae. **C.** Conidia. Bar = 10 µm.

Passalora arthraxonis (Y.L. Guo) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 438 (2003)
(Fig. 40)
Basionym: *Mycovellosiella arthraxonis* Y.L. Guo, *Mycosystema* **21**: 497 (2002).

Literature: Guo *et al*. (2003: 30–31).

Illustrations: Guo & Xu (2002: 498. fig. 1), Guo *et al*. (2003: 31, fig. 16).

Description: *Leaf spots* amphigenous, subcircular to elliptical, 0.5–1.5 mm diam, often confluent, margin indefinite, at first olivaceous-brown, later brown to dark brown, with yellowish

brown halo on the upper surface, brown to greyish brown below. *Caespituli* amphigenous. *Mycelium* internal and external; superfical hyphae emerging through stomata, sometimes forming loose ropes, often climbing leaf hairs, branched, septate, 1.5–3.2 µm wide, subhyaline, thin-walled, smooth. *Stromata* lacking or substomatal, subglobose, 15–35 µm diam, pale olivaceous-brown. *Conidiophores* loosely fasciculate, 5–10, arising from stromata, through stomata or solitary, arising from superficial hyphae, lateral, straight to curved, subcylindrical to attenuated towards the tip, unbranched, 1–3 times geniculate, about 9–37 × 3–5.5 µm, 0–2-septate, pale olivaceous to olivaceous or brown at the base, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, conidiogenous loci conspicuous, thickened and darkened, 1.5–2.5 µm diam. *Conidia* solitary, narrowly obclavate to acicular, straight to curved, 30–118 × 2.5–4 µm, 3–12-septate, hyaline, thin-walled, smooth, apex acute to obtuse, base obconically truncate, hila thickened and darkened.

Holotype: **China**: *Zhejiang Province*: Hangzhou, on *Arthraxon hispidus*, *Poaceae* (*Panicoideae*, *Andropogoneae*), 23 Sep. 1961, *Q. M. Ma* & *X. J. Liu* 408 (HMAS 51952).

Host range and distribution: Only known from the type collection.

Notes: The generic affinity of this species is not clear. The general habit of *P. arthraxonis* is mycovellosielloid, but the conidia are formed singly, cercospora-like and colourless. It may belongs to *Cercospora s. str.*, but this question remains unresolved.

Passalora asprellae (U. Braun) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 69 (2003).
(Fig. 41)
Basionym: *Mycovellosiella asprellae* U. Braun, *Sydowia* **48**: 206 (1996).
Synonym: *Cercospora asprellae* Ellis & Galloway, *in herb*.

Literature: Chupp (1954: 256).

Illustration: Braun (1996: 207, fig. 2).

Description: *Leaf spots* amphigenous, narrow, oblong, 1–2 × 0.5 mm, later confluent, forming narrow streaks, to about 10 mm long, dark, blackish, margin indefinite. *Caespituli* amphigenous, mostly hypophyllous, dense, velvety, dull greyish brown. *Mycelium* internal and external; superficial hyphae branched, septate, 2–6 µm wide, subhyaline to olivaceous-brown, thin-walled, smooth, often dense, intertwined or forming ropes. *Stromata* lacking or only with small, brown hyphal aggregations. *Conidiophores* in small, loose fascicles, arising from stromatic hyphal aggregations or solitary, arising from superficial hyphae, erect, straight, subcylindrical to geniculate-sinuous, unbranched, 10–70 × 3–6 µm, aseptate or only sparingly septate, pale olivaceous to olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–30 µm long, conidiogenous loci conspicuous, 1–2 µm diam, thickened and darkened. *Conidia* solitary, fusiform, obclavate, 20–75 × 3–5 µm, 2–6-septate, rarely somewhat constricted at the septa, subhyaline to pale olivaceous, thin-walled, smooth, apex pointed, base obconically truncate, 1.5–2 µm wide, hila thickened and darkened.

Holotype: **USA**: *Oregon*: on *Hystrix patula*, 10 Sep. 1889, *M. B. Waite* 199 (NY 985492).

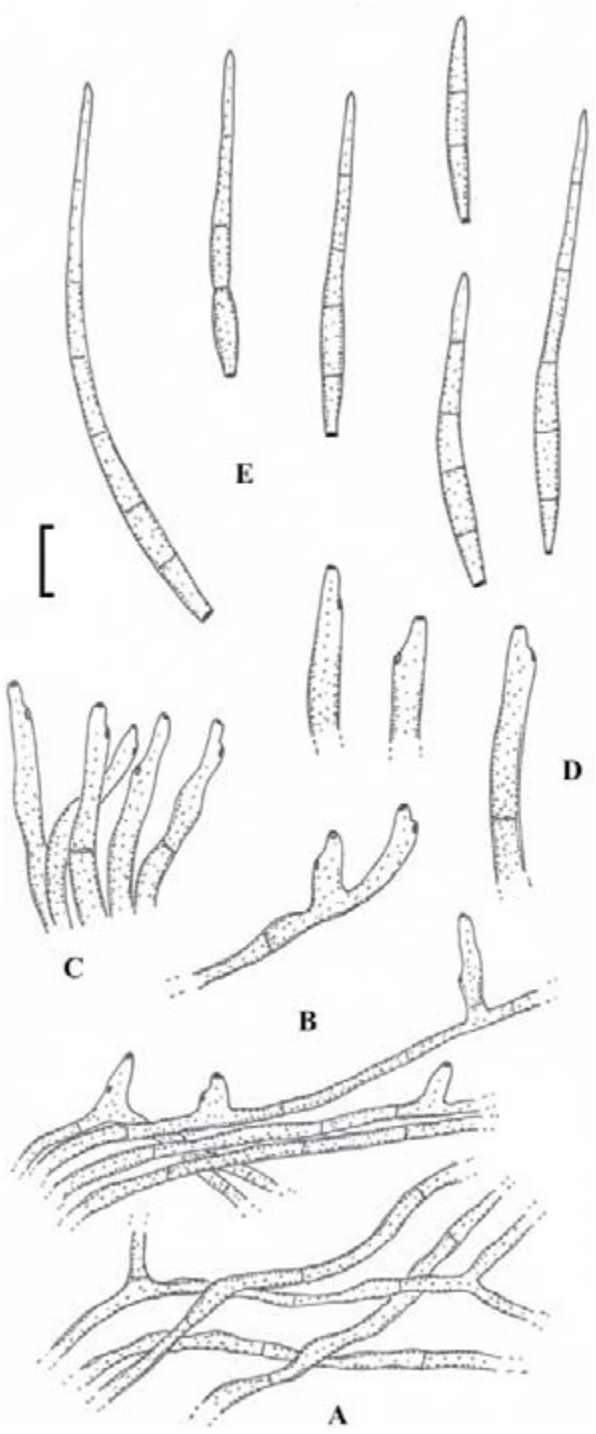

Fig. 41. *Passalora asprellae* (NY 985492, holotype). **A.** Superficial hyphae. **B.** Solitary conidiophores arising from superficial hyphae. **C.** Conidiophore fascicle. **D.** Conidiophores. **E.** Conidia. Bar = 10 µm.

Host range and distribution: On *Hystrix patula* [*Asprella hystrix*, *Elymus hystrix*], *Poaceae* (*Pooideae*, *Triticeae*), North America (USA, Illinois, Oregon).

Passalora brachyelytri (H.C. Greene) U. Braun & Bensch, **comb. nov.**
MycoBank MB811243
(Fig. 42)
Basionym: *Cladosporium brachyelytri* H.C. Greene, *Trans. Wisconsin Acad. Sci.* **53**: 214 (1964).

Literature: Bensch *et al.* (2012: 302).

Illustrations: Schubert (2005a: 64, fig. 5), Bensch *et al.* (2012: 302, fig. 358).

Description: *Leaf spots* distinct, numerous, scattered, narrow, oblong to oblong-elliptical, 1–3(–7) mm long and to 1 mm wide, reddish brown, surrounded by a paler reddish brown halo, often along leaf veins, occasionally confluent. *Caespituli* hypophyllous, scattered, loosely villose, pale, whitish to pale brown. *Mycelium* internal. *Stromata* lacking. *Conidiophores* solitary or in small, loose groups, arising from internal hyphae, emerging through stomata, erect, straight to somewhat flexuous, geniculate-sinuous, mostly unbranched, rarely apically branched, 48–130 × 3.5–5.5 µm, slightly attenuated towards the apex, septate, not or somewhat constricted at the septa, pale brown or olivaceous-brown, wall somewhat thickened, smooth; conidiogenous cells integrated, terminal and intercalary, 12–35 µm long, proliferation sympodial, geniculate, with a single to several conspicuous conidiogenous loci, protuberant, subdenticulate, planate, 1.5–2 µm diam, somewhat thickened and darkened-refractive. *Conidia* in unbranched chains, straight, subcylindrical, subfusiform, rarely somewhat obclavate, (6–)14–27 × 3–5(–6) µm, 1-septate, septum more or less median, not or only slightly constricted at the septum, subhyaline, thin-walled, smooth, apex rounded, slightly pointed or mostly truncate, base truncate, 1–2 µm wide, with protuberant hilum, thickened and darkened-refractive.

Lectotype (designated in Bensch *et al*. 2012: 302): **USA**: *Wisconsin*: Sawyer Co., Flambeau State Forest near Oxbow, on *Brachyelytrum erectum*, 22 Jul. 1964, *H.C. Greene* (WIS). *Isolectotype*: BPI 426166.

Host range and distribution: On *Brachyelytrum erectum*, *Poaceae* (*Pooideae*, *Brachyelytreae*), North America (USA, Wisconsin).

Notes: This species is readily distinguishable from *Cercospora fusimaculans* (syn. *Passalora fusimaculans*) by its much broader conidia. Schubert (2005a) reduced *Cladosporium brachyelytri* to synonymy with *Passalora fusimaculans* var. *barretoana* (now *Cercospora barretoana*).*Cercospora barretoana*, confined to hosts in the *Panicoideae*, differs from *P. brachyelytri* (on *Brachyelytrum*, *Pooideae*, *Brachyelytreae*) in having 0–4(–7)-septate, much longer conidia, 9–70 µm. Based on colourless, cercosporoid conidia, *Passalora barretoana* and *P. fusimaculans* are now treated as species

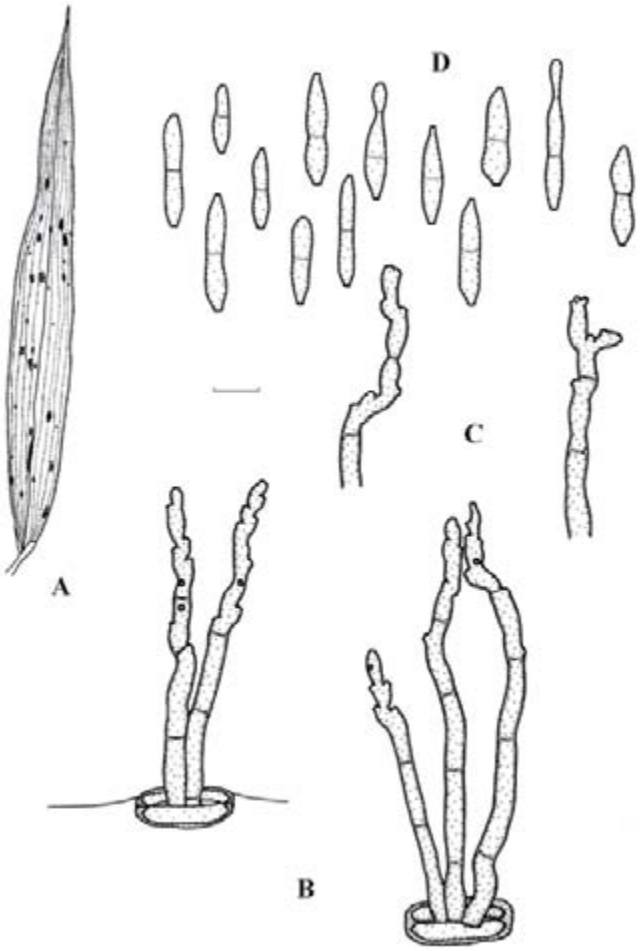

Fig. 42. *Passalora brachyelytri* (WIS, holotype). **A.** Leaf spots. **B.** Conidiophore fascicles. **C.** Conidiophores. **D.** Conidia. Bar = 10 µm. U. Braun del.

of *Cercospora s. str*. The generic affinity of *Cladosporium brachyelytri* is not clear, but due to the consistently didymosporous, almost colourless conidia, we prefer to place this species in *Passalora s. lat*. pending molecular studies.

Passalora caespitosa (Ellis & Everh.) U. Braun, *Cryptog. Mycol.* **20**: 165 (1999).
(Fig. 43)
Basionym: *Cercospora caespitosa* Ellis & Everh., *Proc. Acad. Sci. Philadelphia* I, **43**: 88 (1891).

Literature: Chupp (1954: 244), Crous & Braun (2003: 92).

Illustration: Braun (1999: 163, fig. 10).

Exsiccatae: Ellis & Everh., North Amer. Fungi 2590, 3192.

Description: *Leaf spots* lacking. *Caespituli* amphigenous, mostly hypophyllous, punctiform to pustulate, blackish. *Mycelium* internal. *Stromata* immersed to somewhat erumpent, large, about 100–500 µm diam, dark brown to blackish, composed of swollen hyphal cells, 2–8 µm diam, pale to medium dark brown. *Conidiophores* numerous, in dense fascicles, arising from stromata, erumpent, forming sporodochial conidiomata, straight, subcylindrical to slightly

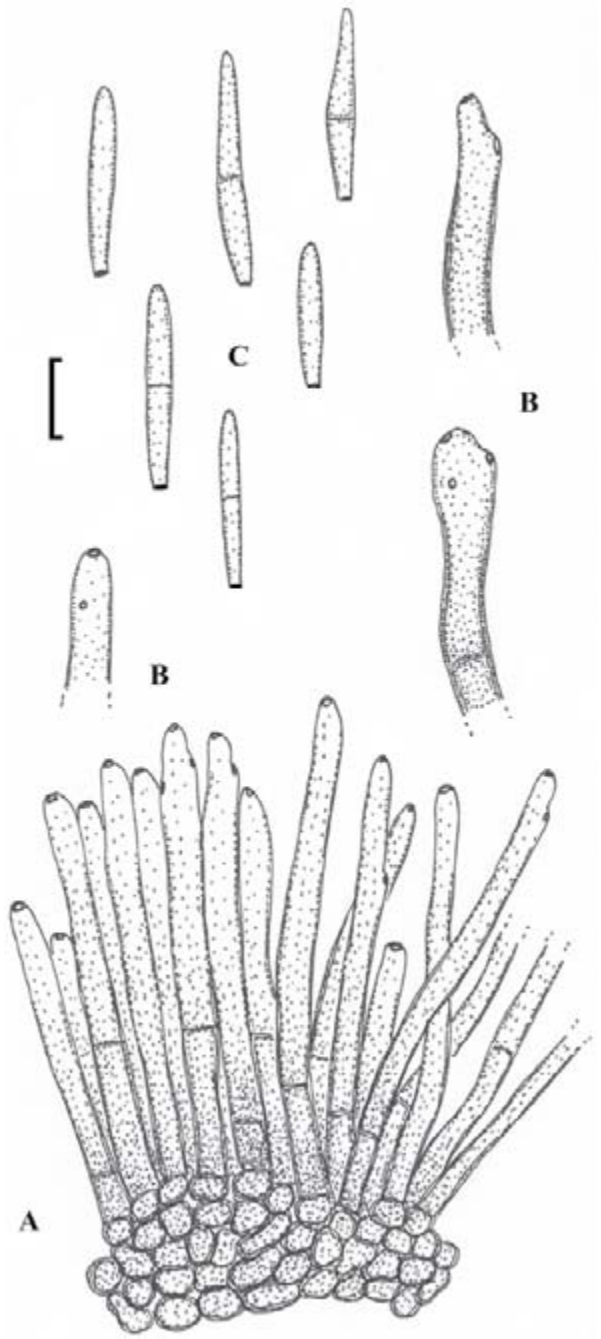

Fig. 43. *Passalora caespitosa* (BPI 433902, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

flexuous-sinuous, barely to slightly geniculate, unbranched, 40–150 × 3–6 µm, width uniform, 0–2-septate, pale olivaceous to medium brown, medium dark brown in mass, tips often paler, wall thin to slightly thickened, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 20–120 µm long, conidiogenous loci conspicuous, thickened and darkened, 1.5–2 µm diam, not or barely protuberant. *Conidia* solitary, cylindrical, cylindrical-obclavate, fusiform, 20–65 × 1.5–4 µm, (0–)1(–3)-septate, subhyaline to pale yellowish brown, thin-walled, smooth, apex obtuse, base short obconically truncate, 1–2 µm wide, hilum barely thickened, somewhat darkened.

Lectotype (**designated here**, MycoBank, MBT200459): **USA**: *Mississippi*: Ocean Springs, on *Eustachys petraea*, 30 Aug. 1881, *S. M. Tracy* 1215 (BPI 433902). *Isolectotype*: MICH 15265. *Former syntypes*: Ocean Springs, on *Eustachys petraea*, 16 Sep. 1889, *S. M. Tracy* (CUP 39255) and Ellis & Everh., North Amer. Fungi 3190 (e.g. BPI 433904, CUP, OSC 53156).

Host range and distribution: On *Chloris gayana*, *Eustachys* (*neglecta*, *petraea* [*Chloris petraea*, *swartziana*]), *Poaceae* (*Chloridoideae*), North America (USA, Florida, Michigan, Mississippi, Wisconsin).

Notes: The "lectotypification" cited in Braun (1999) is incorrect since the proposed material (Ellis & Everh., North Amer. Fungi 3192) was collected in 1893, i.e. after the publication of this species name.

Passalora compacta (Berk. & M.A. Curtis) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 133 (2003).
(Fig. 44)

Basionym: *Cladosporium compactum* Berk. & M.A. Curtis, *Grevillea* **3**: 106 (1875).

Synonyms: *Cercosporidium compactum* (Berk. & M.A. Curtis) Deighton, *Mycol. Pap*. **112**: 59 (1967).

Cercospora scolecotrichoides G.F. Atk., *Cornell Univ. Bull*. **3**: 46 (1897) [*lectotype* (**designated here**, MycoBank, MBT200461): **USA**: *Alabama*: Lee Co., Auburn, on *Arundinaria gigantea* subsp. *tecta*, 28 Oct. 1891, *B. M. Duggan* 2293 (CUP-A-2293); *isolectotypes*: CUP 41180, K(M) IMI 95405].

Literature: Saccardo (1886: 364; 1899: 1106), Lindau (1907: 833), Chupp (1954: 251), Deighton (1967: 59), Crous & Braun (2003: 133), Schubert (2005b: 202), Bensch *et al*. (2013: 307).

Illustrations: Deighton (1967: 59, fig. 30, 61, fig. 31).

Description: *Leaf spots* lacking or almost so. *Caespituli* hypophyllous, more or less evenly scattered, punctiform, dark. *Mycelium* internal. *Stromata* well-developed, oblong, 50–150 µm, dark brown. *Conidiophores* in large, compact fascicles (to 100 or even more), looser when young, very dense and sometimes even subcoremioid when older, arising from stromata, erumpent, rupturing the cuticle, erect, straight to somewhat curved-sinuous, mostly geniculate-sinuous above, often strongly so, unbranched or rarely branched, 50–300 × 3–6.5 µm, loosely pluriseptate, pale, olivaceous, thin-walled, smooth; conidiogenous cells integrated, terminal and intercalary, 10–45 µm long, geniculate, conidiogenous loci conspicuous, thickened and darkened, prominent, 1.5–2.5 µm diam. *Conidia* solitary, broadly ellipsoid-fusiform to obclavate, straight to slightly curved, 20–55 × 5–8 µm, (1–)3(–4)-septate, pale olivaceous, thin-walled, smooth, apex usually attenuated towards an obtuse or subobtuse tip, occasionally broadly rounded, base short obconically truncate, about 2 µm wide, hila somewhat thickened and darkened.

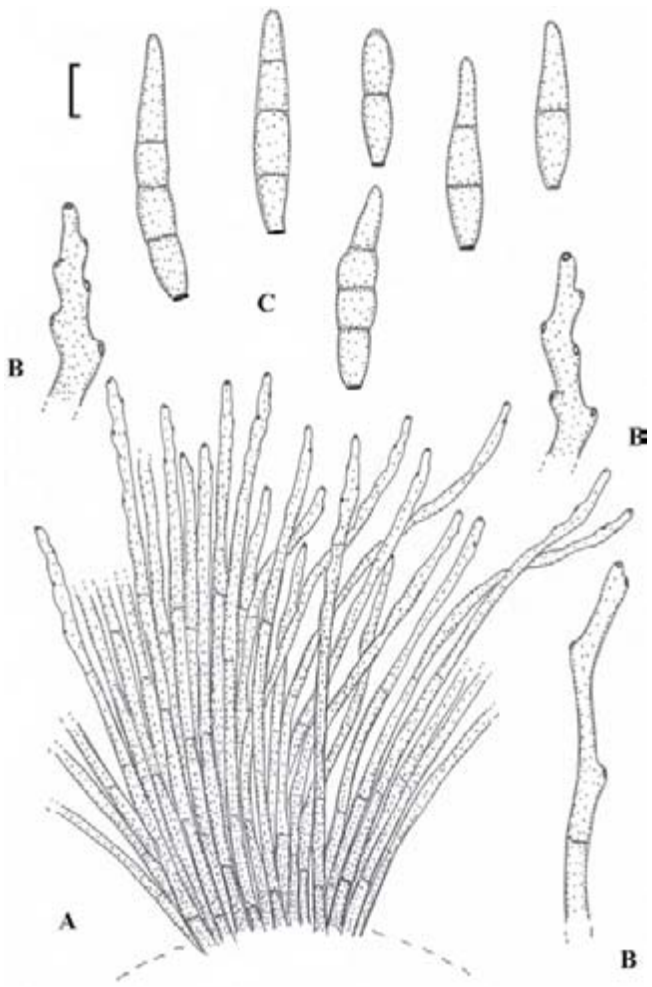

Fig. 44. *Passalora compacta* (K(M) IMI 193890, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Lectotype (**designated here**, MycoBank, MBT200460): **USA**: "N. America, no. 3767", on *Arundinaria gigantea* subsp. *tecta*, ex herb. Broome (K(M) 193890). *Isolectotypes*: K(M) 193891, K(M) IMI 69771, STR (ex herb. Curtis).

Host range and distribution: On *Arundinaria* (*gigantea* subsp. *tecta* [*tecta*], *Arundinaria* sp.), *Poaceae* (*Bambusoideae*, *Bambuseae*), North America (USA, Alabama, Florida).

Passalora dichanthii-annulati (Chaudhary, S.K. Singh & P.N. Singh) U. Braun, **comb. nov.**
MycoBank MB811244
(Fig. 45)

Basionym: *Phaeoramularia dichanthii-annulati* Chaudhary, S.K. Singh & P.N. Singh, *Indian Phytopathol*. **55**: 469 (2002); as "*dicanthii-annulatae*".

Illustration: Chaudhary *et al*. (2002: 469, fig. 1).

Description: *Leaf spots* amphigenous, small, dark brown. *Caespituli* hypophyllous, effuse, brown. *Mycelium* internal. *Stromata* well-developed, subepidermal, pseudoparenchymatous, about 20–25 µm diam, pale olivaceous. *Conidiophores* in fascicles, to 10, arising from

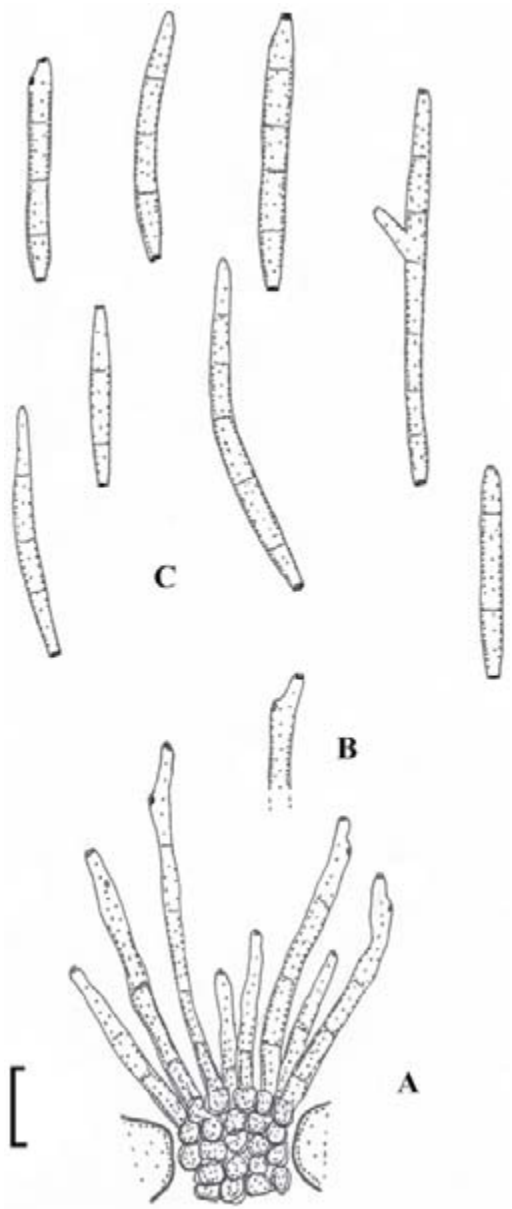

Fig. 45. *Passalora dichanthii-annulati* (based on Chaudhary *et al*. 2002: 469, fig. 1). **A.** Conidiophore fascicle. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

stromata, erect, straight to flexuous, geniculate, unbranched, 15–45 × 3–4 µm, 1–5-septate, light olivaceous, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci conspicuous, thickened and darkened. *Conidia* solitary to catenate, in simple or often branched chains, cylindrical or subcylindrical, straight to curved, 13–68 × 2–5 µm, 2–7-septate, light olivaceous, thin-walled, smooth, apex subacute to obtuse, base obconically truncate, hila thickened and darkened.

Holotype: **India**: *Uttar Pradesh*: Gorakhpur, on *Dichanthium annulatum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Nov. 1994, *R. K. Chaudhary* (HCIO 42571).

Host range and distribution: Only known from the type collection.

Notes: This species is morphologically close to *Passalora barretoana*, but differs in having more cylindrical conidia often formed in branched chains. The genus *Dichanthium* belongs in the *Andropogoneae*. All known hosts of *P. barretoana* are members of the *Paniceae*.

Passalora digitariae (Crous & B. Sutton) Crous & U. Braun, *Mycosphaerella and Anam.*: 451 (2003).
(Fig. 46)

Basionym: *Phaeoramularia digitariae* Crous & B. Sutton, *S. Afr. J. Bot*. **63**: 282 (1997).

Illustration: Crous & Sutton (1997: 282, fig. 4).

Description: *Leaf spots* amphigenous, narrowly elliptical, 3–8 mm long and 0.5–2 mm wide, light brown. *Caespituli* amphigenous, scattered, distinct, punctiform, dark brown. *Mycelium* internal; hyphae branched, septate, 2–4 µm wide, hyaline to olivaceous, thin-walled, smooth. *Stromata* well-developed, substomatal, 20–40 µm diam, dark brown. *Conidiophores* in fascicles, 13–25, arising from stromata, through stomata, erect, divergent, straight, subcylindrical to slightly sinuous, unbranched, 30–90 × 3–5 µm (combined length of stromata and conidiophores 40–110 µm), 1–5-septate, medium brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, 15–35 µm long, conidiogenous loci conspicuous, thickened and darkened, about 1.5–2 µm diam. *Conidia* solitary to catenate, in simple chains, subcylindrical-obclavate, 20–55 × 2.5–4 µm, 1–5-septate, pale olivaceous, thin-walled, smooth, apex obtuse to subtruncate in catenate conidia, base short obconically truncate, about 1.5–2 µm wide, hila somewhat thickened and darkened.

Holotype: **South Africa**: *KwaZulu-Natal*: Pietermaritzburg, Nottingham Rd., on *Digitaria diagonalis*, *Poaceae* (*Panicoideae*, *Paniceae*), Mar. 1939, *A. P. D. McClean* (PREM 33113).

Host range and distribution: Only known from the type collection.

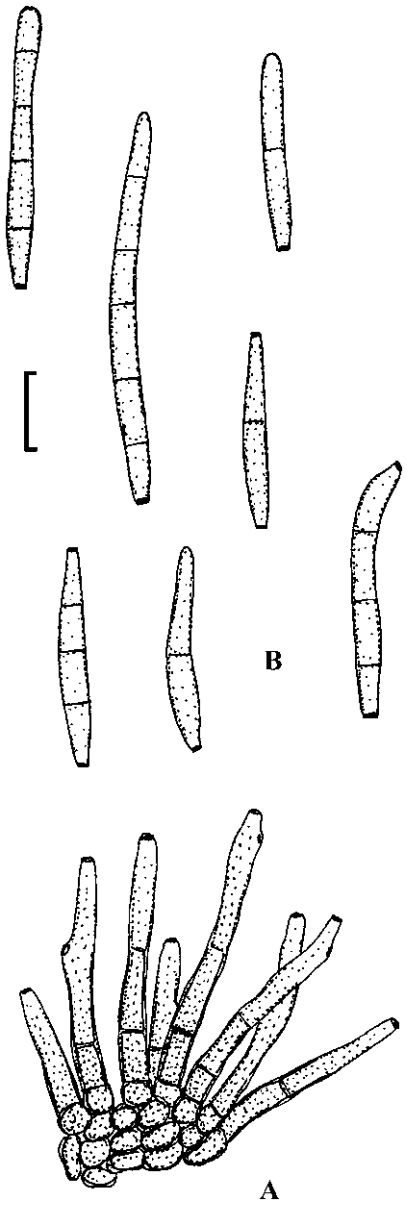

Fig. 46. *Passalora digitariae* (PREM 33113, holotype). **A.** Conidiophore fascicle. **B.** Conidia. Bar = 10 µm.

Passalora fujikuroi (N. Pons) U. Braun & Crous, *Mycosphaerella and Anam.*: 190 (2003).
(Fig. 47)

Basionym: *Mycovellosiella fujikuroi* N. Pons, *Ernstia* **6**: 42 (1996).

Synonym: *Cercospora andropogonis* Sawada, *Special Publ. Coll. Agric. Natl. Taiwan Univ*. **8**: 226 (1959), *nom. inval*. (Art. 38.1) [authentic material: **Taiwan**: Taipei, on *Sorghum bicolor* [*vulgare*], 6 Nov. 1909, *K. Fujiroko* (NTU-PPE, hb. Sawada; TNS-F-218232; BPI 432655)].

Illustration: Pons (1996: 46, fig. 1).

Description: *Lesions* not distinct. *Caespituli* epiphyllous. *Mycelium* internal and external; superficial hyphae emerging through stomata, branched, 1.5–3 µm wide, subhyaline, thin-walled, smooth. *Stromata* lacking or small, substomatal, *textura angularis*, pigmented. *Conidiophores* solitary, arising from superficial hyphae, lateral, or arising from small stromata in small, loose fascicles, through stomata, erect, straight or flexuous, subcylindrical, unbranched, 15–50 × 3–5 µm, aseptate or 1–2-septate, pale to dark brown, thin-walled, smooth; conidiogenous cells integrated, terminal, intercalary or conidiophores reduced to conidiogenous cells, proliferation sympodial, 7–30 µm long, 3–5 µm wide below and 2.5–4 µm wide above; conidiogenous loci conspicuous, unthickened to somewhat thickened. *Conidia* solitary, subcylindrical to short obclavate, straight to curved, 10–45 µm long, base and apex 1–3 µm wide, 0–4-septate, subhyaline to pale olivaceous, thin-walled, smooth, apex obtuse, base obconically truncate, basal hilum thickened and darkened.

Holotype: **Taiwan**: Taipei, on *Sorghum bicolor*, 6 Nov. 1909, *Y. Fujikuro* (NTU-PPE, hb. Sawada). *Isotype*: TNS-F-218232).

Host range and distribution: On *Sorghum bicolor* [*vulgare*], *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (Taiwan).

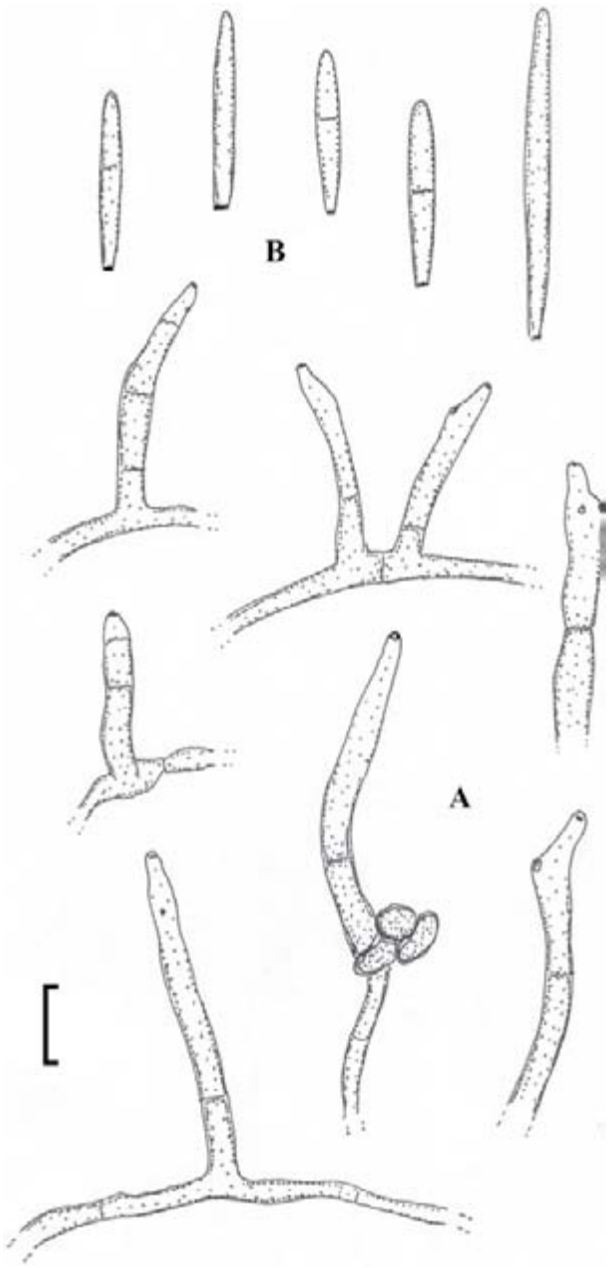

Fig. 47. *Passalora fujikuroi* (NTU-PPE, holotype). **A.** Solitary conidiophores. **B.** Conidia. Bar = 10 µm.

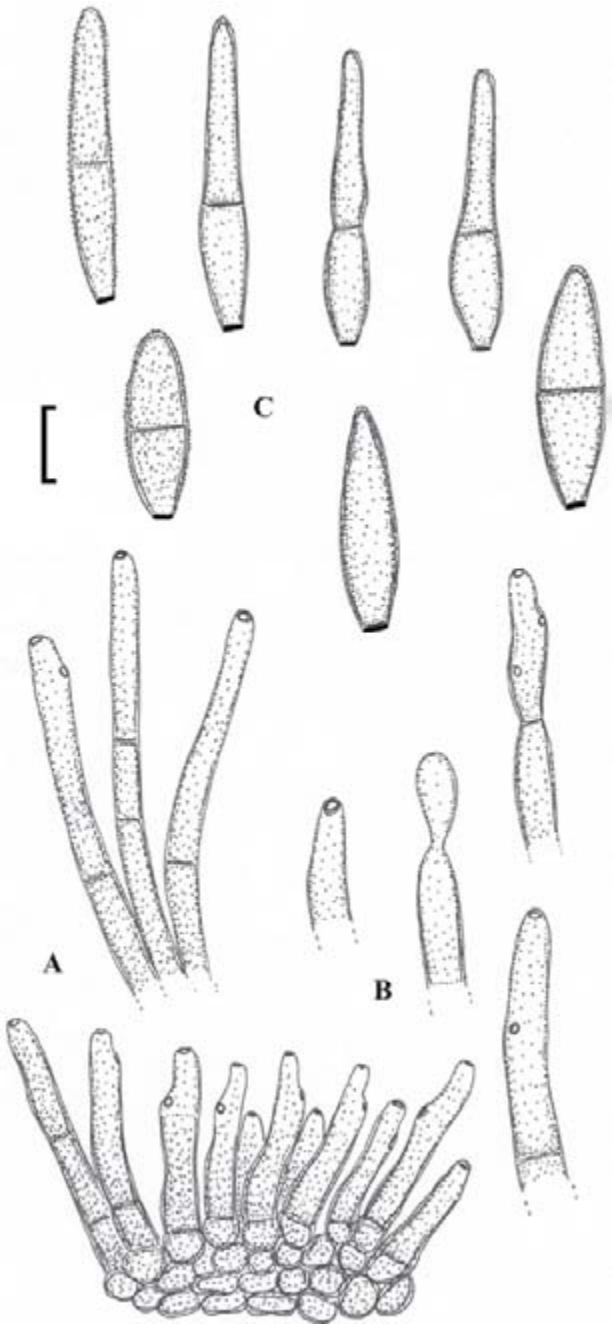

Fig. 48. *Passalora graminis* (HAL, lectotype). **A.** Conidiophore fascicles. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Notes: The combination of morphological characters in this species is unusual. Its generic affinity is unclear, as its conidia are subhyaline or pale and thus cercospora-like. On the other hand, solitary conidiophores *in vivo* arising from superficial hyphae are not typical of *Cercospora s. str*. Presently this species is maintained in *Passalora s. lat*. Based on results of the examination of isotype material, the assignment of this species to the latter genus was confirmed. Sawada (1959) and Goh & Hsieh (1990) cited *C. andropogonis* as a synonym of *Cercospora sorghi*, a true *Cercospora s. str*., which is in conflict with the examinations of Pons (1996) and our own observations. It is possible that authentic material of *C. andropogonis* (*nom. nud*.) originally encompassed conidiophores and conidia of two cercosporoid fungi, although this is not proven.

Passalora graminis (Fuckel) Höhn., *Zentralbl. Bakteriol. Parasitenk*., Abt. 2, **60**: 6 (1923).
(Fig. 48)

Basionym: *Scolicotrichum graminis* Fuckel, *Hedwigia* **2**(15): 134 (1863).

Synonyms: *Passalora hordei* G.H. Otth, *Mitth. Naturf. Ges. Bern* 1868: 66 (1868) [*holotype*: **Switzerland**: Bern, on *Hordeum distichum*, *G. H. Otth* (ZT)].

Passalora punctiformis G.H. Otth, *Mitth. Naturf. Ges. Bern* 1868: 67 (1868) [*syntypes*: **Switzerland**: Bern, on *Dactylis glomerata* and *Melica uniflora*, *G. H. Otth* (?ZT, host as "*Arrhenaterum elatius*").

Cladosporium sphaeroideum Cooke, *Grevillea* **8**(46): 60 (1879) [*holotype*: **New Zealand**: Counterbury Alps, on

Poa foliosa, ex herb. *M. C. Cooke* 398 (K(M) 121569)].

Cercospora graminicola Tracy & Earle, *Bull. Torrey Bot. Club* **22**: 179 (1895) [*lectotype* (**designated here**, MycoBank, MBT200462): **USA**: *Mississippi*: Starkville, on *Phleum pratense*, 4 Nov. 1894, *F. S. Earle* (BPI 436794); *isolectotypes*: BPI 436793, CUP 39906, NY 937032, 937033].

Scolicotrichum compressum Allesch., in Syd., *Mycoth. March*. 4388 (1895) and *Hedwigia* **35**: (34) (1896) [lectotype (**designated here**, MycoBank, MBT200463): **Germany**: Berlin, Lichterfelde, on *Poa compressa*, Sep. 1895, *P. Sydow* (BPI 425109); *isolectotypes*: Syd., Mycoth. March. 4388, e.g. B, PAD].

Scolicotrichum graminis var. *nanum* Sacc., *Ann. Mycol.* **3**: 515 (1905) [*holotype*: **Italy**: Belluno, Agordo, on *Dactylis glomerata*, *D. Saccardo* (not preserved in PAD)].

Scolicotrichum graminis var. *brachypodum* Speg., *An. Mus. Nac. Buenos Aires*, *ser*. 3, **13**: 436 (1911) [*syntypes*: **Argentina**: on *Hordeum jubatum*, *Bromus unioloides*, etc., not specified].

Cercospora graminis (Fuckel) Horsfall, *Mem. Cornell Univ. Agric. Exp. Sta*. **130**: 100 (1930).

Heterosporium secalis Dippen., *South African J. Sci*. **28**: 286 (1931) [*holotype*: **South Africa**: *Cape Province*: Stellenbosch, on *Secale cereale*, 25 Sep. 1929, *B. J. Dippenar* 31 (PREM 46907)].

Cercosporidium graminis (Fuckel) Deighton, *Mycol. Pap*. **112**: 62 (1967).

Passalora compressa (Allesch.) Petr., *Reliquiae Petrakianae* **1**: 50 (No. 192) (1977), *comb. inval.* (Art. 41.5).

Passalora graminis (Fuckel) Poonam Srivast., *J. Living World* **1**: 116 (1994), *comb. inval. et illegit.* (Art. 41.5).

Literature: Saccardo (1886: 348; 1895: 617; 1897: 682; 1911: 774; 1913: 1374), Vassiljevsky & Karakulin (1937: 212, 272), Sprague (1950: 424–429), Chupp (1954: 247), Deighton (1967: 62), Ellis (1971: 281), Crous & Braun (1996: 273), David (1997: 121), Crous & Braun (2003: 203), Guo *et al*. (2003: 90–91).

Illustrations: Vassiljevsky & Karakulin (1937: 212, fig. 19), Ellis (1971: 280, fig. 192 B), Guo *et al*. (2003: 91, fig. 57).

Exsiccatae: Barthol., Fungi Columb. 2685. Clements & Clements, Crypt. Format. Colorad. 505. W.B. Cooke, Mycobiota N. Amer. 445b. Ellis & Everh., Fungi Columb. 991, 1980, 2169, 2170. Ellis & Everh., N. Amer. Fungi 1988, 2600. Erikss., Fungi Paras. Scand. Exs. 186B. Fuckel, Fungi Rhen Exs. 130. Kabát & Bubák, Fungi Imperf. Exs. 94, 442. Kellerm., Ohio Fungi 97. Krieger, Fungi Saxon. Exs. 939, 1938–1940. Kunze, Fungi Sel. Exs. 395. Petr., Fl. Bohem. Morav. Exs. Pilze 498. Petr., Mycoth. Gen. 300. Poelt & Scheuer, Reliqu. Petrak. 1594. Rabenh., Fung. Eur. Exs. 4200. Roum., Fungi Sel. Gall. Exs. 740. D. Sacc., Mycoth. Ital. 1739. Săvul., Herb. Mycol. Rom. 1346. Siem., Fungi Bialowiez. Exs. 199. Solh., Mycofl. Saximont. Exs. 200, 500, 1197, 1199. Syd., Mycoth. Germ. 288, 848. Syd., Mycoth. March. 4888. Triebel, Microf. Exs. 169. Verstergr., Micromyc. Rar. Sel. Praec. Scand. 149. Winter, Fungi Helvet. 95. Zahlbruckner, Krypt. Exs. 1191.

Description: *Leaf spots* lacking or indefinite, i.e. colonies on necrotic or faded leaves, or with lesions of variable shape and size, mostly oblong, at first 2–12 × 1–4 mm, later forming long necrotic streaks, finally large leaf segments or almost entire leaves necrotic, yellowish, ochraceous, straw-coloured, pale brown to dark brown, greyish brown, dingy grey, sometimes with diffuse yellowish halo. *Caespituli* usually hypophyllous, scattered, punctiform, dark brown to blackish. *Mycelium* internal. *Stromata* variable in shape and size, but usually well-developed, substomatal to immersed, 20–130 µm diam, brown, cells circular to somewhat angular-irregular in outline, 3–12(–15) µm diam. *Conidiophores* in small to very large fascicles, arising from stromata, through stomata or erumpent, divergent to dense, erect, straight, cylindrical, subcylindrical to somewhat curved, sinuous, slightly geniculate, unbranched, apex usually obtuse, sometimes hooked, 20–105 × 3–8 µm, 0–4-septate, individual conidiophores pale to medium brown, medium to dark brown in mass, thin-walled, smooth to somewhat rough-walled; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 15–60 µm long, with a single to several conspicuous conidiogenous cells, circular in outline, 2.5–4 µm diam, somewhat thickened and darkened, usually barely protuberant. *Conidia* formed singly, ellipsoid-ovoid, obovoid, short obclavate, (15–)20–50(–60) × (5–)6–12(–14) µm, 0–3-septate, mostly 1-septate, occasionally slightly constricted at the septa, subhyaline to pale brownish, thin-walled, smooth to somewhat rough-walled, apex obtuse, often broadly rounded, base rounded to short obconically truncate, sometimes somewhat peg-like, 3–5 µm wide, hila somewhat thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200464): **Germany**: *Rheinland-Pfalz*: Mt. Rabenkopf, on grass leaves (exact identity unclear), Fuckel [Fungi Rhen. Exs. 130] (HAL). *Isolectotypes*: Fuckel, Fungi Rhen. Exs. 130 (e.g. FH, G).

Host range and distribution: On ×*Agrohordeum macounii*, *Agropyron cristatum*, ×*Agrositanion* sp., *Agrostis* (*capillaris*, *castellana*, *exarata*, *gigantea*, *hallii*, *oregonensis*, *rossiae*, *scabra*, *stolonifera* [*palustris*], *tenuis*), *Alopecurus* (*aequalis*, *alpinus*, *carolinianus*, *geniculatus*, *pratensis*, *textilis* [*tiflisiensis*]), *Ammophila* (*arenaria*, *Ammophila* sp.), *Anthoxanthum odoratum*, *Arctagrostis* (*latifolia*, *Arctagrostis* sp.), *Arrhenatherum* (*album* [*erianthum*], *elatius* subsp. *elatius*, *elatius* subsp. *bulbosum* [*Avena bulbosa*]), ?*Arundinaria* (*gigantea* subsp. *gigantea*, *gigantea* subsp. *tecta* [*tecta*], *Arundinaria* sp.), *Avena sativa*, *Beckmannia* (*eruciformis*, *syzigachne*, *Beckmannia* sp.), *Bromus* (*anomalus*, *carinatus*, *catharticus* [*willdenowii*], *ciliatus*, *frondosus*, *hordeaceus* [*mollis*], *inermis*, *japonicus*, *kalmii* [*purgans*], *laevipes*, *marginalis* [*breviaristatus*], *orcuttianus*, *pacificus*, *secalinus*, *sitchensis*, *vulgaris*), *Calamagrostis* (*canadensis*, *inexpansa*), *Cenchrus* (*purpureus* [*Pennisetum purpureum*], *Cenchrus* sp.), *Cinna* (*arundinacea*, *latifolia*, *Cinna* sp.), *Cynodon* (*dactylon*, *Cynodon* sp.), *Cynosurus* (*cristatus*, *echinatus*), *Dactylis* (*glomerata* subsp. *glomerata*, *glomerata* subsp. *hispanica* [*hispanica*]), *Danthonia* (*californica*, *intermedia*, *Danthonia* sp.), *Deschampsia* (*atropurpurea*, *cespitosa*, *danthonioides*, *elongata*, *Deschampsia* sp.), *Digitaria*

(*eriantha* [*smutsii*], *sanguinalis*, *Digitaria* sp.), ×*Elyhordeum stebbinsianum* [*Elymus aristatus*], *Elymus* (*albicans* [*Agropyron griffithii*], *angulatus* [*antarcticus*], *canadensis* [*robustus*], *caninus*, *enysii*, *elymoides* [*Sitanion hystrix*], *glaucus*, ×*hansenii* [*Sitanion* ×*hansenii*], *hispidus* [*Agropyron trichophorum*], *lanceolatus* [*Agropyron dasystachyum*, *A. riparium*], *macrourus* [*Agropyron sericeum*], *mollis*, *multisetum* [*Sitanion jubatum*], *repens*, ×*saxicola*, *sibiricus*, *smithii*, *spicatus*, *trachycaulus* [*Agropyron latiglume*, *richardsonii*, *subsecundum*], *vancouverensis*, *virginicus*), ×*Elysitanion* sp., *Eragrostis* (*secundiflora*, *Eragrostis* sp.), *Festuca* (*arundinacea* [*elatior*], *kingii*, *nigrescens*, *rubra*, *subulata*, *varia*), *Glyceria* (*borealis*, *canadensis*, *elata*, *fluitans*, *grandis*, *leptostachya*, *maxima*, *notata*, *remota*, *septentrionalis*, *Glyceria* sp.), *Helictotrichon canescens* [*Trisetum canescens*], *Hierochloe* (*redolens*, *Hierochloe* sp.), *Homalotrichon pubescens* [*Avenula pubescens*], *Hordeum* (*brachyantherum*, *bulbosum* [*nodosum*], *jubatum*, *pusillum*, *vulgare*), *Hystrix* (*patula*, *Hystrix* sp.), *Koeleria* (*micranthera* [*cristata*], *Koeleria* sp.), *Leersia* (*oryzoides*, *Leersia* sp.), *Leucopoa* sp., *Leymus* (*condensatus* [*Elymus condensatus*], *mollis* [*Elymus mollis*], *triticoides* [*Elymus triticoides*]), *Lolium* (*multiflorum*, *perenne*, *Lolium* sp.), *Melica* (*bulbosa*, *geyeri*, *smithii*, *spectabilis*, *subulata*, *Melica* sp.), ?*Milium* (*effusum*, *Milium* sp.), *Miscanthus* (*sinensis*, *Miscanthus* sp.), *Muhlenbergia* (*filiformis*, *mexicana*, *racemosa*, *sylvatica*, *Muhlenbergia* sp.), *Nassella viridula* [*Stipa viridula*], *Oryzopsis hymenoides*, *Oryzopsis* sp.), *Panicum* (*antidotale*, *Panicum* sp.), *Phalaris arundinacea*, *Phleum* (*alpinum*, *pratense*), *Phragmites* (*australis*, sp.), *Poa* (*alpinia*, *annua*, *arida*, *chaixii*, *compressa*, *cusickii* [*epilis*], *foliosa*, *interior*, *juncifolia* [*ampla*, *nevadensis*], *longiligula*, *nemoralis*, *nervosa*, *palustris*, *pratensis*, *remota* [*Glyceria remota*], *secunda*, *stenantha*, *trivialis*), *Pseudosclerochloa rupestris* [*Poa canbyi*, *gracillima*, *sandbergii*], *Puccinellia* (*distans*, *Puccinellia* sp.), *Secale* (*cereale*, *montana*), *Spartina gracilis*, *Stenotaphrum* sp., *Stipa* (*comata*, *coronata*, *lemmonii*, *lettermannii*, *nelsonii* [*williamsii*], *occidentalis* [*californica*, *columbiana*, *elmeri*], *pinetorum*, *speciosa*, *thurberiana*, *Stipa* sp.), *Torreyochloa pauciflora* [*Glyceria pauciflora*], *Trisetum* (*flavescens*, *montanum, spicatum*), *Triticum* (*aestivum*, *Triticum* sp.), *Zea mays*, *Poaceae*, widespread, Africa (Canary Islands, South Africa), Asia (China, Iran, Japan, Taiwan, Thailand), Australia, Caucasus (Armenia), Europe (Belgium, Finland, France, Germany, Italy, Poland, Russia, UK, Ukraine), New Zealand, North America (Canada, Manitoba, Ontario; USA, Alaska, Arizona, California, Colorado, Idaho, Illinois, Kansas, Kentucky, Main, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, New Mexico, New York, Nevada, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, Wyoming), South America (Argentina, Chile, Colombia), and West Indies (Cuba, Puerto Rico, Virgin Islands).

Notes: *Passalora graminis* is widespread on a wide range of grasses. Deighton (1967) considered *P. graminis* an aggregate species possibly composed of several taxa. Collections on various hosts, however, are morphologically uniform. The biology of this species is not well known. It often occurs on necrotic or faded leaves and is sometimes considered a parasite of weakened grasses. Inoculation experiments and results of molecular sequence analyses are necessary to elucidate the biology and taxonomy of this species. In the interim, we prefer to maintain *Passalora graminis* in its current wide sense (*s. lat.*). Records of *P. graminis* on *Arundinaria* spp. are doubtful and possibly refer to *P. compactum*. Collections of *P. graminis* on *Milium effusum* may belong to *P. milii*.

Data on asexual/sexual morph connections of *Scolicotrichum graminis* are confusing and unsubstantiated. *Scolicotrichum graminis* is often listed as the asexual morph and synonym of *Mycosphaerella recutita* (Fr.) Johanson 1884 (see Index Fungorum database), which goes back to Fuckel (1870: 107) who cited this species as a "conidial form" of *Sphaerella recutita* (Fr.) Rabenh. (syn. *Sphaeria recutita* Fr. 1823), which was confirmed by Cooke (1871: 921). Arx (1949: 67) provided a comprehensive description of *M. recutita*. According to Eriksson (1992), the type material of *Sphaeria recutita* does not contain a *Mycosphaerella*, i.e. the common application of this name for a *Mycosphaerella* on grasses must be considered erroneous. The oldest valid name for *M. recutita sensu* Arx is not *Mycosphaerella wichuriana* (J. Schröt.) Johanson 1884, as suggested by Eriksson (1992), but *Sphaerella disseminata* De Not. & Carestia 1871 (i.e. *Mycosphaerella disseminata* (De Not. & Carestia) Tomilin 1967), which was re-combined as *Davidiella disseminata* (De Not. & Carestia) Aptroot 2006 (Aptroot 2006: 80). *Davidiella* is a synonym of *Cladosporium*, i.e. the asexual morphs are entirely cladosporioid with catenate conidia and a specific coronate type of conidiogenous loci and conidial hila. A genetic connection between *Passalora graminis* and *Davidiella disseminata* (*M. recutita* sensu Arx) is doubtful. Detailed examinations of the life-cycle of *P. graminis*, cultures and molecular examinations are necessary to elucidate the true biology and life cycle of this species.

The fungal herbarium of G.H. Otth was originally deposited at BERN. Some years ago, the fungus collections of BERN were tranferred to ZT. Type material of *Passalora hordei* is now preserved in ZT, but syntypes of *P. punctiformis*, described from *Dactylis glomerata* and *Melica uniflora*, have not been traced. There is a single specimen on *Arrhenatherum elatius* (Bern, G.H. Otth) deposited at ZT under the name *P. punctiformis*. It is unclear if this collection represents type material of this species. The reference to "*Dactylis* and *Melica*" in the protologue indicates uncertainty in the identification of the host species.

Passalora imperatae (Syd. & P. Syd.) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 225 (2003).

(Fig. 49)

Basionym: *Cercosporina imperatae* Syd. & P. Syd., *Ann. Mycol.* **14**: 372 (1916).

Synonyms: *Cercospora imperatae* (Syd. & P. Syd.) Vassiljevsky, in Vassiljevsky & Karakulin, *Fungi imperfecti parasitici*. 1. *Hyphomycetes*: 270 (1937).

Cercospora imperatae (Syd. & P. Syd.) Sawada, *Taiwan Agric. Rev.* **38**: 697 (1942).

Mycovellosiella imperatae (Syd. & P. Syd.) Goh & W.H. Hsieh, in Hsieh & Goh, *Cercospora and similar fungi from Taiwan*: 139 (1990).

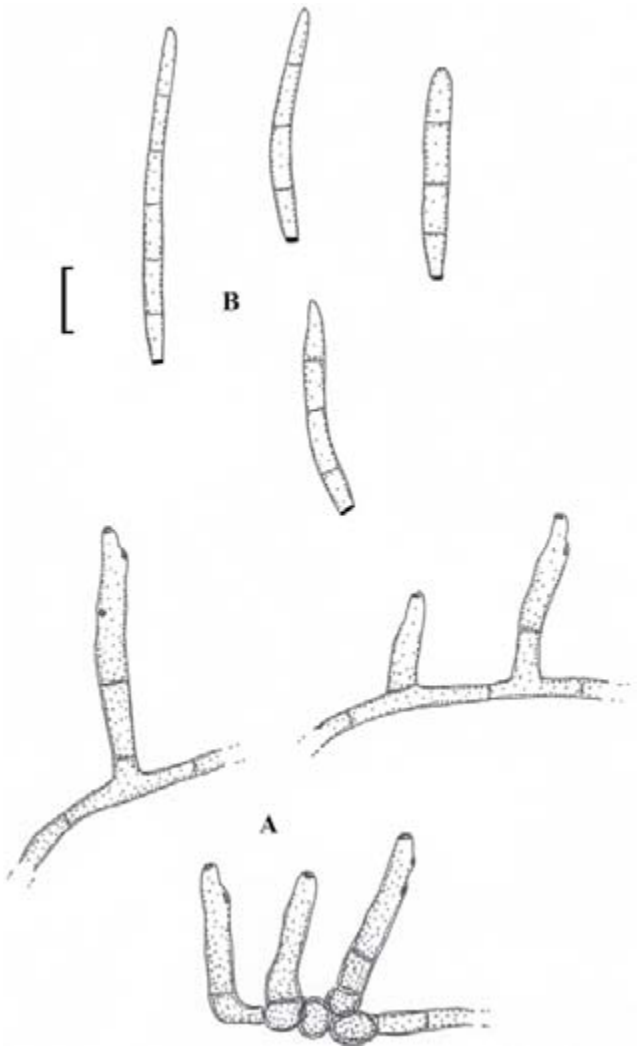

Fig. 49. *Passalora imperatae* (S-F20471). **A.** Solitary conidiophores. **B.** Conidia. Bar = 10 µm.

Literature: Chupp (1954: 247), Vasudeva (1963: 123), Hsieh & Goh (1990: 139), Crous & Braun (2003: 225), Guo *et al*. (2003: 31–32), Kamal (2010: 124).

Illustrations: Hsieh & Goh (1990: 139, fig. 106), Guo *et al*. (2003: 32, fig. 17).

Description: *Leaf spots* amphigenous, subcircular to elliptical, 2–10 mm diam, often confluent, yellowish to pale brown, margin indefinite. *Caespituli* amphigenous, mainly hypophyllous, unevenly scattered, diffuse, dark. *Mycelium* internal and external; superficial hyphae sparingly branched, septate, about 1–3.5 µm wide, pigmented, pale, thin-walled, smooth. *Stromata* absent. *Conidiophores* solitary, arising from superficial hyphae, lateral, occasionally arising from hyphal aggregations, in loose groups, to 4, subfasciculate, erect, straight, subcylindrical to somewhat curved or geniculate-sinuous, unbranched, 20–75 × 6–8 µm, 0–3-septate, pale to medium brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, about 10–35 µm long, conidiogenous loci conspicuous, thickened and darkened, 1–2 µm diam. *Conidia* solitary, cylindrical to obclavate-cylindrical, straight or almost so, 30–65 × 4–6 µm, 1–7-septate, colourless, thin-walled, smooth, apex obtuse, base rounded to obconically truncate, about 2 µm wide, hila thickened and darkened.

Holotype: **Philippines**: Los Baños, on *Imperata cylindrica*, 17 Sep. 1913, *M. B. Raimundo* 1717 (S-F20471). *Isotype*: CUP 40054.

Host range and distribution: On *Imperata cylindrica* [*arundinacea*], *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, India, Philippines, Taiwan).

Notes: The generic affinity of this species is unclear. The colourless conidia support placement in *Cercospora s. str.*, but the mycovellosiella-like habit with solitary conidiophores arising from superficial hyphae are in conflict. We prefer to retain this species in *Passalora*.

Passalora koepkei (W. Krüger) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 238 (2003).
(Fig. 50)

Basionym: *Cercospora koepkei* W. Krüger, *Ber. Versuchsstat. Zuckerrohr W.-Java, Kagok-Tegal* **1**: 115 (1890).

Synonyms: *Mycovellosiella koepkei* (W. Krüger) Deighton, *Mycol. Pap*. **144**: 20 (1979).

Pseudocercospora miscanthi Katsuki, *J. Jap. Bot*. **31**: 372 (1956) [*lectotype* (**designated here**, MycoBank, MBT200465): **Japan**: *Pref. Kagoshima*: Mikata-mura, Amami Island, on *Miscanthus sinensis*, 6 Oct. 1954, *S. Katsuki* (CUP 41022). *Isolectotype*: K(M) IMI 68966)].

Cercospora koepkei var. *sorghi* K. Goto, K. Hirano & Fukatsu, *Ann. Phytopathol. Soc. Japan* **27**: 52 (1962) [*syntypes*: **Japan**: Chiba, Sep. 1940, on *Sorghum bicolor* [*Holcus sorghum* var. *japonicus*]; *Saitama*, 1955, on *S. bicolor* (not traced)].

Literature: Saccardo (1892: 656), Matsumoto & Yamamoto (1934: 591–594), Chupp (1954: 248), Sun (1955: 163), Vasudeva (1963: 656), Katsuki (1965: 34–35, 76), Mulder & Holliday (1974a), Ellis (1976: 262), Deighton (1979: 20), Hsieh & Goh (1990: 140), Crous & Braun (1996: 280; 2003: 238), Guo *et al*. (2003: 33–34).

Illustrations: Krüger (1890: plates VI, VIII B). Matsumoto & Yamamoto (1934: 592, fig. 3), Sun (1955: 164, fig. 21), Mulder & Holliday (1974a, fig., unnumbered). Ellis (1976: 263, fig. 199B), Hsieh & Goh (1990: 140, fig. 107), Guo *et al*. (2003: 33, fig. 18).

Description: *Leaf spots* irregularly shaped to almost elliptical, size variable, at first small, later oblong, to 5 mm in length, at first yellowish, later reddish to purplish brown, leaves with heavy infections finally often becoming straw-coloured, necrotic. *Caespituli* amphigenous, mainly hypophyllous, forming mould-like colonies or covers. *Mycelium* internal and external; superficial hyphae emerging through stomata, sparingly branched, 2–3 µm wide, pale olivaceous, thin-walled, smooth. *Stromata* almost lacking, only with a few swollen hyphal cells or

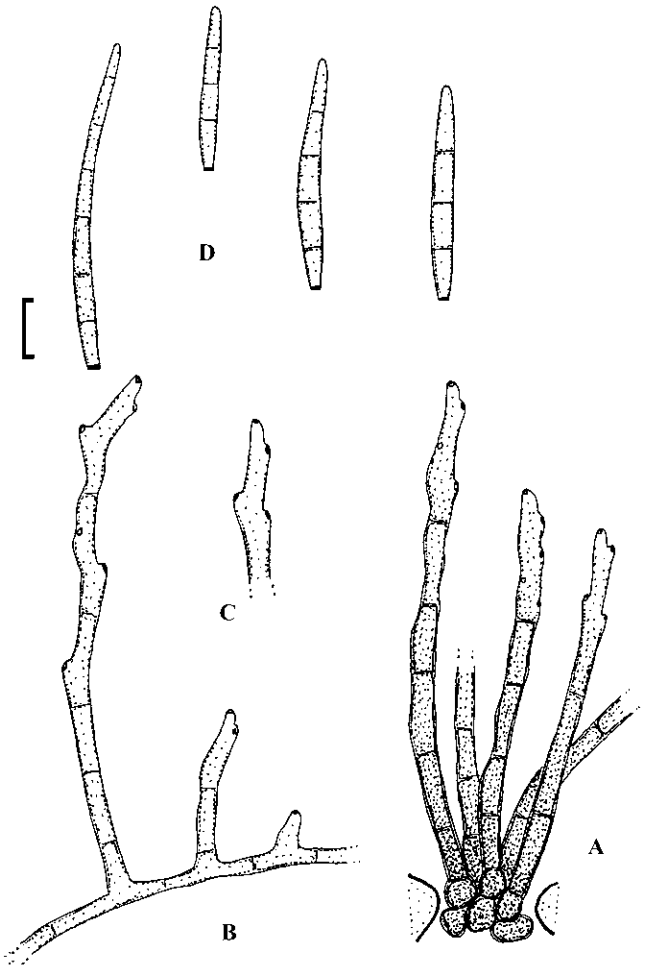

Fig. 50. *Passalora koepkei* (based on Hsieh & Goh 1990: 140, fig. 107). **A.** Conidiophore fascicle. **B.** Solitary conidiophores arising from a superficial hypha. **C.** Conidiophore tip. **D.** Conidia. Bar = 10 µm.

small, 10–20 µm diam, brown. *Conidiophores* in small, mostly loose fascicles, 2–15, arising from internal hyphae or stromata, through stomata, and solitary, arising from superficial hyphae, lateral, rarely terminal, erect, straight, subcylindrical to distinctly geniculate-sinuous, unbranched, 30–200 × 4–7 µm, aseptate to pluriseptate, pale to medium olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or intercalary, occasionally conidiophores reduced to conidiogenous cells, about 10–40 µm long, with a single to several conspicuous conidiogenous loci, thickened and darkened, 1.5–2 µm diam. *Conidia* solitary, fusiform-obclavate, mostly straight, occasionally somewhat curved, 20–65 × 4–6.5 µm, 1–7-septate, often 3-septate, without constrictions, colourless or almost so to pale olivaceous, thin-walled, smooth, apex obtuse to subacute, base short obconically truncate, 1.5–2.5 µm wide, hila thickened and darkened.

Syntypes: **Indonesia**: *Java*: on *Saccharum* spp., W. Krüger (probably not preserved).

Host range and distribution: On *Miscanthus* (*floridulus* [*japonicus*], *sinensis*), *Saccharum* (*officinarum*, *robustum* [*edule*], *spontaneum*), *Sorghum bicolor*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Africa (Gabon, Ghana, Kenya, Mauritius, Reunion, Sierra Leone, Somalia, South Africa, Tanzania, Zimbabwe, Uganda), Asia (Brunei, Cambodia, China, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sabah, Sri Lanka, Taiwan, Thailand), Australia, Central and South America (Brazil, Colombia, Costa Rica, El Salvador, Guatemala, Guyana, Honduras, Panama, Suriname, Venezuela), North America (Mexico; USA, Alabama, Florida, Louisiana), Oceania (American Samoa, Fiji, French Polynesia, Guam, Hawaii, Micronesia, New Caledonia, Palau, Samoa, Solomon Islands, Tonga, Vanuatu), and West Indies (Cuba, Dominican Republic, Puerto Rico, Trinidad and Tobago, Virgin Islands).

Notes: The status of *Cercospora koepkei* var. *sorghi* is not clear. Re-examination of the type material and additional collections are necessary, but type material was not traced. This taxon is tentatively treated as a synonym of *P. koepkei*. A neotypification of *P. koepkei* is not proposed since suitable material from Java has not yet been found.

Passalora maculicola (Ellis & Kellerm.) U. Braun, *Schlechtendalia* **5**: 39 (2000).
(Fig. 51)

Basionym: *Scolicotrichum maculicola* Ellis & Kellerm., *J. Mycol*. **3**: 103 (1887); as "*maculicolum*".

Synonym: *Fusicladium maculicola* (Ellis & Kellerm.) Ondřej, *Česká Mykol*. **25**: 337 (1971).

Literature: Saccardo (1892: 601), Schubert *et al*. (2003: 117), Crous & Braun (2003: 458–459).

Illustrations: Ondřej (1971: 238, figs 1–2), Braun (2000: 37, fig. 6).

Exsiccatae: Ellis & Everh., N. Amer. Fungi 1989, 2789. Kellerman & Swingle, Kansas Fungi 20. Rabenh., Fungi Eur. Exs. 3800. Roum., Fungi Sel. Gall. Exs. 5580.

Description: *Leaf spots* amphigenous, oblong, fusiform, ellipsoid, 3–15 × 1–2(–3) mm, yellowish, ochraceous, dingy brownish, margin narrow, dull medium to dark brown. *Caespituli* amphigenous, mainly hypophyllous, punctiform, mostly dense, dark brown to blackish. *Mycelium* internal. *Stromata* small to well-developed, substomatal, globose to oblong, 10–60 µm diam, brown, composed of swollen hyphal cells, subcircular to somewhat irregular in outline, about 3–7 µm diam. *Conidiophores* in small to fairly large, loose to dense fascicles, arising from stromata, through stomata, erect, straight and subcylindrical to usually moderately to strongly geniculate-sinuous, unbranched or only rarely branched, (20–)30–80(–100) × (3–)4–7(–8) µm, continuous to septate, mostly sparingly septate, pale to medium brown or olivaceous-brown throughout or paler towards the tip, wall thin to slightly thickened, smooth, occasionally somewhat verruculose; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–50 µm long, with a single to several conspicuous conidiogenous loci, non-protuberant, truncate, slightly thickened and somewhat darkened, 1–2 µm diam, non-coronate (i.e., not cladosporioid). *Conidia*

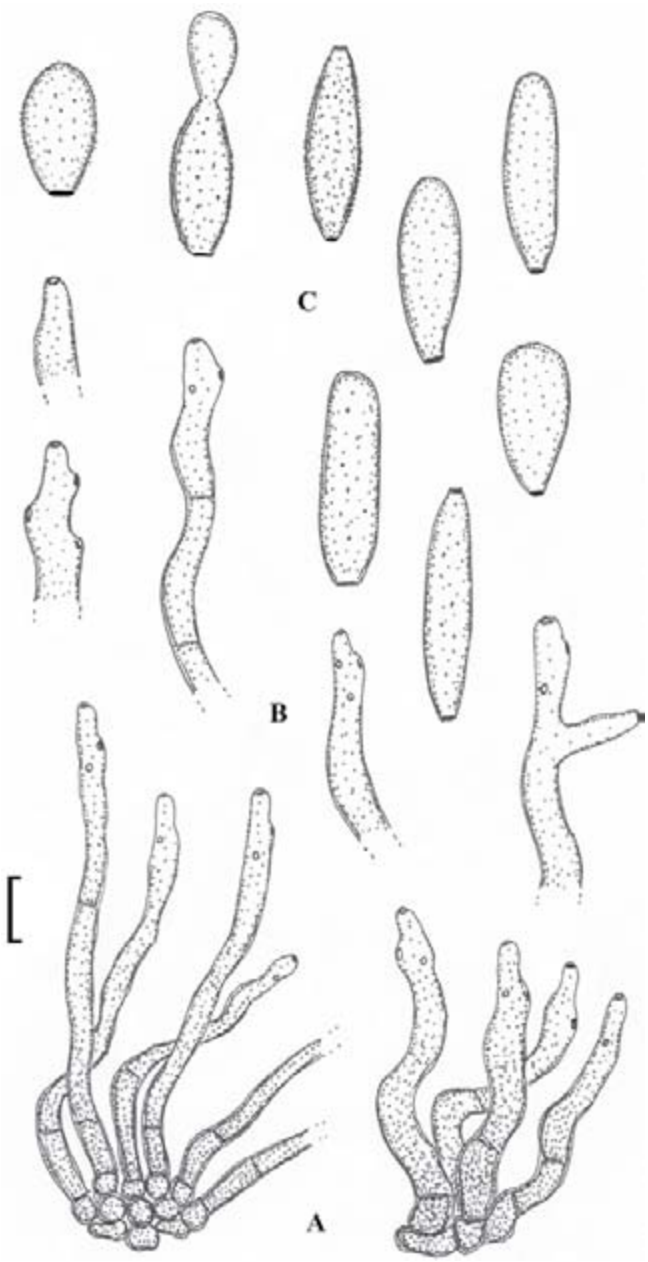

Fig. 51. *Passalora maculicola* (NY 830653, lectotype). **A.** Conidiophore fascicles. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

solitary or in short, simple or rarely branched chains, broadly ellipsoid-ovoid, obovoid, subfusiform, rarely subcylindrical or subglobose, 11–23 × 5–11 µm, aseptate, subhyaline, pale yellowish green to olivaceous, verruculose, apex broadly rounded in solitary conidia, or attenuated-truncate in catenate ones, bases rounded, subtruncate, truncate or short obconically truncate, 1–2.5 µm wide, hila slightly thickened and darkened.

Lectotype (designated by Braun 2000): **USA**: *Kansas*: Manhattan, on *Phragmites australis*, 1 Jun. 1887, *W. A. Kellerman* 934 (NY 830653). *Isolectotypes*: BPI 425144, NY 266874, 266875, 830656–830660.

Host range and distribution: On *Phragmites australis*, *Poaceae* (*Arundinoideae*), North America (Canada, Ontario; USA, Iowa, Kansas, North Dakota, Nebraska, Oklahoma, Oregon, South Dakota, Washington, Wisconsin).

Notes: North American records of this species on *Arundo donax* are unproven and unclear. The generic affinity of *P. maculicola* is intricate and can only be verified with certainty by using cultures and results from molecular sequence analyses. The general habit of this species is cladosporioid and reminiscent of heterosporium-like *Cladosporium* species (Bensch *et al*. 2012), but the conidiogenous loci and conidial hila are not coronate (not cladosporioid) but truncate and somewhat thickened and darkende, i.e. cercospora-like. Due to verruculose conidia, *P. maculicola* is also comparable with *Asperisporium*, which is possibly a synonym of *Passalora s. lat*. (Braun *et al*. 2013). The conidia in *Asperisporium* spp. are usually formed singly. At present this species is best maintained in *Passalora*. *Deightoniella roumeguerei* (Cavara) Constant. 1983 (syn. *Scolicotrichum roumeguerei* Cavara 1890, as "*roumegueri*") is another species on *Phragmites*, which is distinct and not congeneric.

Passalora milii (Syd.) G.A. de Vries, *Contrib. Knowledge of the Genus Cladosporium Link ex Fries*: 94 (1952).
(Fig. 52)
Basionym: *Cladosporium milii* Syd., *Ann. Mycol*. **12**: 538 (1914).

Literature: Saccardo (1931: 792), Crous & Braun (2003: 460), Schubert (2005b: 213), Bensch *et al*. (2013: 321).

Exsiccatae: Syd., Mycoth. Germ. 1295, 1296.

Description: *Leaf spots* on living and faded leaves, indistinct or linear, about 1 mm wide, length variable, pale, margin indefinite. *Caespituli* hypophyllous, scattered, punctiform, dark brown to blackish. *Mycelium* internal. *Stromata* substomatal to intraepidermal, applanate to oblong, to 60 × 20 µm, brown, composed of swollen hyphal cells, subcircular to irregular in outline, 3–8 µm diam. *Conidiophores* in moderately large to very large fascicles, moderately dense, arising from stromata, through stomata or erumpent, erect, straight, subcylindrical to somewhat curved-sinuous, usually not geniculate, unbranched, 40–75 × 5–8 µm, aseptate or 1–2-septate, septa more or less near the base, brownish, thin-walled, smooth; conidiophores reduced to conidiogenous cells or integrated, terminal, to 60 µm long, tips often curved, with a single or several conspicuous conidiogenous loci near the tip, circular in outline, 2–3 µm diam, slightly thickened and darkened. *Conidia* solitary, ellipsoid-ovoid, broadly obovoid or short cylindrical, 12–38 × 5–10.5 µm, 0–2-septate, not constricted, subhyaline, pale olivaceous, olivaceous to pale greyish brown, thin-walled, verruculose, apex broadly rounded, base subtruncate to short obconically truncate, 2.5–3 µm wide, hila slightly thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200466): **France**: *Lorraine*: Forbach ("Wald am Öttinger Tälchen"), on *Milium effusum*, 22 Jun. 1913, *A. Ludwig* (HBG). *Isolectotypes*:

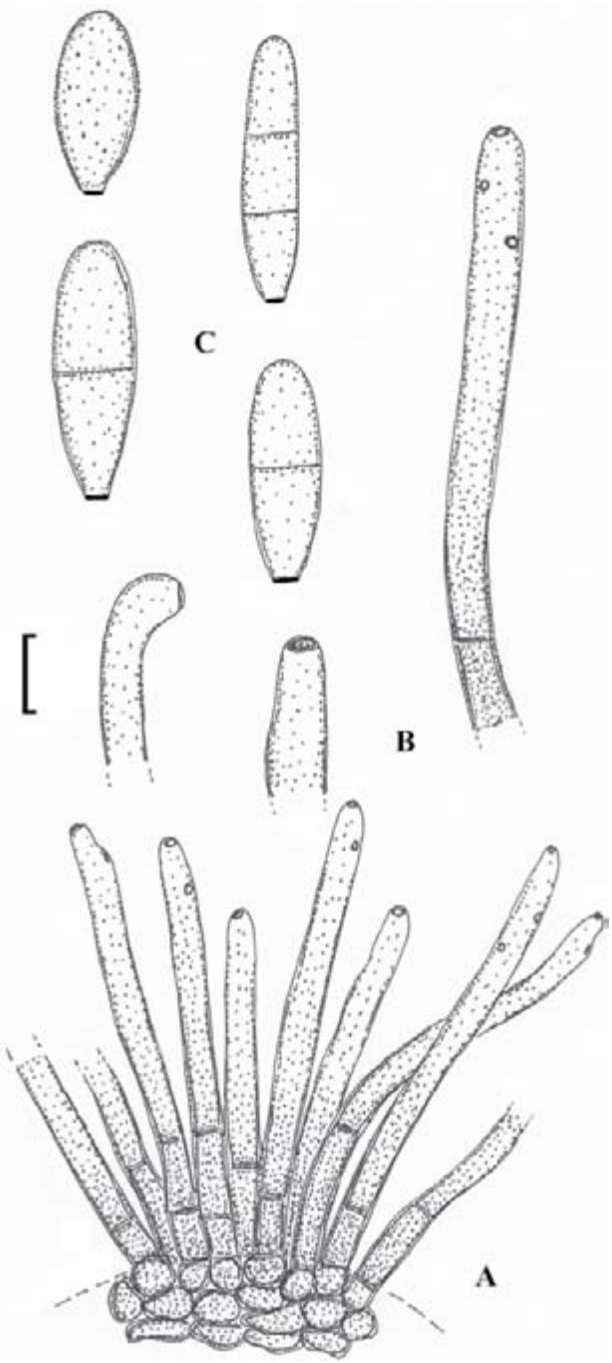

Fig. 52. *Passalora milii* (HBG, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

BPI 427262, F 1093516. Former *syntypes*: Syd., Mycoth. Germ. 1295, e.g. CUP, M, MICH 15428; Syd., Mycoth. Germ. 1296, e.g. BPI 427263, CUP, M, MICH 15429).

Host range and distribution: On *Milium effusum*, *Poaceae* (*Pooideae*, *Aveneae*), Europe (France, Germany, Latvia, Russia).

Notes: Several collections from Germany (B700006628, 700006630–70006636, 70006482) and two samples from Latvia (B700006627, 700006629) have been examined. Based on the verruculose conidia, this species is reminiscent of *Asperisporium*.

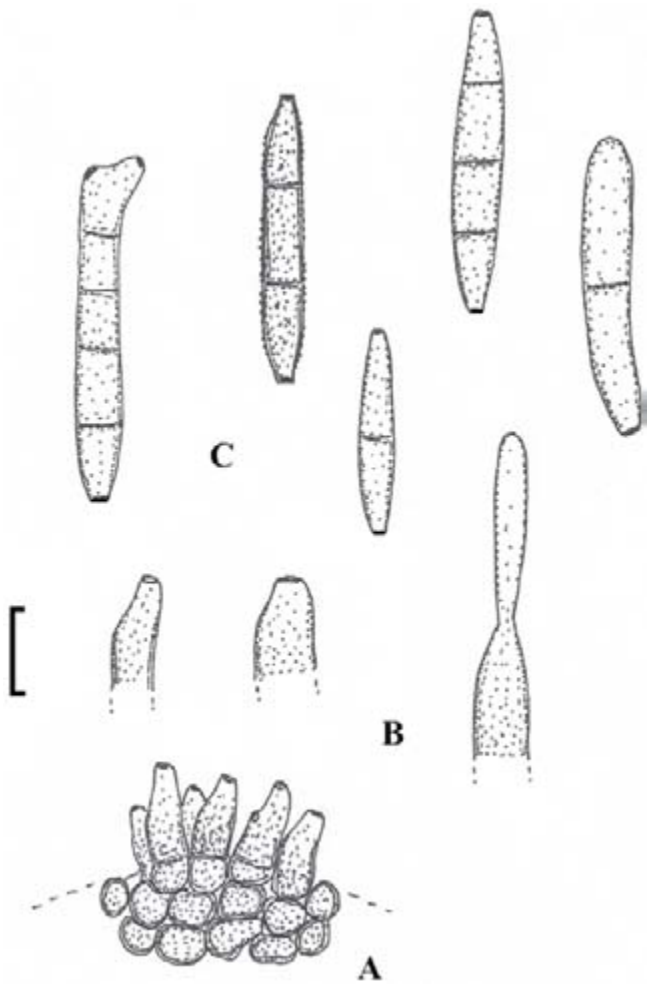

Fig. 53. *Passalora paspalicola* (W-1978-07621, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Passalora paspalicola (Petr. & Cif.) U. Braun, *Fungal Diversity* **8**: 56 (2001).
(Fig. 53)
Basionym: *Cercospora paspalicola* Petr. & Cif., *Ann. Mycol.* **30**: 226 (1932).

Literature: Chupp (1954: 250), Crous & Braun (2003: 308).

Illustration: Braun (2001: 53, fig. 12).

Exsiccatae: Cif., Mycofl. Doming. Exs. 331.

Description: *Leaf spots* indistinct, later irregular, brown discolorations, usually 1–3 mm diam. *Caespituli* amphigenous, punctiform, subcircular to oblong in outline, blackish. *Mycelium* internal. *Stromata* immersed, large, 30–350 µm diam, dark brown. *Conidiophores* numerous, densely fasciculate, forming well-developed sporodochial conidiomata, conidiophores little differentiated, reduced to conidiogenous cells, only developed as somewhat elongated peripherical cells of the stromata, subcylindrical-conical, 5–15 × 3–6 µm (sometimes with persistent conidia resembling longer conidiophores), aseptate, brownish, thin-walled, smooth, conidiogenous loci conspicuous, slightly thickened and darkened, 1–1.5 µm diam. *Conidia* solitary

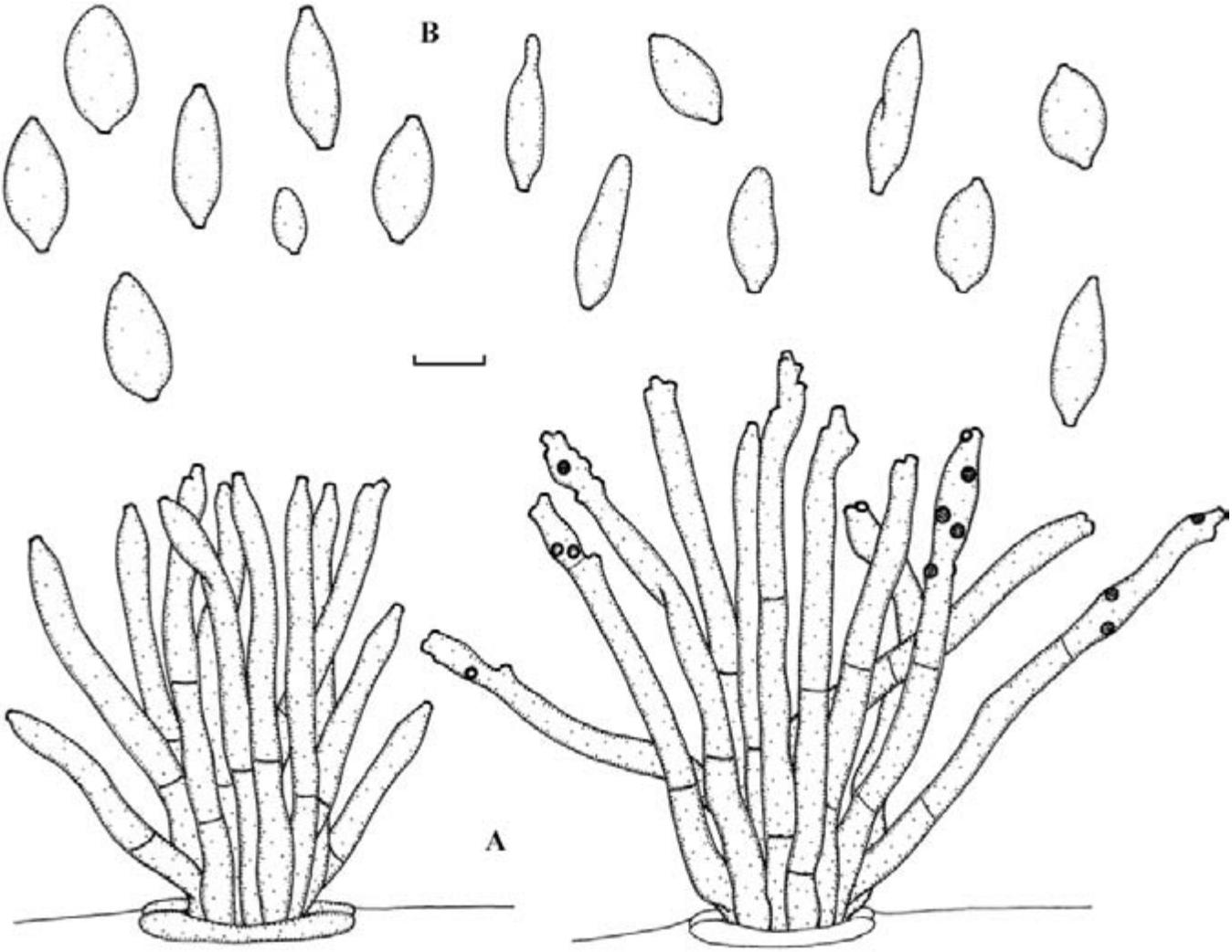

Fig. 54. *Passalora phalaridis* (NY 1042610, holotype). **A.** Conidiophore fascicles. **B.** Conidia. Bar = 10 µm.

to catenate, occasionally in branched chains, cylindrical, obclavate-subcylindrical, ellipsoid-ovoid, 15–60 × 4–6.5 µm, 1–4-septate, subhyaline to pale olivaceous, thin-walled, smooth, apex obtuse, base rounded to obconically truncate, 1–1.5 µm wide, hila slightly thickened and darkened.

Lectotype (designated by Braun 2001): **Dominical Republic**: *Prov. Azua*: Valle de San Juan, San Juan de la Maguana, on living leaves of *Paspalum clavuliferum*, *Poaceae* (*Panicoideae*, *Paniceae*), 22 Aug. 1929, *E. L. Ekman* [Cif., Mycofl. Doming. Exs. 331] (W-1978-07621). *Isolectotypes*: BPI 845246, CUP (Ciferri, M.Dom. 0331), ILL 33101, MICH 15348. *Topotypes*: CUP 40470 (Aug. 1926), NY 937111, 937112 (1 Aug. 1929).

Host range and distribution: Only known from the type collections.

Passalora phalaridis K. Schub. & U. Braun, *Nova Hedwigia* **84**: 197 (2007).
(Fig. 54)

Illustration: Schubert & Braun (2007: 198, fig. 5).

Description: *Leaf spots* amphigenous, elliptical to oblong, to 10 mm long and 1–2 mm wide, scattered, but often aggregated, occasionally confluent, pale brown, surrounded by a narrow brown margin, surrounding leaf tissue often discoloured, brownish to somewhat reddish brown, often somewhat paler below. *Caespituli* usually hypophyllous, occasionally epiphyllous, scattered to effuse, often in lines, at first covered by the white detached cuticle, later erumpent, loose to dense, caespitose, pale brown, velvety. *Mycelium* internal, subcuticular to intraepidermal; hyphae sparingly branched, 3–5 µm wide, septate, pale yellowish brown, smooth, wall only slightly thickened. *Stromata* substomatal, dense, several layers deep, composed of swollen hyphal cells, subglobose to angular, pale yellowish brown, smooth, walls slightly thickened. *Conidiophores* loosely to densely fasciculate, arising from stromata, emerging through stomata, erect, straight to somewhat flexuous, cylindrical, sometimes geniculate towards the apex, unbranched, 35–80 × 4–5.5(–6) µm, (0–)1–4-septate, subhyaline to pale brown, smooth, wall thin or almost so; conidiogenous cells integrated, terminal, rarely intercalary, cylindrical, 20–50 µm long, sympodial, with a single or several conspicuous conidiogenous loci, somewhat crowded near the apex, protuberant, truncate, (1–)1.5–2.5(–3) µm diam, thickened and somewhat darkened-

refractive. *Conidia* catenate, in unbranched chains, broadly ellipsoid-fusiform, 12–23 × 5–10.5 µm, aseptate, almost hyaline to pale olivaceous, smooth or almost so, walls unthickened, attenuated towards the apex and base, hila protuberant, truncate, 1–2.5 µm diam., somewhat thickened and darkened-refractive.

Holotype: **USA**: *New York*: Genese Co., Bergen Swamp, on *Phalaris arundinacea*, *Poaceae* (*Pooideae*, *Aveneae*), 19 Jul. 1946, *W. C. Muenscher* and *C. T. Rogerson* (NY 1042610), originally deposited as *Cladosporium velutinum* Ellis & Tracy.

Host range and distribution: Only known from the type collection.

Note: Resembling *Cercospora barretoana*, but conidia much shorter, broader, aseptate and at least slightly pigmented.

Passalora ramularioides (Sacc. & Fautrey) U. Braun, *Schlechtendalia* **5**: 40 (2000).
(Fig. 55)
Basionym: *Scolicotrichum ramularioides* Sacc. & Fautrey, *Bull. Soc. Mycol. France* **16**: 24 (1900).

Literature: Saccardo (1902: 1057), Vassiljevsky & Karakulin (1937: 213), Crous & Braun (2003: 467), Braun & Crous (2005: 413).

Illustration: Braun (2000: 41, fig. 9).

Description: *Leaf spots* amphigenous, fusiform, elliptical, 1–5 × 0.5–1.5 mm, centre pale, yellowish to ochraceous, later greyish white, margin narrow, dark. *Caespituli* amphigenous, finely punctiform, effuse to dense, dark brown. *Mycelium* internal. *Stromata* almost absent or small, 10–25 µm diam, brown, substomatal to intraepidermal, cells globose to somewhat angular-irregular in outline, 2–8 µm diam, walls somewhat thickened. *Conidiophores* solitary or in small fascicles, loose to dense, arising from stromata, through stomata or erumpent, erect, straight, subcylindrical to geniculate-sinuous, unbranched, 25–100 × 3–7 µm, septate, pale to medium brown throughout or apex somewhat paler, walls somewhat thickened, smooth; conidiogenous cells integrated, terminal, 20–50 µm long, conidiogenous loci somewhat thickened and darkened, 1.5–2 µm diam. *Conidia* solitary, rarely in short chains, subcylindrical, subfusiform, ellipsoid-ovoid, 15–30 × 3–6 µm, (0–)1-septate, subhyaline to pale yellowish, ochraceous or olivaceous-brown, thin-walled, smooth, apex obtuse, rounded, base short obconically truncate, 1–2 µm wide, hila slighty thickened and darkened.

Holotype: **France**: Côte-d'Or, on *Leersia oryzoides*, *F. Fautrey* 23 (PAD).

Host range and distribution: On *Leersia* (*oryzoides*, *Leersia* sp.), *Poaceae* (*Ehrhartoideae*, *Ehrharteae*), Europe (France, Ukraine), North America (USA, Iowa).

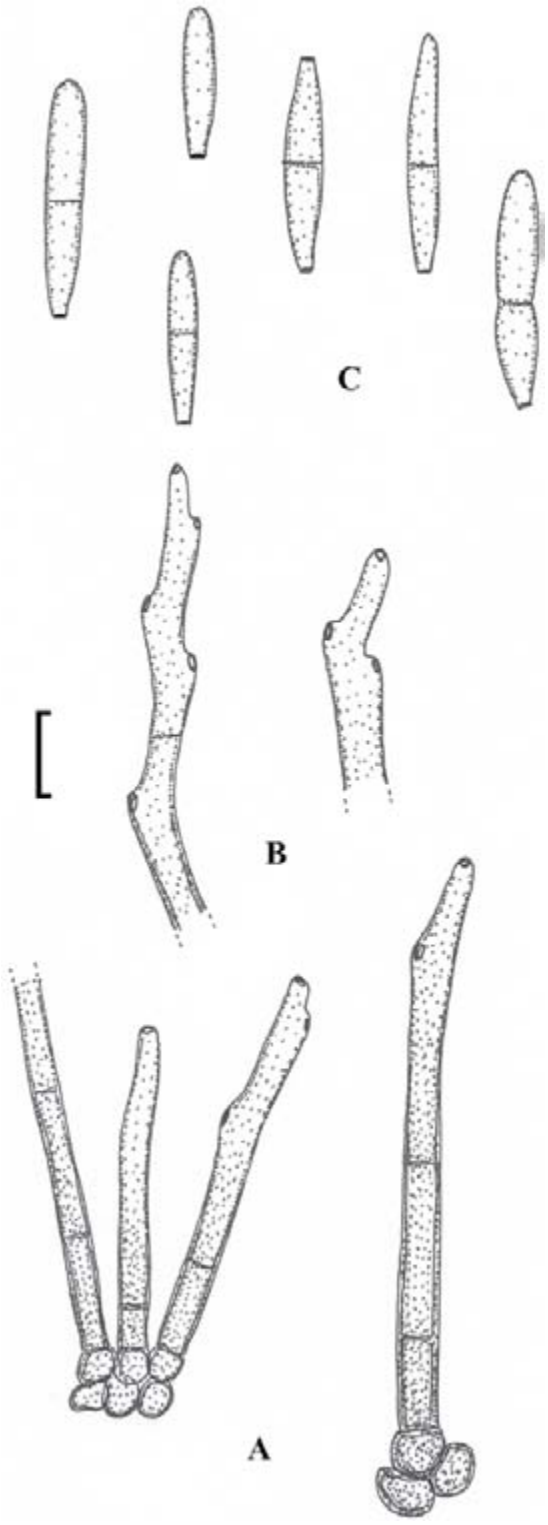

Fig. 55. *Passalora ramularioides* (PAD, holotype). **A.** Conidiophore fascicle. **B.** Conidiophores. **C.** Conidia. Bar = 10 µm.

Passalora tungurahuensis (Petr.) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 413 (2003).
(Fig. 56)
Basionym: *Cercospora tungurahuensis* Petr., *Sydowia* **4**: 574 (1950).

Literature: Chupp (1954: 255).

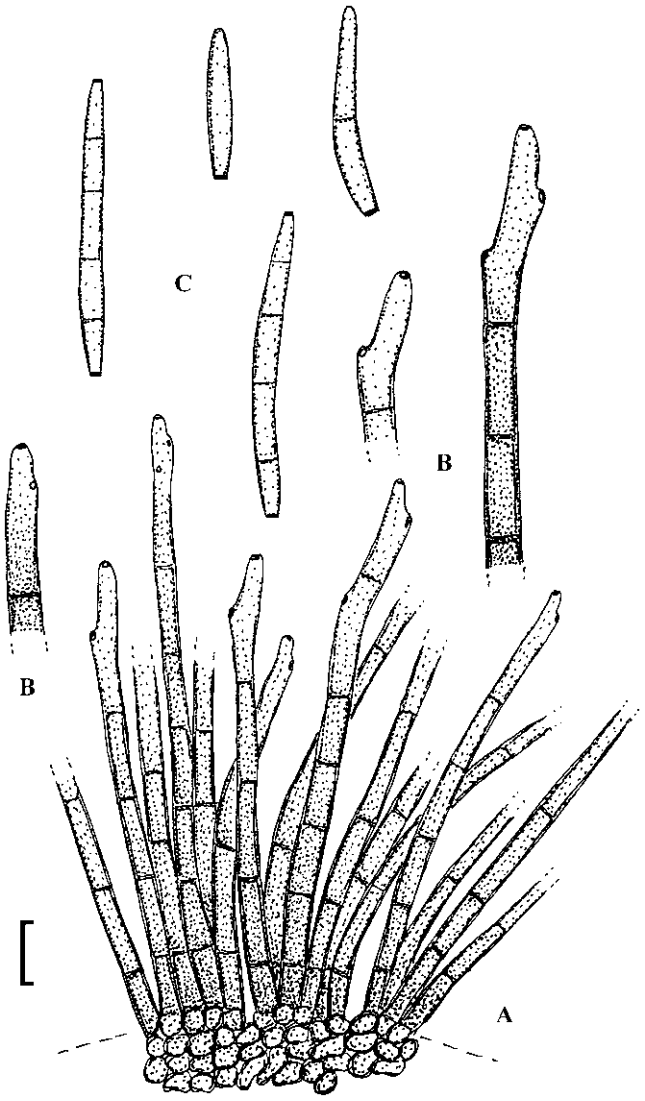

Fig. 56. *Passalora tungurahuensis* (W-1974-0003437, lectotype). **A.** Conidiophore fascicle. **B.** Conidiophore tips. **C.** Conidia. Bar = 10 µm.

Description: *Leaf spots* amphigenous, large, large leaf segments or later almost entire leaves discoloured, greyish brown, margin indefinite or with a diffuse yellowish halo. *Caespituli* epiphyllous, punctiform, scattered, dark brown to blackish. *Mycelium* internal. *Stromata* immersed, large, 30–100 µm diam, dark brown, composed of swollen hyphal cells, circular to somewhat angular-irregular in outline, about 3–6 µm diam. *Conidiophores* in large fascicles, loose to mostly dense, arising from stromata, erumpent, erect, straight, subcylindrical to somewhat geniculate-sinuous, unbranched, 80–160 × 4–7.5 µm, pluriseptate throughout, pale to medium dark brown, tips paler, wall somewhat thickened, smooth; conidiogenous cells integrated, terminal, occasionally intercalary, 10–40 µm long, with a single to several conspicuous conidiogenous loci, somewhat thickened and darkened, 1.5–2 µm diam. *Conidia* solitary or in short chains, ellipsoid-ovoid, subcylindrical, almost obclavate, fusiform, 15–60 × 3.5–7 µm, (0–)1–4(–5)-septate, hyaline, subhyaline to pale greenish olivaceous, thin-walled, smooth, apex obtuse to short conically truncate in catenate conidia, base short obconically truncate, 1.5–2 µm wide, hila somewhat thickened and darkened.

Lectotype (**designated here**, MycoBank, MBT200467): **Ecuador**: *Tungurahua*: Baños, Hacienda San Antonio, on *Cenchrus bambusiformis* [*Pennisetum bambusiforme*], 6 Dec. 1937, *H. Sydow* [hb. Petrak 32194] (W-1974-0003437). *Isolectotype*: B 700016007.

Host range and distribution: On *Cenchrus bambusiformis* [*Pennisetum bambusiforme*], *Poaceae* (*Panicoideae*, *Paniceae*), South America (Brazil, Ecuador).

Passalora vaginae (W. Krüger) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 417 (2003).

(Fig. 57)

Basionym: *Cercospora vaginae* W. Krüger, *Meded. Proefstn. Suikerriet W. Java, Kagok-Tegal* **3**: 29 (1896).

Synonym: *Mycovellosiella vaginae* (W. Krüger) Deighton, *Mycol. Pap*. **144**: 26 (1979).

Literature: Saccardo (1899: 1106), Chupp (1954: 256), Sun (1955: 168), Vasudeva (1963: 208), Abbott (1964: 49–50), Katsuki (1965: 34), Kirk (1973), Ellis (1976: 262), Sivanesan & Waller (1986: 49–50), Hsieh & Goh (1990: 141), Guo *et al*. (2003: 34–35).

Illustrations: Sun (1955: 169, fig. 25), Ellis (1976: 263, fig. 199B), Hsieh & Goh (1990: 142, fig. 108), Guo *et al*. (2003: 35, fig. 19).

Description: *Spots* mainly on sheaths, sometimes also formed as leaf spots, at first small, subcircular to elliptical, red, margin conspicuous, spots later confluent or increasing, to about 15 mm diam, on leaves dark reddish above, indistinct below. *Caespituli* amphigenous, effuse, dark greyish brown, velvety, mostly in the centre of the lesion. *Mycelium* internal and external; superficial hyphae sparingly branched, septate, pale, thin-walled, smooth. *Stromata* sometimes developed, substomatal, 10–75 µm diam, dark brown, but without conidiophore fascicles. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, occasionally terminal, i.e. at the end of procumbent hyphae, erect to ascending, straight to curved, subcylindrical, conical to geniculate-sinuous, simple or sometimes branched, occasionally entangled, 20–200 × 3–5 µm, 1–5-septate, pale olivaceous-brown to darker brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, with conspicuous conidiogenous loci, about 1–1.5 µm diam. *Conidia* solitary, cylindrical or obclavate-cylindrical, straight to somewhat curved, 15–55 × 3–6.5 µm, 0–5-septate, occasionally slightly constricted at the septa, hyaline to olivaceous, thin-walled, smooth, apex obtuse, base short obconically truncate, 1–2 µm wide, somewhat thickened and darkened.

Holotype: **Indonesia**: *Java*: on *Saccharum officinarum* (details not recorded, probably not preserved).

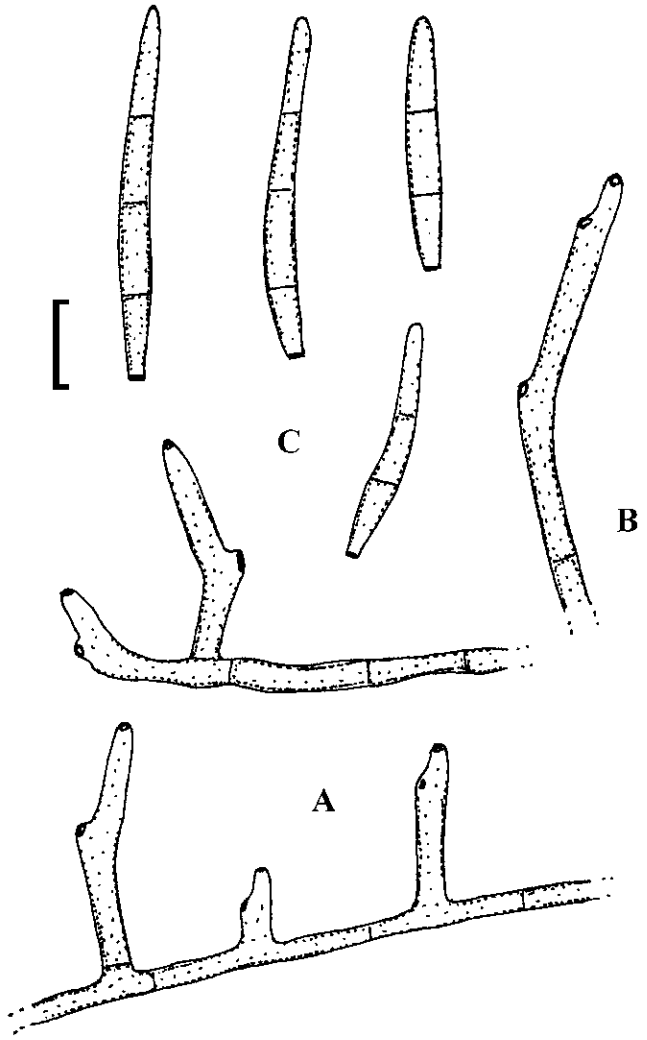

Fig. 57. *Passalora vaginae* (based on Hsieh & Goh 1990: 142, fig. 108). **A.** Solitary conidiophores arising from superficial hyphae. Conidiophore fascicle. **B.** Conidiophore. **C.** Conidia. Bars = 10 µm.

Host range and distribution: On *Saccharum* (*officinarum*, *spontaneum*), *Poaceae* (*Panicoideae*, *Anthropogoneae*), Africa (Ghana, Madagascar, Malawi, Mauritius, Mozambique, Senegal, Sierra Leone, South Africa, Togo, Zimbabwe), Asia (Afghanistan, China, India, Indonesia, Japan, Malaysia, Pilippines, Taiwan, Thailand, Vietnam), Central and South America (Brazil, Costa Rica, El Salvador, Guatemana, Guyana, Honduras, Panama, Peru, Venezuela), North America (Mexico; USA, Florida, Georgia, Louisiana, Texas), Oceania (Hawaii), and West Indies (Barbados, Cuba, Dominican Republ., Haiti, Jamaica, Puerto Rico, Trinidad and Tobago, Virgin Island).

Notes: Chupp (1954) referred to "*Ber. Vers. Stat. Zuckerr. West Java* **1**: 64 (1890)" as the place and date of publication of the basionym. Type material of this species is probably not preserved, but a neotypification is postponed since appropriate material from Java has not yet been found.

Doubtful, excluded and insufficiently known species

Mycovellosiella oryzae (Deighton & D. Shaw) Deighton, *Mycol. Pap.* **144**: 25 (1979).
Basionym: ***Ramularia oryzae*** Deighton & D. Shaw, *Trans. Brit. Mycol. Soc.* **43**: 516 (1960).

Literature: Braun (1998: 201), Crous & Braun (2003: 485).

Illustrations: Braun (1998: 203, fig. 470).

Holotype: **New Guinea**: Madang, on *Oryza sativa*, *Poaceae*, 15 Mar. 1958, *D. Shaw* (K(M) IMI) 73536).

Mycovellosiella paspali Deighton, *Mycol. Pap.* **144**: 24 (1979).
Synonym: ***Ramularia paspali*** (Deighton) U. Braun, *Nova Hedwigia* **50**: 513 (1990).

Literature: Braun (1998: 201), Crous & Braun (2003: 485).

Illustrations: Deighton (1979: 24, fig. 12), Braun (1998: 203, fig. 471).

Holotype: **Trinidad**: Botany Island, I.C.T.A., on *Paspalum* sp., *Poaceae*, 8 Apr. 1960, *C. L. A. Leakey* (K(M) IMI) 86339a).

Mycovellosiella sacchari Sarbajna, see ***Pseudocercospora sacchari***.

Mycovellosiella taiwanensis (T. Matsumoto & W. Yamam.) X.J. Liu & Y.L. Guo, see ***Pseudocercospora taiwanansis***.

Passalora aterrima Bres., *Ann. Mycol.* **18**: 57 (1920).

Literature: Saccardo (1931: 799), Crous & Braun (2003: 477), Guo *et al*. (2003: 89–90).

Illustration: Guo *et al*. (2003: 89, fig. 57).

Description: *Colonies* densely gregarious, velutinous, blackish. *Hyphae* 5–6 µm wide. *Conidiophores* solitary, erect, straight, cylindrical-filiform, 380–500 × 5–6 µm, septate, pigmented, apex obtuse. *Conidia* solitary, ellipsoid, 14–19 × 8–10 µm, 1-septate, brown, apex broadly rounded [according to Guo *et al*. (2003), conidiophores 140–700 × 4–5 µm, and conidia 15–18 × 8–10 µm].

Holotype: **Brazil**: *Rio Grande do Sul*: São Leopoldo, on hymenium (rarely stalk) of *Thelephora* sp., on bamboo, *Poaceae*, *Rick* (not traced).

Notes: This species, known from the type collection in Brazil and on *Bambusa* sp. in China (Guo *et al*. 2003), is undoubtedly not congeneric with *Passalora* in the current sense, but its generic affinity is unclear.

Passalora bambusicola (Sawada) Poonam Srivast., *J. Living World* **1**: 113 (1994), *nom. inval.* (ICN, Art. 39.1).

Basionym: *Cercosporidium bambusicola* Sawada, *Taiwan Agric. Res. Inst. Rep*. **87**: 77 (1944), *nom. inval*. (Art. 39.1); as "*bambusicolum*".

Synonym: ***Pseudospiropes bambusicola*** Goh & W.H. Hsieh, in Hsieh & Goh, *Cercospora and similar fungi from Taiwan*: 147 (1990).

Holotype: **Taiwan**: Taipei, on *Bambusa* sp., *Poaceae*, 6 Mar. 1913, *Y. Fujikuro* (NTU-PPE, herb. Sawada).

Passalora eragrostidis Viégas, *Bragantia* **6**: 386 (1946).

Literature: Crous & Braun (2003: 452).

Illustration: Viégas (1946: plate 26).

Description: *Leaf spots* hypophyllous, oblong, 5–10 mm, 1–2 mm wide, between veins, brown. *Colonies* effuse. *Mycelium* internal and external; superficial hyphae septate, hyaline. *Conidiophores* solitary, arising from superficial hyphae, erect, straight to curved-sinuous, unbranched, 50–180 × 4–4.5 µm, pluriseptate, brown below, subhyaline above; conidiogenous cells integrated, terminal, barely geniculate, but with obtuse, truncate denticles. *Conidia* solitary, ellipsoid, 10–16 × 6–7 µm, 1-septate, at first hyaline, later brown, thin-walled, asperulate, ends more or less rounded.

Holotype: **Brazil**: *Matto Grosso*: Jupiá, Rio Paraná, on *Eragrostis ciliaris*, *Poaceae*, 20 Apr. 1943, *R. O. Botero* (not traced).

Notes: Type material of this species has not been examined. The affinity of *P. eragrostidis* is unclear, but it does not belong to the complex of cercosporoid fungi. Viégas (1946) described asperulate conidia and illustrated superficial mycelium, so that this species could also be a member of *Cladosporium* (subgen. *Heterosporium*).

Phaeoramularia graminicola Mukerji & Khanna, in Mukerji *et al*., *Bibl. Mycol.* **91**: 291 (1983).

Literature: Crous & Braun (2003: 481).

Type: Not clearly indicated, there are cultures under IMI 173304 and in the "Indian Type Culture Collection" and a dried culture in "Herbarium, New Delhi University, Dept. of Botany".

Notes: This species was isolated from green leaves of *Triticum*. The material in IMI (now K) has been examined and the taxonomic affinity of *P. graminicola* was unclear, but this species is not cercosporoid.

Phaeoramularia kellermaniana Marasas & I.H. Bredell, *Bothalia* **11**: 217 (1974).

Synonyms: *Cladosporium gossypii* Jacz., *Holopkovoe Delo* **1929** (5–6): 567 (1929), non *Alternaria gossypii* (Jacz.) Y. Nisik., K. Kimura & Miyaw., 1940.

Cladosporium malorum Rühle, *Phytopathology* **21**: 1146 (1931).

Cladosporium porophorum Matsush., *Icones Microfungorum a Matsushima lectorum*: 36 (1975).

Cladophialophora kellermaniana (Marasas & I.H. Bredell) U. Braun & Feiler, *Microbiol. Res*. **150**: 83 (1995).

Pseudocladosporium kellermanianum (Marasas & I.H. Bredell) U. Braun, *A monograph of Cercosporella, Ramularia and allied genera* **2**: 393 (1998).

Alternaria malorum (Rühle) U. Braun, Crous & Dugan, *Mycol. Progr*. **2**: 5 (2003).

Chalastospora gossypii (Jacz.) U. Braun & Crous, *Persoonia* **22**: 144 (2009).

Holotype: **South Africa**: *Cape Prov*.: Kopgat, Calvinia, isolated from wheat straw, *Triticum aestivum*, *Poaceae*, Feb. 1972, *W. F. O. Marasas* OP-76 (PREM 44703). *Isotype*: K(M) IMI 165252; ex-type culture: CBS 266.75.

Notes: This is a saprobic species which was placed in the genus *Chalastospora* E.G. Simmons, *Pleosporales* (Crous *et al.* 2009). In a new phylogenetic/taxonomic concept of *Alternaria s. lat.*, recently introduced by Woudenberg *et al*. (2013), *Chalastospora* was reduced to synonymy with *Alternaria* and treated as section of this genus. Based on this concept, *Alternaria malorum* is the nomenclaturally correct name of this species. *Cladosporium gossypii* is the oldest valid name for this species, but the epithet "*gossypii*" is pre-occupied in *Alternaria* so cannot be taken up.

Pseudocercospora

Key to Pseudocercospora species on Poaceae

1 Mycelium *in vivo* internal; stromata large, to 230 µm diam; conidia (23–)30–38.5(–42.5) × 5.8–7.7 µm, 4–7-septate; on *Bambusa tulda* ..... **P. bambusae**

Mycelium *in vivo* internal and external, superficial, with solitary conidiophores arising from superficial hyphae; stromata not developed; on other hosts 2

2 (1) Leaf spots absent; conidia cylindrical-filiform, 20–90 × 2–3 µm, pale olivaceous-brown; on *Saccharum* ..... **P. whalianensis**

Leaf spots present, distinct; conidia at least partly obclavate or acicular, and/or hyaline or subhyaline 3

3 (2) Conidia pigmented, at least pale olivaceous-brown; on *Cymbopogon* or *Saccharum* 4
Conidia hyaline or subhyaline; on *Saccharum* 5

4 (3) Conidiophores narrow, 4–65 × 1–3.5 µm; conidia narrowly obclavate-cylindrical, 15–80 × 1–3.5 µm; on *Saccharum* ..... **P. sacchari**
Conidiophores somewhat wider, 16–55 × 3–4 µm; conidia obclavate-cylindrical, 25–95 × 3–4 µm; on *Cymbopogon* ..... **P. cymbopogonis**

5 (3) Older leaf spots subcircular to irregular, 0.5–12 mm wide, reddish to dark purple, most distinct on the upper leaf surface (referred to as "Purple spot of sugarcane"); conidiophores short, 12–35 µm long, 1–3-septate ..... **P. rubropurpurea**
Leaf spots different, characteristic purple spots not formed; conidiophores longer, 10–156 µm long, 0–7-septate 6

6 (5) Lesions developed as characteristic black stripes; conidia long, obclavate-filiform, 14–212 × 2–4.5 µm, 1–22-septate ..... **P. atrofiliformis**
Lesions different, black stripes not formed, leaf spots either developed as ring spots or as elliptical to oblong patches, brown, reddish or straw-coloured 7

7 (6) Lesions developed as characteristic ring spots (circular to irregular, 4–21 × 1.5–7.5 µm, or confluent, to 35 mm diam, brown, often with a reddish brown to dark reddish brown narrow border, finally with a grey centre surrounded by a purplish brown margin); conidia 36–127 × 2–3.5 µm ..... **P. saccharicola**
Lesions narrowly elliptical to oblong, 2–10 × 1–1.5 mm; conidia longer, 20–275 × 2–4 µm ..... **P. taiwanensis**

Tabular key to Passalora species on Poaceae

Bambusa ..... **P. bambusae**

Cymbopogon ..... **P. cymbopogonis**

Saccharum

1 Leaf spots lacking; conidia cylindrical-filiform, 20–90 × 2–3 µm, pale olivaceous-brown ..... **P. whalianensis**
Leaf spots developed, distinct; conidia at least partly obclavate or acicular, and/or hyaline or subhyaline 2

2 (1) Conidia pigmented, pale olivaceous-brown ..... **P. sacchari**
Conidia hyaline or subhyaline 3

3 (2) Older leaf spots subcircular to irregular, 0.5–12 mm wide, reddish to dark purple, most distinct on the upper leaf surface (referred to as "Purple spot of sugarcane"); conidiophores short, 12–35 µm, 1–3-septate ..... **P. rubropurpurea**
Leaf spots different, characteristic purple spots not formed; conidiophores longer, 10–156 µm, 0–7-septate 4

4 (3) Lesions developed as characteristic black stripes; conidia long, obclavate-filiform, 14–212 × 2–4.5 µm, 1–22-septate ..... **P. atrofiliformis**
Lesions different, black stripes not formed, leaf spots either developed as ring spots or as elliptical to oblong patches, brown, reddish or straw-coloured 5

5 (4) Lesions developed as characteristic ring spots (circular to irregular, 4–21 × 1.5–7.5 µm, or confluent, to 35 mm diam, brown, often with a reddish brown to dark reddish brown narrow border, finally with a grey centre surrounded by a purplish brown margin); conidia 36–127 × 2–3.5 µm ..... **P. saccharicola**
Lesions narrowly elliptical to oblong, 2–10 × 1–1.5 mm; conidia longer, 20–275 × 2–4 µm ..... **P. taiwanensis**

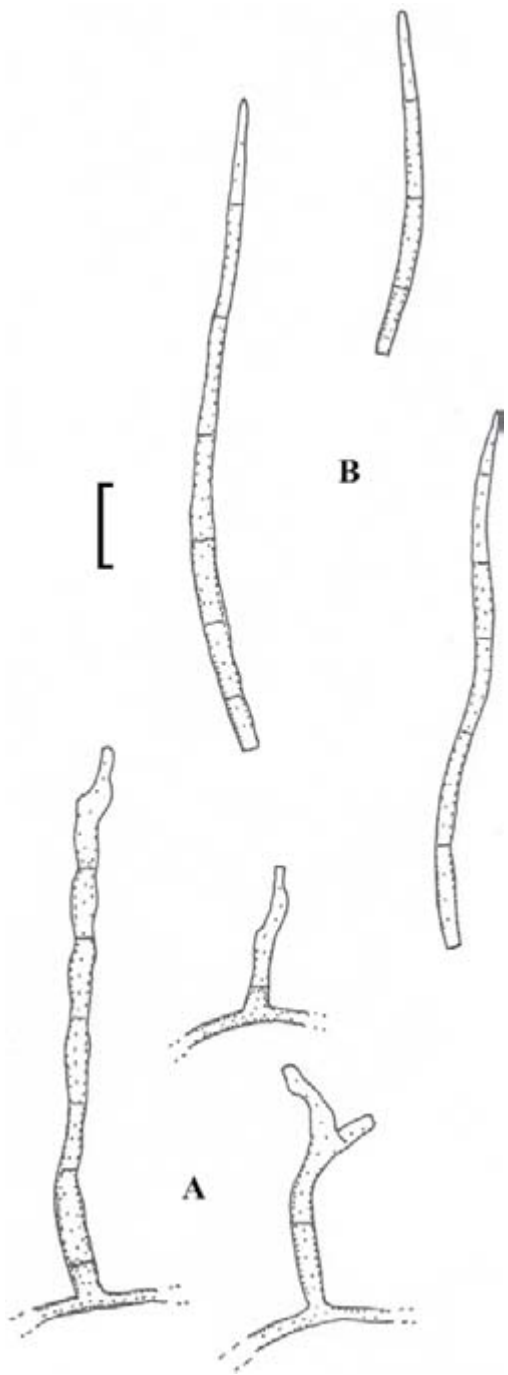

Fig. 58. *Pseudocercospora atrofiliformis* (based on Sun 1955: 162, fig. 21). **A.** Solitary conidiophores arising from superficial hyphae. **B.** Conidia. Bar = 10 µm.

List of Pseudocercospora species on Poaceae

Pseudocercospora atrofiliformis (W.Y. Yen, T.C. Lo & C.C. Chi) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **97**: 152 (1981).
(Fig. 58)
Basionym: *Cercospora atrofiliformis* W.Y. Yen, T.C. Lo & C.C. Chi, *J. Sugarcane Res. Taiwan* **7**: 15 (1953).

Literature: Sun (1955: 162), Abbott (1964: 21–23), Sivanesan & Waller (1986: 51), Hsieh & Goh (1990: 144), Guo *et al.* (1998: 383), Crous & Braun (2003: 71).

Illustration: Yen *et al.* (1953: 4, fig. 1), Sun (1955: 162, fig.21), Guo *et al.* (1998: 383, fig. 315).

Description: *Leaf spots* amphigenous, at first yellow, ovoid to rounded, later developing into narrow dark brown to black streaks, 5–36 mm long and 0.5–1.2 mm wide, between veins (referred to as "Black stripe of sugarcane"). *Caespituli* amphigenous, mostly hypophyllous. *Mycelium* internal and external, superficial. *Stromata* lacking. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, subcylindrical, narrowed towards the tip, geniculate-tortuous, unbranched, 20–80 × 3–4.5 µm, 2–6(–9)-septate, dark olivaceous-brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous, unthickened, not darkened. *Conidia* solitary, narrowly obclavate-filiform, slighty to strongly curved, 14–212 × 2–4.5 µm, 1–22-septate, hyaline or subhyaline, hila neither thickened nor darkened.

Syntypes: **Taiwan**: Taichung, on *Saccharum officinarum*, 8 Dec. 1952, *W. Y. Yen*; Puli, on *S. officinarum*, 19 Jan. 1953, *W. Y. Yen*; Hualian, on *S. officinarum*, 19 Jan. 1953, *W. Y. Yen* (not traced).

Host range and distribution: On *Saccharum officinarum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, Taiwan).

Pseudocercospora bambusae Saika & A.K. Sarbhoy, *Indian Phytopathol.* **38**: 432 "1985" (1986).
(Fig. 59)

Illustration: Saika & Sarbhoy (1986: 433, fig. 1).

Description: *Caespituli* hypophyllous, at first scattered, punctiform, later effuse, velvety, forming circular, subcircular to elliptical colonies, brown to dark brown. *Mycelium* immersed; *hyphae* branched, septate, about 2.5–4 µm wide, subhyaline to pale brown. *Stromata* epidermal to subepidermal, subcircular to flattended, to 230 µm diam, pigmented. *Conidiophores* numerous, arising from stromatic hyphal aggregations, erect, divergent, almost straight below, flexuous to geniculate above, unbranched, about 87.5–180 µm long, 3–4.7 µm wide below and 4.7–6.3 µm wide above at the subclavate apex, 4–7-septate, pale to medium brown, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous. *Conidia* solitary, broadly obclavate-fusiform, straight to slightly curved, about (23–)30–38.5(–42.5) × 5.8–7.7 µm, 4–7-septate, pale to medium brown, thin-walled, smooth, apex obtuse, base short obconically truncate, about 1.5–2.5 µm wide, hila unthickened, not darkened.

Holotype: **India**: *Assam*: on *Bambusa tulda*, *Poaceae* (*Bambusoideae*), 3 May 1978, *U. N. Saikia* (HCIO 32704).

Host range and distribution: Only known from the type collection.

Notes: *Pseudocercosporella bambusae* Deighton 1973 is a different cercosporoid fungus on *Bambusa* spp., distinguished

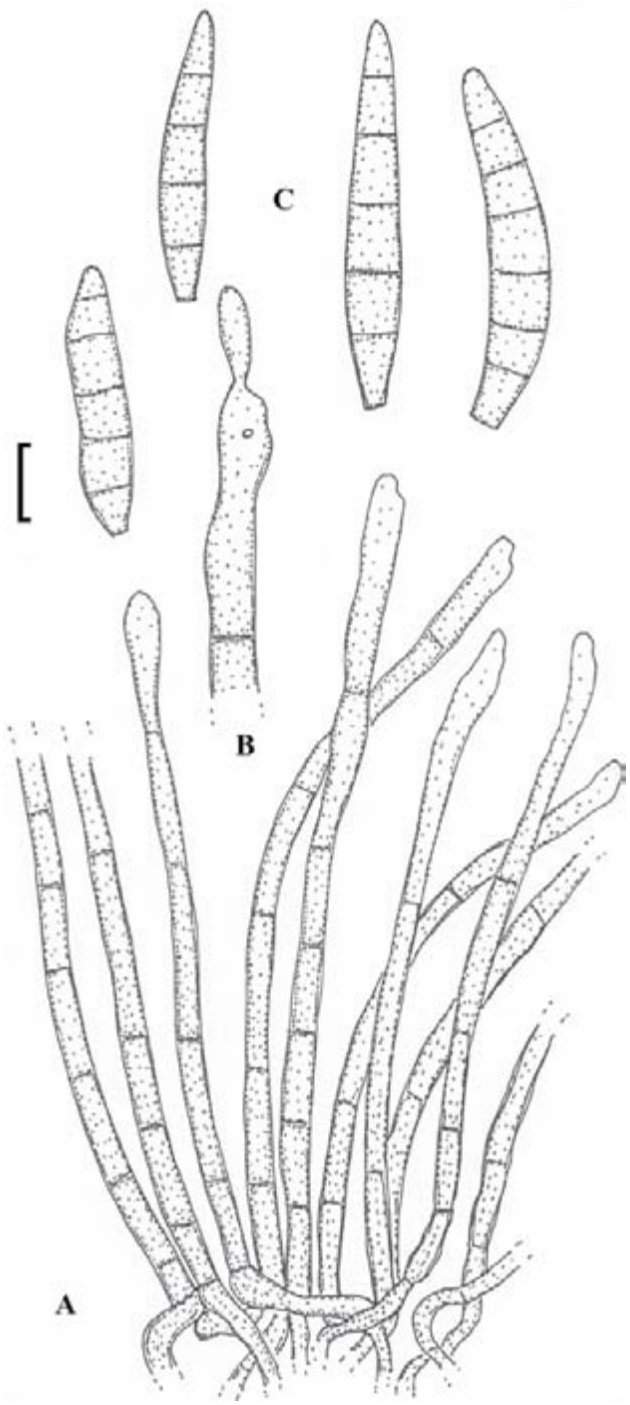

Fig. 59. *Pseudocercospora bambusae* (based on Saika & Sarbhoy 1986: 433, fig. 1). **A.** Conidiophore fascicle. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

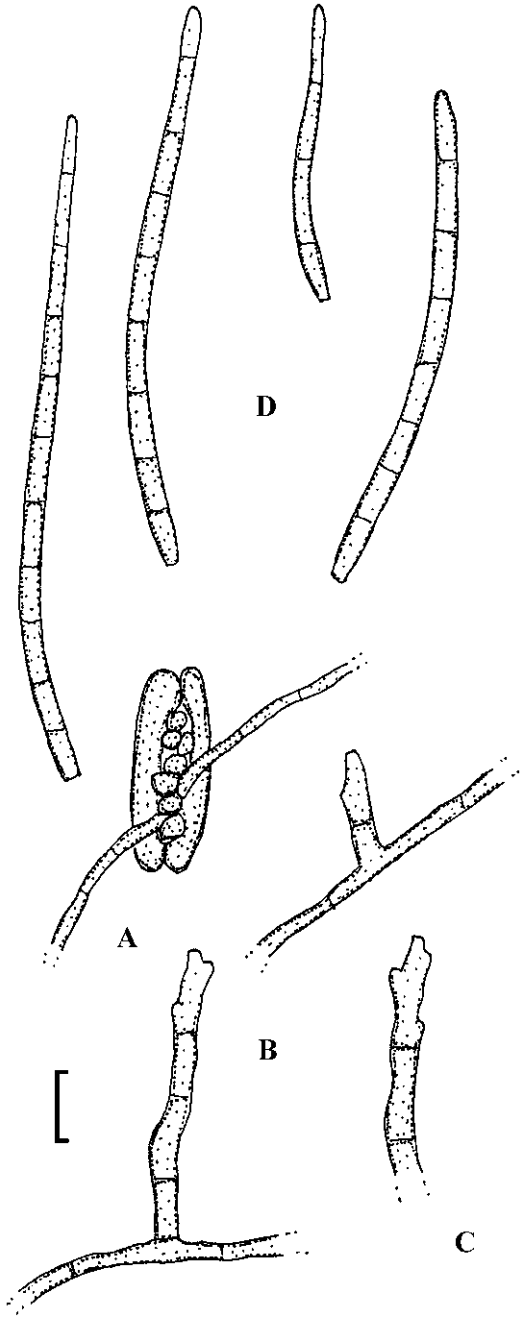

Fig. 60. *Pseudocercospora cymbopogonis* (based on Yen 1977: 149, fig. 2). **A.** Superficial hyphae emerging through a stoma. **B.** Solitary conidiophores arising from superficial hyphae. **C.** Conidiophore. **D.** Conidia. Bar = 10 µm.

in the short, colourless conidiophores and colourless conidia. Hsieh & Goh (1990: 147) re-examined type material of *Cercosporella dendrocalami* Sawada 1944 (*nom. inval.*, Art. 39.1) and reduced it to synonymy with Deighton's species.

Pseudocercospora cymbopogonis (J.M. Yen) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **94**: 386 "1978" (1979).

(Fig. 60)

Basionym: *Cercospora cymbopogonis* J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **93**: 148 (1977).

Literature: Hsieh & Goh (1990: 145), Guo *et al.* (1998: 384), Crous & Braun (2003: 150).

Illustrations: Yen (1977: 149, fig. 2), Guo *et al.* (1998: 384, fig. 316).

Description: *Leaf spots* scattered or confluent, brown, margin indefinite. *Caespituli* amphigenous or only hypophyllous. *Mycelium* internal and external; superficial *hyhae* emerging through stomata, branched, septate, pale olivaceous-brown, 2–3 µm wide. *Stromata* lacking. *Conidiophores* solitary, arising from superficlal hyphae, lateral, at the top of mother

cells, erect, straight to tortuous-geniculate, unbranched, 16–55 × 3–4 µm, 1–6-septate, olivaceous-brown, apex rounded to truncate, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous. *Conidia* solitary, obclavate-cylindrical, somewhat curved-sinuous, 25–95 × 3–4 µm, 4–11-septate, pale olivaceous-brown, thin-walled, smooth, apex rounded, base slightly short obconically truncate, hila unthickened, not darkened.

Holotype: **Taiwan**: Taichung, garden, on *Cymbopogon* sp., *Poaceae* (*Panicoideae*, *Andropogoneae*), 29 Oct. 1971, *J. M. Yen* 71258 (not traced).

Host range and distribution: Only known from the type collection.

Pseudocercospora rubropurpurea (S.H. Sun) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **97**: 154 (1981).
(Fig. 61)
Basionym: *Cercospora rubropurpurea* S.H. Sun, *J. Agric. Forest*. (*Taichung*) **4**: 182 (1955).

Literature: Sivanesan & Waller (1986: 40–42), Hsieh & Goh (1990: 145), Guo *et al.* (1998: 385), Crous & Braun (2003: 360).

Illustration: Sun (1955: 165, fig. 22), Guo *et al.* (1998: 385, fig. 317).

Description: *Leaf spots* at first only visible as indistinct yellowish stripes, later subcircular to irregular, 0.5–12 mm wide, reddish to dark purple, most distinct on the upper leaf surface (referred to as "Purple spot of sugarcane"). *Caespituli* amphigenous, mainly epiphyllous. *Mycelium* internal and external, superficial. *Stromata* lacking. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, straight to slightly curved, geniculate, unbranched, 12–35 × 3.5–4 µm, 1–3-septate, olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous. *Conidia* solitary, obclavate, cylindrical, acicular, straight to slightly curved, 45–108 × 3–3.5 µm, 3–7(–9)-septate, hyaline, thin-walled, smooth, apex subacute or subobtuse, base subtruncate to long obconically truncate, hila unthickened, not darkened.

Holoype: **Taiwan**: Taichung, on *Saccharum officinarum*, 9 Aug. 1955, *S. H. Sun* (not traced).

Host range and distribution: On *Saccharum officinarum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, Taiwan).

Pseudocercospora sacchari K. Bhalla & A.K. Sarbhoy, *Indian Phytopathol.* **53**: 265 (2000), *nom. nov.* (as "(Sarbajna) K. Bhalla & A.K. Sarbhoy, *comb. nov*.").
(Fig. 62)
Basionym: *Mycovellosiella sacchari* Sarbajna, *J. Mycopathol. Res.* **28**: 162 (1990), *nom. inval.* (Art. 37.5).

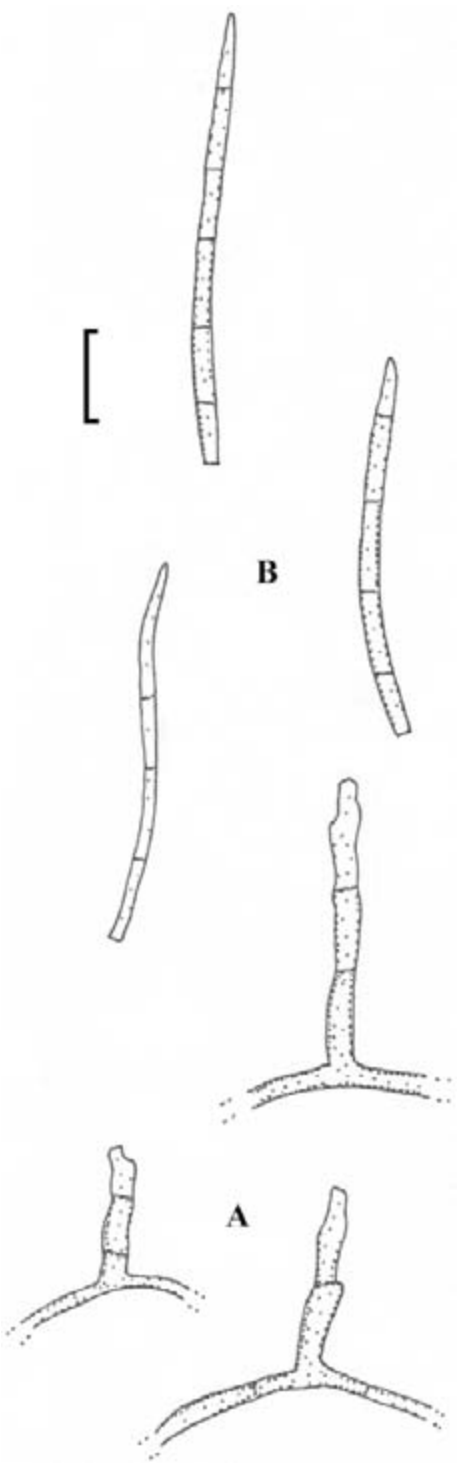

Fig. 61. *Pseudocercospora rubropurpurea* (based on Sun 1955: 165, fig. 22). **A.** Solitary conidiophores arising from superficial hyphae. **B.** Conidia. Bar = 10 µm.

Synonym: *Pseudocercospora sacchari* U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam.*: 488 (2003), *nom. illegit.* (Art. 52.1)

Literature: Braun & Crous (2007: 66), Kamal (2010: 216).

Illustration: Sarbajna (1990: 161, fig. 1), Bhalla & Sarbhoy (2000: 264, fig. 4).

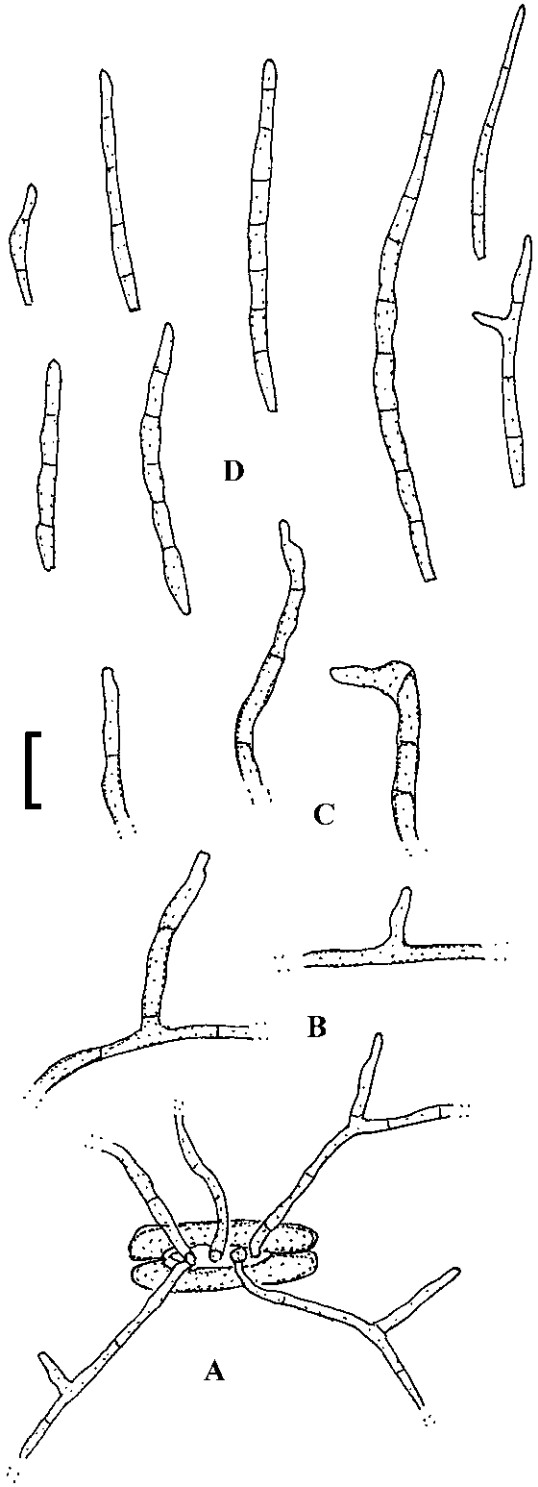

Fig. 62. *Pseudocercospora sacchari* (K(M) IM)I 311125, holotype). **A.** Superficial hyphae emerging through a stoma. **B.** Conidiophores arising from superficial hyphae. **C.** Conidiophores. **D.** Conidia. Bar = 10 µm.

Description: *Leaf spots* amphigenous, circular, elliptical to eye-shaped, with greyish centre, surrounded by a reddish brown margin, 3–11 mm diam, sometimes confluent. *Caespituli* amphigenous, mainly hypophyllous, deep olivaceous, somewhat floccose. *Mycelium* internal and external; *superficial hyphae* emerging through stomata, branched, septate, pale brownish, 1–2.5 µm wide, sometimes intertwined, forming ropes. *Stromata* lacking or almost so. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, straight, subcylindrical to strongly curved, sinuous, geniculate, unbranched or branched, 4–65 × 1–3.5 µm, 0–6-septate, pale olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores sometimes reduced to conidiogenous cells, about 10–25 µm long, conidiogenous loci inconspicuous or visible by being denticle-like, but always unthickened and not darkened. *Conidia* solitary, obclavate-cylindrical (often with short lateral branchlets, sometimes giving rise to secondary conidia), 15–80 × 1–3.5 µm, 2–13-septate, often slightly constricted at septa, pale olivaceous-brown, thin-walled, smooth, apex obtuse or subobtuse, base short obconically truncate, about 1.5–2 µm wide, hila unthickened, not darkened.

Holotype: **India**: *West Bengal*: Baduria, on *Saccharum officinarum*, 18 Oct. 1986, *K. K. Sarbajna* (K(M) IMI 311125).

Host range and distribution: On *Saccharum officinarum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), India (West Bengal).

Pseudocercospora saccharicola (S.H. Sun) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **97**: 154 (1981).
(Fig. 63)
Basionym: *Cercospora saccharicola* S.H. Sun, *J. Agric. Forest. Taiwan* **4**: 183 (1955).

Literature: Sutton & Waller (1986: 51), Hsieh & Goh (1990: 146), Guo *et al.* (1998: 395), Crous & Braun (2003: 362).

Illustrations: Yen *et al*. (1953: 5, fig. 2), Sun (1955: 167, fig. 23), Guo *et al.* (1998: 386, fig. 318).

Description: *Leaf spots* at first small, circular to irregular, dark green to yellowish, later larger and subcircular to irregular, 4–21 × 1.5–7.5 mm or confluent and larger, to 35 mm diam, brown, often with a reddish brown to dark reddish brown narrow border, finally with a grey centre surrounded by a purplish brown margin (referred to as “Ring spot of sugarcane”). *Caespituli* hypophyllous. *Mycelium* internal and external. *Stromata* lacking. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, distinctly geniculate, simple, rarely branched, 34–126 × 3–3.5 µm, 2–4-septate, olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous. *Conidia* solitary, obclavate, acicular, straight to slightly curved, 36–127 × 2–3.5 µm, 3–9-septate, hyaline, thin-walled, smooth, apex subacute, base subtruncate, hila neither thickened nor darkened.

Syntypes: **Taiwan**: Taichung, on *Saccharum officinarum*, 10 Aug. 1955, *S. H. Sun*; Taichung, Nantu, Puli, Wufeng, on *S. officinarum*, 1935, *W. Y. Yen* (not traced).

Host range and distribution: On *Saccharum officinarum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, Taiwan).

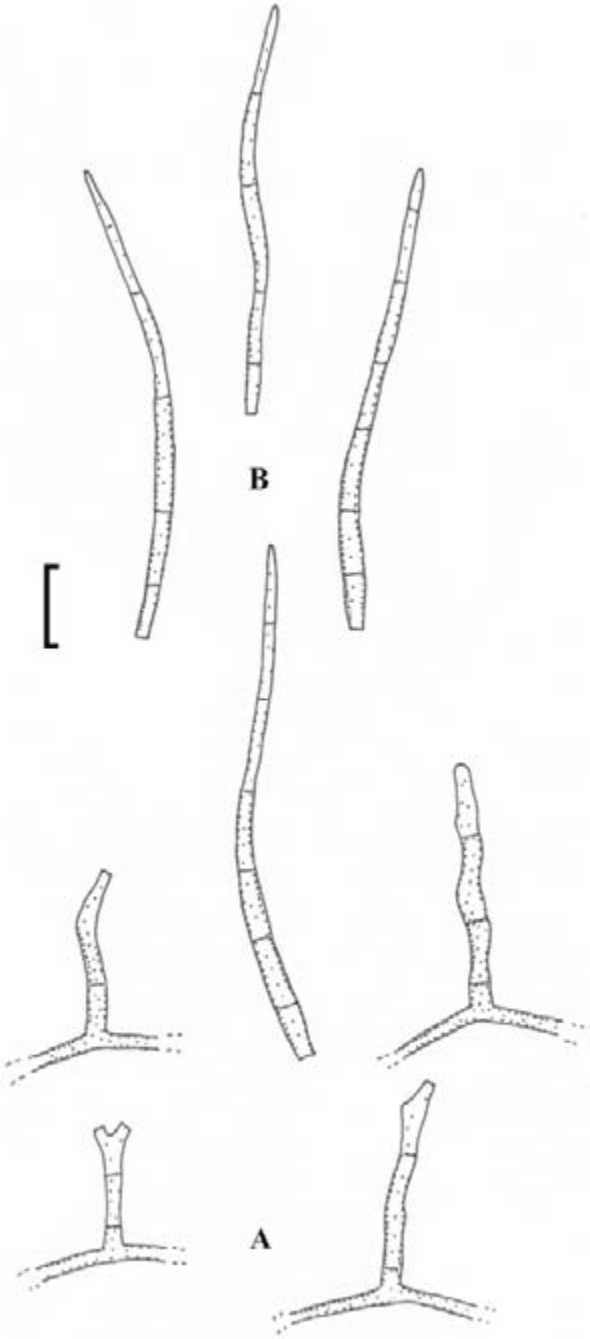

Fig. 63. *Pseudocercospora saccharicola* (based on Sun 1955: 167, fig. 23). **A.** Solitary conidiophores arising from superficial hyphae. **B.** Conidia. Bar = 10 µm.

Pseudocercospora taiwanensis (T. Matsumoto & W. Yamam.) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **97**: 154 (1981).

(Fig. 64)

Basionym: *Cercospora taiwanensis* T. Matsumoto & W. Yamam., *J. Soc. Trop. Agric. Taiwan* **6**: 590 (1934).

Synonym: *Mycovellosiella taiwanensis* (T. Matsumoto & W. Yamam.) X.J. Liu & Y.L. Guo, *Mycosystema* **1**: 262 (1988).

Literature: Chupp (1954: 255), Sun (1955: 167), Abbott (1964: 33–36), Katsuki (1965: 74), Sivanesan (1976; 1984: 480), Sivanesan & Waller (1986: 51–52), Hsieh & Goh (1990: 146), Crous & Braun (2003: 396).

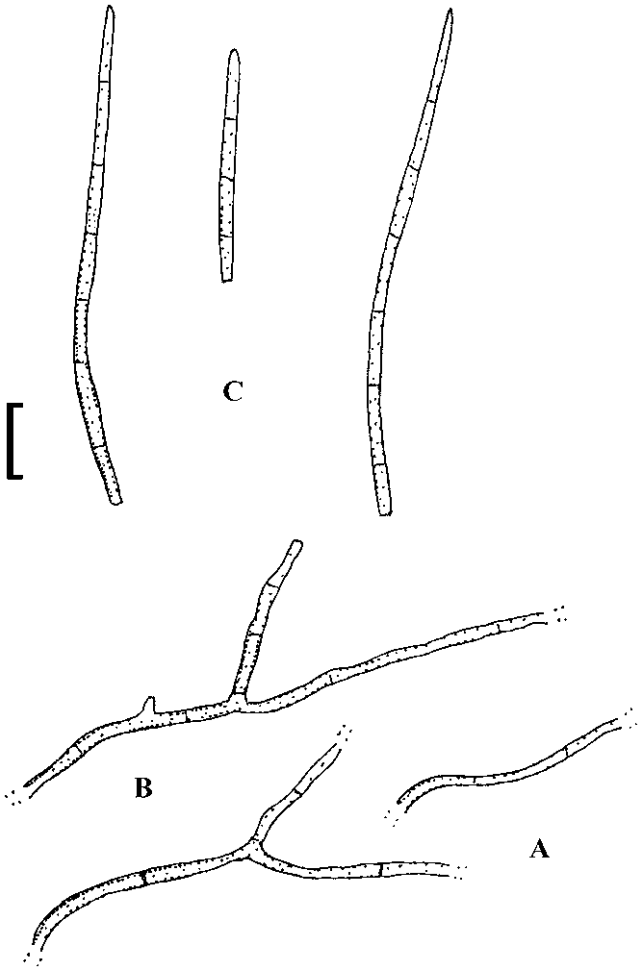

Fig. 64. *Pseudocercospora taiwanensis* (CUP 41374, lectotype). **A.** Superficial hyphae. **B.** Solitary conidiophores arising from a superficial hypha. **C.** Conidia. Bar = 10 µm.

Illustrations: Matsumoto & Yamamoto (1934: 585, fig. 1 and pl. 3 [upper left and right]), Sun (1955: 168, fig. 24), Sivanesan (1976: fig., unnumbered).

Description: *Leaf spots* elliptical to oblong, 2–10 × 1–1.5 mm, yellowish to reddish brown, centre later straw-coloured. *Caespituli* amphigenous. *Mycelium* internal and external, superficial; hyphae branched, septate, 1–3.5 µm wide, subhyaline to pale olivaceous or brownish, thin-walled, smooth. *Stromata* lacking. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, subcylindrical to geniculate, somewhat attenuated towards the tip, unbranched, 5–100(–155) × 2.5–4.5 µm, 0–7-septate, subhyaline, pale olivaceous, yellowish brown to olivaceous brown, paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, conidiogenous loci inconspicuous, neither thickened nor darkened. *Conidia* solitary, narrowly obclavate to acicular, straight, curved to somewhat sinuous, 20–275 × 2–4 µm, indistinctly 1–15-septate, hyaline or subhyaline, thin-walled, smooth, apex subacute, base subtruncate, hila neither thickened nor darkened.

Lectotype (**designated here**, MycoBank, MBT200468): **Taiwan**: Hualien Kang (Karenkô), on *Saccharum officinarum*, 13 May 1934, *W. Yamamoto* (CUP 41374). *Isolectotypes*: BPI 441849, 441850.

Host range and distribution: On *Saccharum officinarum* *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (China, Japan, Taiwan).

Notes: *Leptosphaeria taiwanensis* W.Y. Yen & C.C. Chi (Yen & Chi 1952) was originally proposed as sexual morph of *Cercospora taiwanensis*, but Hsieh (1979) linked this species to *Stagonospora taiwanensis* W.H. Hsieh and *Phoma* sp. Eriksson & Hawksworth (2003) introduced the combination *Saccharicola taiwanensis* (W.Y. Yen & C.C. Chi) Erikss. & D. Hawksw. 2003 and emphasized further examination was required to establish the asexual/sexual morph connexion of *S. saccharicola*. Matsumoto & Yamamoto (1934) cited "in foliis Sacchari officinarum, Karenkô, Taiwan (Formosa)" (without date and collector) as type material. They mentioned that the fungus was brought to their attention in spring 1933 by I. Okamoto, but the material concerned was sterile. They obtained a second sample in 1934 and recollected this fungus in that year themtheves, i.e. all original samples collected at Karenkô, including duplicates preserved at BPI and CUP, are syntypes.

Pseudocercospora whalianensis (J.M. Yen & S.K. Sun) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam*.: 430 (2003).
(Fig. 65)

Basionym: *Cercospora whalianensis* J.M. Yen & S.K. Sun, *Mycotaxon* **7**: 394 (1978).

Synonym: *Cercoseptoria whalianensis* (J.M. Yen & S.K. Sun) J.M. Yen, *Bull. Trimestriel Soc. Mycol. France* **97**: 93 (1981).

Literature: Hsieh & Goh (1990: 133).

Illustration: Yen & Sun (1978: 395, fig. 1 A–C).

Description: *Leaf spots* lacking. *Caespituli* amphigenous. *Mycelium* internal and external; superficial hyphae branched, septate, 2–2.5 µm wide, pale olivaceous-brown, thin-walled, smooth. *Stromata* lacking. *Conidiophores* solitary, arising from superficial hyphae, lateral, at the top of mother cells, erect, straight to curved, subcylindrical or once geniculate, 10–45 × 3–3.5 µm, 1–4-septate, pale olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal, conidiogenous loci inconspicuous, unthickened, not darkened. *Conidia* solitary, cylindrical-filiform, straight to somewhat curved, 20–90 × 2–3 µm, 1–11-septate, pale olivaceous-brown, thin-walled, smooth, apex rounded, base subtruncate, hila unthickened, not darkened.

Holotype: **Taiwan**: Whalian, Kungfu, on *Saccharum officinarum*, 12 Aug. 1977, *S.K. Sun* 114 (not traced).

Host range and distribution: On *Saccharum officinarum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), Asia (Taiwan).

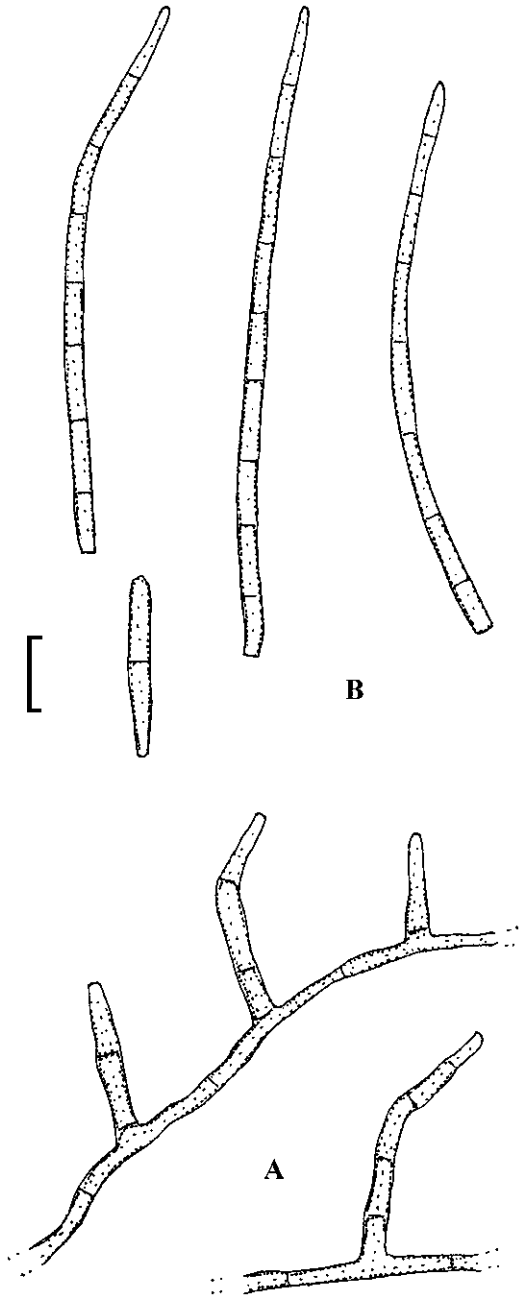

Fig. 65. *Pseudocercospora whalianensis* (based on Yen & Sun 1978: 395, fig. 1 A–C). **A.** Solitary conidiophores arising from superficial hyphae. **B.** Conidia. Bar = 10 µm.

Zasmidium

A single species.

Zasmidium dichanthii (S.A. Khan & Kamal) U. Braun & Crous, *Schlechtendalia* **20**: 100 (2010).
(Fig. 66)

Basionym Cercospora dichanthii S.A. Khan & Kamal, *Mycopathol. Mycol. Appl*. **39**: 200 (1969); as "*dicanthii*".

Synonym: *Stenella dichanthii* (S.A. Khan & Kamal) U. Braun & Crous, in Crous & Braun, *Mycosphaerella and Anam*.: 159 (2003).

Illustration: Khan & Kamal (1969: 198, fig. 2).

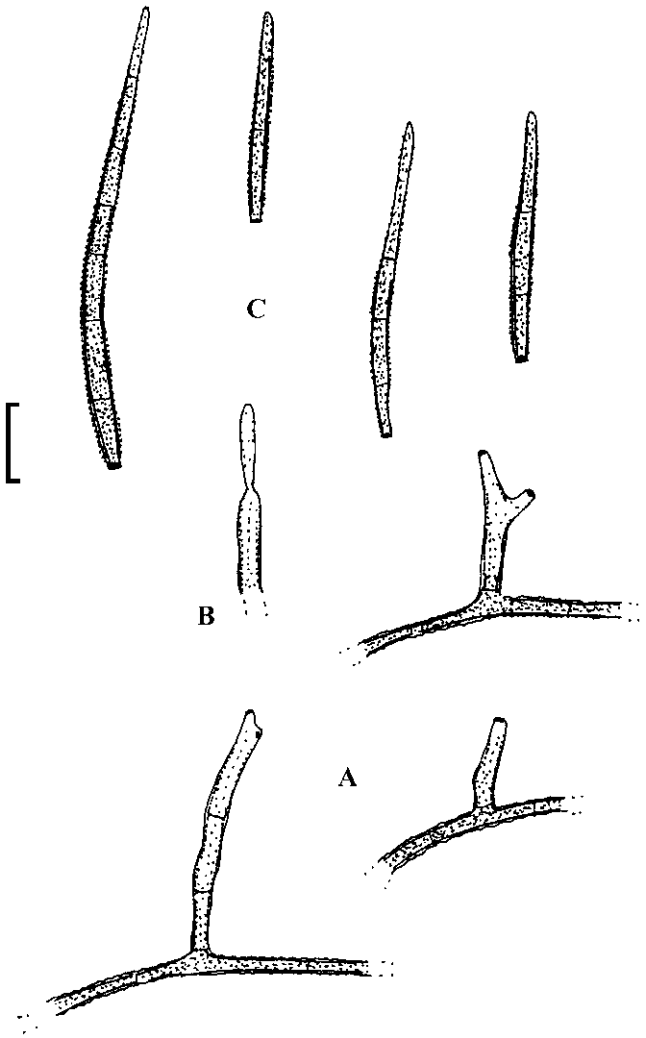

Fig. 66. *Zasmidium dichanthi* (K(M) IMI 104699, holotype). **A.** Solitary conidiophores arising from superficial hyphae. **B.** Conidiophore tip. **C.** Conidia. Bar = 10 µm.

Description: *Leaf spots* variable, often oblong and marginal, dark reddish brown. *Caespituli* amphigenous, mainly hypophyllous. *Mycelium* internal and external; *superficial hyphae* sparingly branched, septate, 1–3 µm wide, subhyaline or pale, thin-walled, verruculose. *Stromata* lacking or almost so. *Conidiophores* solitary, arising from superficial hyphae, lateral, erect, straight, subcylindrical to geniculate-sinuous, unbranched, 20–60(–75) × 2–4 µm, 0–4-septate, pale olivaceous to olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, about 10–25 µm long, conidiogenous loci inconspicuous to somewhat conspicuous by being slightly darkened-refractive, barely thickened, 1–1.5 µm diam. *Conidia* solitary, narrowly obclavate-subcylindrical, 10–80 × 2–3.5(–4) µm, 0–6-septate, subhyaline, thin-walled, verruculose, apex subacute or subobtuse, base short obconically truncate, 1–2 µm wide, barely thickened, slightly refractive.

Holotype: **Pakistan**: Dokri, on *Dichanthium annulatum*, *Poaceae* (*Panicoideae*, *Andropogoneae*), 30 Oct. 1963, *S. A. Khan* (K(M) IMI 104699).

Host range and distribution: Only known from the type collection.

Notes: This species is a typical stenella-like fungus with verruculose superficial hyphae and solitary conidiophores. The solitary conidia are also verruculose. The conidigenous loci are often inconspicuous, 1–1.5 µm wide, unthickened and slightly darkened-refractive.

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