Additions to the cercosporoid fungi from the Brazilian Cerrado: 1. New species on hosts belonging in family *Fabaceae*, and reallocations of four *Stenella* species into *Zasmidium*

Antonio Hernández-Gutiérrez¹, Zuleide Martins Chaves², Denise Dornelo-Silva² & José Carmine Dianese^{2*}

¹Departamento de Fitopatologia, Universidade Federal do Pará, Rua Augusto Corrêa 01, Campus do Guamá, 66071-110 Belém, Pará, Brazil

²Departamento de Fitopatologia, Universidade de Brasília, 70910-900, Brasília, Distrito Federal, Brazil

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Abstract. Nine new species of cercosporoid fungi were found on leaves of plants in family *Fabaceae* from the Brazilian Cerrado: *Asperisporium galactiae* on *Galactia peduncularis*, *Sirosporium sclerolobii* and *Zasmidium sclerolobii* on *Sclerolobium paniculatum*, *Pseudocercospora acosmii-subelegantis* on *Acosmium subelegans*, and *Pseudocercospora stryphnodendri* on *Stryphnodendron adstringens*. In addition, four other *Pseudocercospora* species were found on *Cassia* s. lat., including *Chamaecrista* and *Senna*: *Pseudocercospora aquae-emendadasensis* on *Chamaecrista orbiculata*; *Pseudocercospora sennae*, *Pseudocercospora sennae-rugosae*, and *Pseudocercospora subcuticularis* on *Senna rugosa*. Descriptions, illustrations, and discussions of the new taxa are supplemented by keys to *Pseudocercospora* species on hosts belonging to *Cassia* s. lat., and to *Zasmidium* species on *Fabaceae*.

Key words: *Asperisporium*, foliicolous fungi, fungal taxonomy, leaf spots, Neotropical mycodiversity, *Pseudocercospora*, *Sirosporium*

* Corresponding author: e-mail: jcarmine@gmail.com

Introduction

A survey accomplished in 2008 indicated that the *Fabaceae* (including subfamilies *Caesalpinoideae*, *Faboideae*, and *Mimosoideae*), known as the largest family of flowering plants in the world, encompasses in the Cerrado 108 genera, 1,174 species, and 262 varieties and subspecies. The *Fabaceae* corresponds to 9.5 % of the total number (> 12,000 species) of higher plant species in the Cerrado, including angiosperms, gymnosperms, and pteridophytes (Mendonça et al. 2008). However, studies on legume-associated cercosporoid fungi from the Cerrado are very scarce and confined to species described by Viégas (1945), included in Chupp (1954), some of them revised by Inácio et al. (1996) and Crous et al. (1997), and a few by Batista et al. (1960). Starting in 1994 (Medeiros & Dianese 1994), a sequence of papers was published describing new species of cercosporoid fungi from the Cerrado. In these publications, a new species belonging in *Parastenella*, four in *Cercospora*, 22 in *Passalora*, 31 in *Pseudocercospora*, and five in *Stenella* were described (Dianese & Câmara 1994; Inácio & Dianese 1998, 1999, 2006; Furlanetto & Dianese 1999; Dornelo-Silva & Dianese 2003; Dornelo-Silva et al. 2007; Dianese et al. 2008; Hernández-Gutiérrez & Dianese 2008, 2009, 2014a, b; Hernández-Gutiérrez et al. 2014). Four of the species previously assigned to *Stenella* are now reallocated to *Zasmidium*. On fabaceous hosts only eight new species distributed among the genera *Cercospora*, *Passalora*, and *Pseudocercospora* have recently been described (Hernández-Gutiérrez & Dianese 2009). The present paper deals with new species of *Asperisporium*, *Pseudocercospora*, *Sirosporium*, and *Zasmidium* on plants belonging to *Fabaceae*, and reallocations of *Stenella* species from the Cerrado into *Zasmidium*.

Material and methods

Leaves showing necrotic spots of different shades of gray/brown were collected and dried in plant presses, before processing and depositing them in Herbarium UB Mycological Collection. Colonies on the leaf spots were initially examined using a Zeiss (Discovery v.8) stereomicroscope, to look for synnematosus or fasciculate conidiophores. Portions of the fungal colonies were removed from the leaves and mounted on slides containing lactoglycerol. Then, light microscopic observations, measurements, and drawings were made using a Zeiss microscope, coupled to a *camera lucida*. The drawings show details of stromata, conidiophores, conidiogenous cells, and conidia of each specimen studied.

Taxonomy

Asperisporium galactiae A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.**
Mycobank MB 814798

Fig. 1

Holotype: BRAZIL. Mato Grosso: Cuiabá, Chapada dos Guimarães National Park, Morro São Jerônimo, on leaves of *Galactia peduncularis* (Benth.) Taub. (*Fabaceae*/*Faboideae*), 11 Apr 1996, J.C. Dianese (UB – Mycol Col. 11332).

Etymology: *galactiae*, derived from the host plant genus *Galactia*.

Diagnosis: Differs from the type species, *Asperisporium caricae* (Speg.) Maubl., in having sublunate to fusoid conidia (vs. short-cylindrical in *A. caricae*).

Description: Lesions 0.5–2 mm diam., amphigenous, sparse, circular or irregular, brown, without defined margin and halo. Colonies brown, caespitose, mostly hypophyllous, sometimes epiphyllous. Mycelium internal. Stromata well-developed, *textura globosa*, erumpent, light brown, 23–50 µm diam. Conidiophores 0–2-septate, sometimes reduced to a simple conidiogenous cell, in compact sporodochia, straight, lageniform, cylindrical, ampulliform when immature, 17–38 µm long, 6–8 µm broad in the widest part, light brown, smooth, thin-walled. Conidiogenous cells terminal, integrated, polyblastic, sympodial, with prominent thick, dark conidiogenous loci, 1.5–2.5 µm wide. Conidia solitary, sublunate to fusoid, obconically truncate to truncate at the base, with thick, dark hilum, 1–2 µm wide, apex rounded to broadly rounded, 33–40 µm long, 5–8 µm diam. in the widest part, 2–3 µm at the base, 1–3 µm near the apex, 0–5-septate, dark brown, strongly verrucose when mature.

Comment: Crous & Braun (2003) and Braun et al. (2013) considered *Asperisporium* close to *Passalora*, but differing by possessing strongly verrucose conidia. However, sequencing of the ITS region and nLSU of the *Asperisporium* type species, *A. caricae*, showed that it clustered within the *Mycosphaerellaceae* clade close to several *Passalora* species, but excluding the type species of the latter genus (Minnis et al. 2011). Thus, Braun et al. (2013) also admitted that further molecular work is needed to better clarify the situation of the polyphyletic genus *Passalora*. They also suggested that species with lightly verruculose conidia, as for instance *A. sequoiae* (Ellis & Everh.) B. Sutton & Hodges and *A. juniperinum* (Georgescu & Badea) B. Sutton & Hodges, clustering close to *Passalora* species and further away from the *Asperisporium* type species (Minnis et al. 2011), should be assigned to *Passalora* s. lat. Therefore, it is currently advisable to assign phylogenetically unresolved species that morphologically agree with the type of *Asperisporium* to the latter genus, at least tentatively.

There are 22 species of *Asperisporium* described and illustrated in the literature (<http://indexfungorum.org>, September 2015). Most of the species agree morphologically well with the type species, *A. caricae* (Ellis 1971, 1976). Recently, *A. caricicola* Crous & C. Nakash., a species morphologically indistinguishable from the type species has been described. The authors based the introduction of the new species on minor differences in ITS and LSU sequences; and the data was generated by comparing just one isolate of *A. caricae* with one of that considered as new species (Crous et al. 2015). When one takes into account that morphology reflects the entire genome of a fungus, it is difficult to accept a new species just based on minor differences in sequences whose phylogenetic meaning is hardly appraisable. In addition, it is more than questionable to base such a critical species on an unacceptably small sampling. *Carica papaya* is a species naturally distributed in coastal regions of tropical America, but *A. caricicola* was based on a single collection from cultivated papaya on Fiji, Oceania, which raised the question if, indeed, two morphologically indistinguishable *Asperisporium* have been evolved on this host or if the sequences just reflect intraspecific genetic variation.

This question can barely be answered just based on two sequences. In any case, the precipitate introduction of *A. caricicola* is little helpful and more confusing to phytopathologists.

Asperisporium galactiae forms dark, subcuticular or subepidermal stromata, with *textura globosa*. This characteristic is also present in *A. moringae* (Ellis 1976); all other species of *Asperisporium* have stromata with *textura angularis*. Conidiophores of most species are cylindrical or occasionally obclavate, but conidiophores of *A. galactiae* range from ampulliform when young, to lageniform or even cylindrical when mature, and they are 0–1-septate. The conidia of *Asperisporium* species are in general uniformly 0–1(–2)-septa, except for *A. mikaniae* (Ellis & Everh.) R.W. Barreto (Barreto & Evans 1995) that may show conidia up to 5-septate, as is the case in *A. galactiae*.

The conidia of *A. galactiae* are well characterized by being slightly curved (sublunate), wider at the middle, and strongly verrucose, but not verruculose at the base, with a more or less prominent dark hilum. The conidiogenous cells of *A. galactiae* are very characteristic by having prominent, thick, dark colored conidiogenous loci, appearing as broad short denticles, giving a peculiar shape to the conidiogenous cell apex.

Two species assigned to *Asperisporium* are known to be parasitic on hosts of the *Fabaceae*, viz. *A. cassiae* (Syd.) Deighton on *Senna multiglandulosa* (Jacq.) H.S. Irwin & Barneby (= *Cassia tomentosa* L. f.), and *A. pongamiae* (Syd. & P. Syd.) Deighton on *Pongamia* sp. (Ellis 1976). Thus, the present specimen represents the third *Asperisporium* species on a host of the *Fabaceae*, and the first on a *Galactia* species.

Asperisporium cassiae shows longer multiseptate conidiophores and smaller conidia than the new species; while *A. pongamiae* has smaller conidia with smooth, wrinkled or minutely verruculose wall. Among other cercosporoid fungi on members of the genus *Galactia*, there are only two that, however, are typical *Cercospora* species, *C. flagellifera* G.F. Atk. and *C. galactiae* Ellis & Everh. Thus, the well-defined and peculiar characteristics of the new species, such as verrucose, sublunate to fusoid conidia, infecting for the first time a *Galactia* species, differentiate this specimen from the remaining species of *Asperisporium*, clearly indicating that it belongs to a new species.

Pseudocercospora acosmii-subelegantis A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.**
Fig. 2

MycoBank MB 814799

Holotype: BRAZIL. *Distrito Federal*: Planaltina, Águas Emendadas Ecological Station, on leaves of *Acosmium subelegans* (Mohlenbr.) Yakovlev (*Fabaceae/Faboideae*), 6 Mar 1995, M. Sanchez (UB – Mycol Col. 7397).

Etymology: *acosmii-subelegantis*, derived from the host species *Acosmium subelegans*.

Diagnosis: Differs from *P. luzianensis*, also known from the Cerrado, in having non-synnematus conidiophores and conidia with thickened walls and septa (vs. conidia with thin septa and walls in *P. luzianensis*).

Description: Lesions 0.5–3 mm diam., amphigenous, punctiform, circular or irregular, dark brown, without a delimiting margin. Colonies exclusively hypophyllous, brown. Mycelium internal. Stromata absent. Conidiophores in fascicles with up to ten conidiophores emerging through stomata, straight or slightly curved, sometimes showing percurrent proliferations, 41–93 µm long and 3–5 µm wide, 1–5 septate, light brown olivaceous, smooth. Conidiogenous cells integrated, polyblastic, sympodial, sometimes geniculate and showing percurrent extensions; conidiogenous loci flat slightly pigmented. Conidia simple, non catenate, obclavate or fusoid, sometimes curved, obconically truncate to truncate at the base, with unthickened, but lightly pigmented 1.5–3 µm wide hilum, obtuse to rounded at the apex, walls and septa thickened, 32–82 µm long, 7–10 µm broad at the widest part, 1–4 µm at the base, 1–2 µm near the apex, 0–9-septate, olivaceous-brown, paler near the apex, smooth.

Pseudocercospora aquae-emendadasensis A. Hern.-Gut., Z.M. Chaves & Dianese, sp. nov.

Fig. 3

MycoBank MB 814800

Holotype: BRAZIL. Distrito Federal: Planaltina, Águas Emendadas Ecological Station, on leaves of *Chamaecrista orbiculata* (Benth.) H.S. Irwin & Barneby (*Fabaceae*), 21 Feb 1997, M. Sanchez (UB – Mycol. Col. 13421).

Etymology: Specific epithet referring to the site of type collection.

Diagnosis: Differs from *P. chamaecristigena* in having shorter mononematous conidiophores (50–130 µm long) (vs. much longer synnematus conidiophores, 208–335 µm long, in *P. chamaecristigena*).

Description: Lesions 1–4 mm diam., amphigenous, circular, brown to dark brown, surrounded by a yellowish halo. Colonies amphigenous, mainly caespitose, sometimes loosely synnematus, olivaceous-brown. Mycelium internal. Stromata 17–50 µm diam., moderately developed, *textura globosa*, substomatal, light brown. Conidiophores in loose to dense fascicles, emerging through stomata, slightly curved, somewhat flexuous or straight, 50–130 µm long, 5–7 µm broad at the widest part, 1–5-septate, occasionally with percurrent proliferation, light brown to olivaceous, smooth, thin-walled. Conidiogenous cells terminal, integrate, mostly monoblastic, sometimes polyblastic and sympodial, light olivaceous; conidiogenous loci aplanate, unthickened. Conidia solitary, straight, slightly curved, sometimes flexuous, obclavate to fusoid, obconically truncate, sometimes cylindrical at the base with slightly prominent hilum, 2–4 µm wide, rounded to broadly rounded at the apex, 28–65 µm long, 5–7 µm broad at the widest part, 2–3 µm at the base, 2–3 µm near the apex, 0–4-septate, walls and septa thickened, sometimes constricted at some septa, light olivaceous to subhyaline, smooth.

Additional specimen examined: **BRAZIL.** *Distrito Federal:* Planaltina, Águas Emmendadas Ecological Station, on leaves of *Chamaecrista orbiculata* (*Fabaceae*), 5 Mar 1997, *M. Sanchez* (UB – Mycol Col. 13703).

Pseudocercospora sennae A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.**
MycoBank MB 814801

Fig. 4

Holotype: **BRAZIL.** *Distrito Federal:* Brasília, North Peninsula, on leaves of *Senna rugosa* (G. Don.) H.S. Irwin & Barneby (*Fabaceae*), 31 May 1992, *J.C. Dianese* (UB – Mycol Col. 1132).

Etymology: Specific epithet derived from the host genus.

Diagnosis: Differs from *P. taichungensis* in having much longer, 1–5-septate conidiophores, 30–76 µm long, and much longer conidia, 24–132 µm (vs. conidiophores 10–25 × 1–3 µm, 0–2-septate, conidia, 20–55 µm long) in *P. taichungensis*).

Description: Lesions 1–6 mm diam., amphigenous, irregular, sometimes coalescent, brown with a darker margin and surrounded by a yellowish brown halo. *Mycelium* internal. *Colonies* amphigenous, brown. *Stromata* 42–183 µm diam., well-developed, *textura angularis*, erumpent, brown. *Conidiophores* in dense and compact layers arising from the stromata, unbranched, straight or slightly curved, cylindrical, 30–76 µm long, 4–6 µm broad at the widest part, reddish brown, 1–5-septate, sometimes percurrently proliferating, smooth, thin-walled. *Conidiogenous cells* terminal, integrated, mono- or polyblastic, sympodial; *conidiogenous loci* flat, unthickened, 3–3.5 µm wide. *Conidia* solitary, curved or straight, narrowly obclavate, sometimes cylindrical or filiform, obconically truncate to truncate at the base, hilum not thickened. 1–2.5 µm wide; obtuse to rounded or broadly rounded at the apex, 24–132 µm long, 3–5 µm broad at the widest part, 1–2 µm at the base, 1–3 µm near the apex, 1–8-septate, light brown to subhyaline, smooth, thin-walled.

Additional specimens examined: On leaves of *Senna rugosa* (*Fabaceae*) **BRAZIL.** *Distrito Federal:* Brasília, North Peninsula, 11 May 1992, *J.C. Dianese* (UB – Mycol Col. 1219). Planaltina, Águas Emendadas Ecological Station, 10 Jun 1992, *R.B. Medeiros* (UB – Mycol Col. 1139). Brazlândia, 18 Jun 1992, *R.B. Medeiros* (UB – Mycol Col. 1232). PADÉ, 18 Feb 1993, *J.C. Dianese* (UB – Mycol Col. 3177). *Minas Gerais:* Divinópolis, Expo Park, *J.C. Dianese* (UB – Mycol Col. 5514).

Pseudocercospora sennae-rugosae A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.** Fig. 5
MycoBank MB 814802

Holotype: **BRAZIL.** *Distrito Federal:* Brasília, North Peninsula, on leaves of *Senna rugosa* (G. Don.) H.S. Irwin & Barneby (*Fabaceae*), 9 Jan 1993, *J.C. Dianese* (UB – Mycol Col. 3033).

Etymology: Epithet referring to the host species, *Senna rugosa*.

Diagnosis: Differs from *P. sennae* in having 2–12-septate conidiophores and longer, 3–18-septate conidia, $17\text{--}193 \times 3\text{--}4 \mu\text{m}$ (vs. conidiophores 1–5-septate and conidia shorter, $24\text{--}132 \times 3\text{--}5 \mu\text{m}$, with 1 to 8 septa in *P. sennae*).

Description: Lesions 2–8 mm diam., amphigenous, irregular, reddish brown, surrounded by a somewhat darker margin. Colonies mainly epiphyllous, occasionally hypophyllous, caespitose, shining grey. Stromata 152–245 μm diam., well-developed formed by cells of *textura angularis* at the lower part and *textura prismatica* at the upper part due to the compactly aggregated conidiophores, brown, subcuticular to subepidermal, erumpent. Conidiophores in very dense and compact fascicles to form a prismatic texture, individual conidiophores only evident at the apex or at conidiogenous cells, unbranched, straight or slightly curved, cylindrical, 50–66 μm long, 4–5 μm broad at the widest part, 2–12-septate, brown, smooth, thin-walled. Conidiogenous cells terminal, integrated, monoblastic, narrowly lageniform to cylindrical, light brown; conidiogenous loci flat, unthickened, 2–2.5 μm wide. Conidia solitary, straight, slightly curved to strongly curved by being almost U-shaped, filiform to slightly obclavate; obconically truncate to truncate at the base, hilum unthickened, 1–2 μm wide, obtuse to rounded at the apex, 17–193 μm long, 3–4 μm broad at the widest part, 1–3 μm at the base and near the apex, 3–18-septate, light brown to light olivaceous-brown, smooth, thin-walled.

Additional specimen examined: On leaves of *Senna rugosa* (Fabaceae) **BRAZIL**. Distrito Federal: Planaltina, Núcleo Rural do Pipiripau, 10 Jun 1994, C.A. Inácio (UB – Mycol Col. 6191).

Pseudocercospora stryphnodendri A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.** Fig. 6
Mycobank MB 814803

Holotype: **BRAZIL**. Minas Gerais: Divinópolis, Barrinha Farm, right side of Highway from Divinópolis to Formiga, $20^{\circ}13'54.9''\text{S}$, $45^{\circ}05'33.7''\text{W}$, on leaves of *Stryphnodendron adstringens* (Mart.) Coville (Fabaceae), 31 Dec 1991, J.C. Dianese (UB – Mycol Col. 894).

Etymology: Epithet referring to the host genus.

Diagnosis: Differs from the similar *P. chamaecristae* in having fasciculate, but non-synnematus, much shorter conidiophores, 12–22 μm long and much longer and narrower, 3–9-septate conidia, $26\text{--}75 \times 2\text{--}3 \mu\text{m}$ (vs. longer, synnematus conidiophores and much shorter and wider, 1–4-septate conidia, $25\text{--}35 \times 5\text{--}8 \mu\text{m}$, in *P. chamaecristae*).

Description: Lesions 1–16 mm diam., amphigenous, irregular, sometimes circular, coalescent, purplish brown, without margin or surrounding halo. Colonies amphigenous, caespitose, yellowish grey. Stromata 13–26 μm diam., poorly developed, formed by cells of *textura*

globosa, substomatal, light olivaceous to subhyaline. *Conidiophores* in compact stomatal fascicles, unbranched, straight or slightly curved, lageniform or ampulliform, 12–22 µm long, 3–4 µm broad at the widest part, 0–1-septate, light olivaceous to subhyaline, smooth, thin-walled. *Conidiogenous cells* terminal, integrate, mainly forming a unicellular conidiophore, polyblastic, sympodial, geniculate, conidiogenous loci flat, unthickened, not pigmented, 1–1.5 µm wide. *Conidia* solitary, curved, flexuous or straight, filiform, obclavate, obconically truncate to truncate at the base, hilum unthickened, 1 µm wide; acute, obtuse to rounded at the apex, 26–75 × 2–3 µm diam. at the widest part, 1–2 µm at the base and near the apex, 3–9-septate, light olivaceous to subhyaline, smooth, thin-walled.

Additional specimens examined: on leaves of *Stryphnodendron adstringens* (Fabaceae), **BRAZIL**. *Distrito Federal*: Brasília, Vargem Bonita, Cerrado das Mansões, 26 Jun 1994, M. Sanchez (UB – Mycol Col. 6222, 6223, 6242, 6243, and 6244). Planaltina, Águas Emendadas Ecological Station, 26 Jun 1995, Z.M. Chaves (UB – Mycol Col. 8880).

Pseudocercospora subcuticularis A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.** Fig. 7
MycoBank MB 814804

Holotype: **BRAZIL**. *Distrito Federal*: Brasília, University of Brasília, Biological Experiment Station, on leaves of *Senna rugosa* (G. Don.) H.S. Irwin & Barneby (Fabaceae), 11 Jul 1993, J.C. Dianese (UB – Mycol Col. 4092).

Etymology: Epithet referring to the subcuticular origin of the conidiophores.

Diagnosis: Differs from the similar *P. sennae-rugosae* in having 2–7-septate, shorter conidiophores (to 56 µm long), and much shorter, 0–13-septate conidia (26–92 µm long) (vs. 2–12-septate conidiophores, 50–66 × 4–5 µm, conidia 3–18-septate, 17–193 × 3–4 µm in *P. sennae-rugosae*).

Description: Lesions 3–18 mm diam., amphigenous, angular or irregular, limited by the leaf veins, brown, surrounded by a darker margin. *Colonies* amphigenous, dark greyish or black, mostly subcuticular. *Stromata* 125–225 µm diam., well-developed, intraepidermal, formed by cells of *textura angularis*, light brown or olivaceous. *Conidiophores* in dense fascicles, unbranched, straight or slightly curved, cylindrical, inclined towards the direction of the cuticle fissure, 33–56 µm long, 4–7 µm broad at the widest part, 2–7-septate, light olivaceous, smooth, thin-walled. *Conidiogenous cells* terminal, sometimes intercalary, integrated, monoblastic, cylindrical or slightly ampulliform, sometimes percurrently proliferating; *conidiogenous loci* 2–3 µm wide. *Conidia* solitary, straight, sometimes curved, obclavate or fusoid to cylindrical, obconically truncate to truncate at the base, hilum unthickened, 1–4 µm wide; rounded to broadly rounded at the apex, 26–92 µm long, 4–7 µm broad at the widest part, 2–4 µm at the base, 2–3 µm near the apex, 0–13-septate, light olivaceous, smooth, thin-walled.

Comments to the new Pseudocercospora species: Six new *Pseudocercospora* species found on four host species belonging to three different genera, *Acosmium*, *Chamaecrista*, *Stryphnodendron*, and *Senna*, are described herein. The first species, *P. acosmii-subelegantis*, is characterized by the marked conidial polymorphism, all with thickened septa and walls, as present in some *Pseudocercospora* species previously allocated to *Prathighada* s. lat. The type species of the latter genus and other species with unthickened conidiogenous loci proved to belong to *Pseudocercospora* (Braun et al. 2013). Thus, the new species, which is clearly separated from *Passalora acosmii* A. Hern.-Gut & Dianese, also found on *A. subelegans* (Hernández-Gutiérrez & Dianese 2009), is here accommodated in *Pseudocercospora* s. str. There is no morphologically comparable species on allied hosts of the *Amorpheae* (dalbergioid clade, see Bruneau et al. 2013).

Pseudocercospora stryphnodendri is well-characterized by its short, pale, 0–1-septate conidiophores and narrow, very pale conidia. This is the first *Pseudocercospora* described on a host belonging to the genus *Stryphnodendron*. There are no comparable *Pseudocercospora* species on phylogenetically allied hosts of the *Mimosoideae* (*Microlobium*, *Parapiptadenia*, *Pseudopiptadenia*, *Stryphnodendron* lineage, see Jobson & Luckow 2007).

The other new species occur on hosts of the genera *Chamaecrista* and *Senna*, both pertaining to a well-supported clade that is taxonomically usually referred to as *Caesalpinioideae*, tribe *Cassieae*, subtribe *Cassiinae*, comprising *Cassia*, *Chamaecrista*, and *Senna*, although the latter group probably warrants to be considered as tribe *Cassieae* s. str. (Bruneau et al. 2013). There are numerous *Pseudocercospora* spp. described on hosts of *Cassia* s. lat. (incl. *Chamaecrista* and *Senna*). A first comprehensive survey of and key to cercosporoid fungi on *Cassia* s. lat. was published by Braun (1989). He reduced *Pseudocercospora cassia-occidentalis* and *P. singaporensis* to synonymy with *P. nigricans*. An updated key to *Pseudocercospora* species, reflecting the morphological differences, is herein provided taking into account the summary shown in Table 1.

Table 1. Some morphotaxonomic features of the *Pseudocercospora* species found on hosts belonging to *Cassia* s. lat.

<i>Pseudocercospora</i> species	Stromata (µm)	Conidiophores / Fascicles	Conidiophores (µm) Septation		Conidia (µm) Septation	
<i>P. angustata</i> (2)	S	Mono, densely fasciculate	10–50 × 2–3.5	Rare	15–75 × 2–4	3–7
<i>P. aquae-emendadasensis</i> (1)	17–50, text. globose, substomatal	Mono, stomatal	50–130 × 5–7	1–5	28–65 × 5–7	0–4 Thickened wall and septa
<i>P. cassiae-alatae</i> (3)	A	Mono on external hyphae		0–6	15–90	1–10
<i>P. cassiae-diphyllae</i> (4)	S, 3–5, substomatal	Mono, stomatal and laterally on creeping hyphae	5–70 × 2.5–7	Aseptate	12–55 × 3–6	1–5

Table 1. (continued)

<i>Pseudocercospora</i> species	Stromata (μm)	Conidiophores / Fascicles	Conidiophores (μm)	Septation	Conidia (μm)	Septation
<i>P. cassiae-occidentalis</i> (5)	A	Mono, fascicle with 2–6 conidiophores, stomatal	60–130 $\times$ 4–5 μm	2–6	62–100 $\times$ 3.5–5	3–6
<i>P. cassiae-siameae</i> (2)	17–24, substomatal	Mono, fascicles compact	15–27 $\times$ 3.5–4 non geniculate	0–1	29–94 $\times$ 3.5–4.5	3–10
<i>P. cassiae-sophorae</i> (6)	A or small on external hyphae	Mono, conidiophores verruculose single on external hyphae, sometimes subsynnematosus	6.5–65 $\times$ 2–3.5	0–4	14–55 $\times$ 2–3.5	2–5
<i>P. cassiigena</i> (3)	Globose 25–40, erumpent	Mono, conidiophores densely fasciculate	6–11 $\times$ 2–3	0	22–36 $\times$ 2–2.5	Strictly 3
<i>P. cassia-fistulae</i> (7)	Elongate, erumpent, 45 wide	Mono, fasciculate on stromata, secondary conidiophores simple on creeping hyphae originated from stromata	10–30 $\times$ 2.5–5	0–2	25–65 $\times$ 3–4	2–8
<i>P. caesalpiniicola</i> (8)	30–45, substomatal	Synnematous, fascicle with up to 35 conidiophores	50–251 $\times$ 4–6	Multi	40–105 $\times$ 5–6.5	2–9
<i>P. chamaecristae</i> (8)	30–50, substomatal to intraepidermal	Synnematous, synnemata 120–280 $\times$ 15–60		Multi	25–35 $\times$ 5–8	1–4
<i>P. chamaecristigena</i> (8)	35–83, substomatal, textura globosa	Synnematous, textura parallela, synnemata 208–335 $\times$ 20–83, with 16–65 conidiophores	208–335 $\times$ 3–5	4–12	35–79 $\times$ 5–8	
<i>P. exilis</i> (8)	25–50, substomatal	Synnematous, synnemata 149–332 $\times$ 7–23, with 5–13 conidiophores	149–332 $\times$ 5–7	6–14	38–103 $\times$ 6–9	4–10
<i>P. luzianensis</i> (8)	50–88, substomatal	Synnematous, synnemata 315–600 $\times$ 12–47, with 6–41 conidiophores	141–600 $\times$ 3–5	8–21	22–89 $\times$ 5–7	1–8
<i>P. nigricans</i> (2)	A	Mono, stomatal, Fascicle with 2–12 conidiophores	15–125 $\times$ 3.5–5	Multi	30–80 $\times$ 3.5–5	3–5
<i>P. sennae</i> (1)	P, 42–183, text. ang., erumpent	Mono, fascicle compact on stromata	30–76 $\times$ 4–6	1–5	24–132 $\times$ 3–5	1–8

Table 1. (continued)

<i>Pseudocercospora</i> species	Stromata (μm)	Conidiophores / Fascicles	Conidiophores (μm)	Septation	Conidia (μm)	Septation
<i>P. sennae-rugosae</i> (1)	152–245/ textura angularis at base, prismatica above subepidermal erumpent	Mono, fascicle compact on stromata	50–66 $\times$ 4–5	2–12	17–193 $\times$ 3–4 Strongly curved almost u-shaped	3–18
<i>P. sieberiana</i> (9)	A	Mono, fascicle with up to 12 conidiophores, stomatal	37.5 $\times$ 2–2.5		27.5–72.5 $\times$ 2.5–3	1–6
<i>P. simulata</i> (10)	A	Mono, fascicle superficial with 2–20 conidiophores	50–300 $\times$ 3–5	Multi	20–80 $\times$ 3–7	1–5 (3)
<i>P. singaporensis</i> (3)	A	Mono, fascicles with 2–10 conidiophores, stomatal	31–77 $\times$ 4.5–5.5	1–4	30–67 $\times$ 3.5	1–4 (3)
<i>P. subcuticularis</i> (1)	125–225, textura angularis, erumpent intraepidermal	Mono, fascicles densely compacted, on stromata	33–56 $\times$ 4–7	2–7	26–92 $\times$ 4–7	0–13
<i>P. taichungensis</i> (7)	30–100 wide, erumpent	Mono, fascicles densely compact, on stromata	10–25 $\times$ 1–3	0–2	20–55 $\times$ 1.5–3	1–6

(1) Present study, (2) Deighton (1976), (3) Yen & Lim (1980), (4) Braun (1989), (5) Yen (1981), (6) Singh et al. (2000), (7) Hsieh & Goh (1990), (8) Hernández-Gutiérrez & Dianese (2009), (9) Ram & Mallaiah (1992), (10) Castañeda-Ruiz & Braun (1989)

A – absent

S – small, no dimensions offered

Mono – mononematous

Multi – multiseptate, no number offered

Key to *Pseudocercospora* species on hosts of the genus *Cassia* s. lat., including *Chamaecrista* and *Senna* species

- 1 Conidiophores synnematosus 2
- 1 Conidiophores mononematous 5
- 2(1) Synnemata 315–600 μm long; conidiophores 8–21-septate; conidia 1–8-septate, 22–89 $\times$ 5–7 μm *P. luzianiensis*
- 2 Synnemata < 400 μm long 3
- 3(2) Synnemata 120–280 $\times$ 15–60; conidia 1–4-septate, 25–35 $\times$ 5–8 μm ; stromata 30–50 μm diam., substomatal to intraepidermal *P. chamaecristae*
- 3 Synnemata > 300 μm long; conidia 4–12-septate 4

- 4(3) Synnemata composed of 5–13 conidiophores, $149\text{--}332 \times 7\text{--}23\ \mu\text{m}$; conidiophores 6–14-septate; conidia 4–10-septate, $38\text{--}103 \times 6\text{--}9\ \mu\text{m}$; stromata $25\text{--}50\ \mu\text{m}$, substomatal, textura globosa *P. exilis*
- 4 Synnemata composed of 16–65 conidiophores, $208\text{--}335 \times 20\text{--}83\ \mu\text{m}$; conidia 4–12-septate, $35\text{--}79 \times 5\text{--}8\ \mu\text{m}$; stromata, $35\text{--}83\ \mu\text{m}$ diam., substomatal, textura globosa *P. chamaecristigena*
- 5(1) Stromata present 6
- 5 Stromata absent 8
- 6(5) Stromata minute 7
- 6 Stromata well-developed 12
- 7(6) Stromata small; conidiophores mostly on external hyphae, densely fasciculate; conidia 3–7-septate, up to $75\ \mu\text{m}$ long *P. angustata*
- 7 Stromata $3\text{--}5\ \mu\text{m}$ diam.; conidiophores on stomatal fascicles and laterally on creeping hyphae, conidia 1–5-septate, up to $55\ \mu\text{m}$ long *P. cassiae-diphyllae*
- 8(5) Conidiophores in fascicles, exclusively emerging through stomata 9
- 8 Conidiophores also solitary, on external hyphae 10
- 9(8) Conidiophores short, $37.5 \times 2\text{--}2.5\ \mu\text{m}$; conidia 1–6 septate, narrow, $27.5\text{--}72.5 \times 2.5\text{--}3\ \mu\text{m}$ *P. sieberiana*
- 9 Conidiophores $15\text{--}130 \times 3.5\text{--}5.5\ \mu\text{m}$; conidia 1–6-septate, $30\text{--}100 \times 3.5\text{--}5\ \mu\text{m}$ *P. nigricans* (incl. *P. cassiae-occidentalis*, *P. singaporensis*)
- 10(8) Conidiophores up to $300\ \mu\text{m}$ long; conidia mostly 1–5-septate, $20\text{--}80 \times 3\text{--}7\ \mu\text{m}$ *P. simulata*
- 10 Conidiophores up to $80\ \mu\text{m}$ long 11
- 11(10) Conidia 1–10-septate, $15\text{--}90\ \mu\text{m}$ long *P. cassiae-alatae*
- 11 Conidia 2–5-septate, $14\text{--}55\ \mu\text{m}$ long *P. cassiae-sophorae*
- 12(6) Stromata substomatal 13
- 12 Stromata intradermal, erumpent 14
- 13(12) Stromata up to $50\ \mu\text{m}$ diam.; conidiophores 1–5-septate, $50\text{--}130 \times 5\text{--}7\ \mu\text{m}$, conidia thick walled, 0–4-septate, $28\text{--}65 \times 5\text{--}7\ \mu\text{m}$ *P. aquae-emendadasensis*
- 13 Stromata up to $25\ \mu\text{m}$ diam.; conidiophores 0–1-septate, $15\text{--}27 \times 3.5\text{--}4\ \mu\text{m}$, conidia 3–10-septate, $29\text{--}94 \times 3.5\text{--}4.5\ \mu\text{m}$ *P. cassiae-siameae*
- 14(12) Stromata globose, $25\text{--}40\ \mu\text{m}$ diam.; conidiophores aseptate, $6\text{--}11 \times 2\text{--}3\ \mu\text{m}$; conidia strictly 3-septate, $22\text{--}36 \times 2\text{--}2.5\ \mu\text{m}$ *P. cassiigena*
- 14 Stromata elongated, $45\ \mu\text{m}$ wide, or globose, reaching more than $100\ \mu\text{m}$ in diam. 15
- 15(14) Stromata elongated; primary conidiophores fasciculate on stromata, secondary conidiophores on superficial hyphae originating from stromata; conidiophores 0–2-septate, $10\text{--}30 \times 2.5\text{--}5\ \mu\text{m}$; conidia 2–8-septate, $25\text{--}65 \times 3\text{--}4\ \mu\text{m}$ *P. cassiae-fistulae*

- 15 Stromata globose reaching over 200 µm in diam. 16
- 16(15) Conidia up to 18-septate; stromata over 200 µm diam. 17
- 16 Conidia up to 8-septate; stromata reaching up to 183 µm diam. 18
- 17(16) Conidiophores 2–12-septate, 50–66 × 4–5 µm; conidia 3–18-septate, 17–193 × 3–4 µm *P. sennae-rugosae*
- 17 Conidiophores 2–7-septate, 33–56 × 4–7 µm; conidia 0–13-septate, 26–92 × 4–7 µm *P. subcuticularis*
- 18(16) Conidiophores 1–5-septate, 30–76 × 4–6 µm, sometimes showing percurrent proliferations; conidia 1–8-septate, 24–132 × 3–5 µm *P. sennae*
- 18 Conidiophores 0–2-septate, 10–25 × 1–3 µm; conidia 1–6-septate, 20–55 × 1.5–3 µm *P. taichungensis*

Sirosporium sclerolobii A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.**
 MycoBank MB 814805

Fig. 8

Holotype: BRAZIL. Goiás: Cristalina, Fazenda Nova Índia, on leaves of *Sclerolobium paniculatum* var. *rubiginosum* (Tul.) Benth. (*Fabaceae*), 10 Apr 1996, J.C. Dianese (UB – Mycol Col. 4933).

Etymology: Specific epithet referring to the host genus, *Sclerolobium*.

Diagnosis: Differs from the similar *S. munduleae* in having 1–29-septate conidia, 15–107 µm long (vs. conidia up to 14 septate and up to 80 µm long in *S. munduleae*).

Description: Lesions 2–13 mm diam., irregular, coalescent, amphigenous, dark brown, without a limiting margin. Colonies exclusively hypophyllous, caespitose, yellowish brown. Mycelium internal and external. Stromata 33–66 µm diam., well-developed, *textura angularis*, erumpent, light brown, originating from the internal mycelium. Primary conidiophores on top of the stromata, in loose fascicles, simple or branched, straight or slightly curved, narrowly lageniform to cylindrical, 16–33 µm long, 4–5 µm broad at the widest part, 0–5-septate, brown-olivaceous, smooth, thin-walled; conidiogenous cells terminal, integrated, mono- or polyblastic, sympodial; conidiogenous loci conspicuous, thickened and dark. Secondary conidiophores formed as single polyblastic conidiogenous cells laterally differentiated on external hyphae, arising from stromata. Conidia solitary, curved, straight when young, later flexuous or sinuous, subcylindrical to obclavate, sometimes cylindrical, young conidia show thin walls, but mature conidia are thick-walled, often constricted at the septa; obconically truncate at the base, with a moderately thick, dark hilum, 1–2 µm wide, rounded to broadly rounded at the apex, 15–107 µm long, 3–9 µm diam. at the widest part, 1–2 µm at the base, 2–4 µm near the apex, 1–29-septate, occasionally with some oblique septa, olive-brown to light olive-brown, smooth.

Additional specimen examined: on leaves of *Sclerolobium paniculatum* var. *rubiginosum* (*Fabaceae*). **BRAZIL.** *Goiás:* Cristalina, Fazenda Nova Índia, 26 Jun 1994, 10 Apr 1996, J.C. Dianese (UB – Mycol Col. 4934).

Comment: Braun et al. (2013) indicated that “the phylogenetic meaning and value of thick conidial walls and oblique to longitudinal septa as distinguishing characters between *Sirosporium* and *Passalora* are unclear”, and further emphasized that the phylogenetic position of *Sirosporium antenniforme* (Berk. & M.A. Curtis) Bubák & Serebrian., the type species of genus, being still unknown. As the specimen on *Sclerolobium paniculatum* morphologically fits the traditional concept of the genus *Sirosporium* (Ellis 1971, 1976), and considering the currently unresolved phylogenetical position of this genus (Braun et al. 2013), it is advisable to place the new species in *Sirosporium*, at least tentatively. One of the most conspicuous characteristics of the specimen studied is the presence of fasciculate conidiophores on top of erumpent stromata and, at the same time, the presence of secondary conidiophores born laterally or apically on external hyphae, also originating from the stromata.

Amongst the 29 validly published *Sirosporium* names (<http://indexfungorum.org>, accessed on September 22, 2015), only three species were found on fabaceous hosts, viz. *S. gliricidia* (Syd. & P. Syd.) Deighton on *Gliricidia sepium* from the Philippines, *S. munduleae* (Syd. & P. Syd.) M.B. Ellis on *Mundulea suberosa* from South Africa, and *S. pluriseptatum* (Gadp., C.D. Sharma, Firdousi, A.N. Rai & K.M. Vyas) Kamal on *Cassia fistula* from India. Many of the known species associated with members of 16 other families show a similar conidial morphology, but all of them are easily separated from the new species based upon dimensional differences.

In Table 2 clear differences indicate that *S. sclerolobii* sp. nov., the fourth species found on *Fabaceae*, is easily distinguishable from the other three previously detected. Besides that, *S. gliricidia* has dark stromata and the conidiophores on the adaxial leaf surface originate directly from the stromata, forming loose fascicles, but those of the abaxial surface, are solitary and originated directly from the superficial mycelium (Ellis 1976). Here in the case of *S. sclerolobii* the colonies are exclusively hypophyllous with both, conidiophore fascicles and external mycelium, formed on the same leaf surface.

Table 2. Comparison of *Sirosporium* species infecting *Fabaceae*, subfamily *Faboideae*

<i>Sirosporium</i> species	Conidiophores		Conidia	
	Size (µm)	Septa	Size (µm)	Septa
<i>S. gliricidia</i>	–80 × 4–8	2–4	40–85 × 5–6	5–13
<i>S. munduleae</i>	–80 × 5–8	0–2	22–45 × 9–12	1–6
<i>S. pluriseptatum</i>	–101 × 3–6.5	up to 14	37–208 × 4–9	2–35
<i>S. sclerolobii</i> , sp. nov.	–66 × 4–5	0–5	15–107 × 3–9	1–29

Sirosporium munduleae has longer (up to 80 µm) conidiophores with rugose to verrugose upper portion (Ellis 1976), different from the smooth, shorter ones (up to 66 µm) formed by *S. sclerobii*. Finally, *S. pluriseptatum* has larger, up to 14-septate conidiophores (–101 × 3–6.5 µm) and much larger, 2–35-septate conidia (37–208 × 4–9 µm).

Zasmidium sclerobii A. Hern.-Gut., Z.M. Chaves & Dianese, **sp. nov.**
MycoBank MB 814806

Fig. 9

Holotype: BRAZIL. *Goiás*: Luziânia, Roberto Ronald Farm on road to Unaí, on leaves of *Sclerobium paniculatum* Vogel (*Fabaceae*), 15 Nov 1994, J.C. Dianese (UB – Mycol. Col. 6838).

Etymology: Specific epithet referring to the host genus.

Diagnosis: Different from the similar *Z. buteae* by its very large stromata, shorter conidiophores, 30–74 µm long, and shorter conidia 13–69 µm long, with 0–10 septa (vs. lacking stromata, much longer conidiophores, up to 150 µm, and much longer, 5–12 septate conidia, 64–157 µm long, in *Z. buteae*).

Description: Lesions 1–3 mm diam., amphigenous, circular or irregular, sometimes coalescent, dark brown, surrounded by a reddish margin. Colonies mainly hypophyllous, sometimes epiphyllous, caespitose, dark brown. Mycelium external and internal; external hyphae light brown, septate, verruculose to verrucose, branched, giving rise to holoblastic conidiogenous cells; internal hyphae subhyaline, septate, giving rise to stromata. Stromata well-developed, 44–125 µm diam., textura globosa, subepidermal, erumpent, subhyaline to hyaline. Primary conidiophores on top of the stromata, in dense fascicles, simple, sometimes branched, straight or slightly curved, cylindrical, 30–74 µm long, 2–3 µm broad at the widest part, 2–8-septate, olive-brown, finely verruculose at the apex, thin-walled; secondary conidiophores differentiated as simples conidiogenous cells, arising laterally or terminally on creeping external verruculose hyphae. Conidiogenous cells terminal or intercalary, integrate, or conidiophores reduced to conidiogenous cells, mono- or polyblastic, sympodial, geniculate, verruculose, olivaceous; conidiogenous loci aplanate, thickened and dark, 1.5–2 µm wide. Conidia in simple or branched chains, straight to slightly curved, cylindrical, sometimes slightly obclavate, obconically truncate at the base with a thickened dark hilum, 1.5–2 µm wide, rounded to broadly rounded or conical-truncate at the apex, with 1–2 thick, dark apical scars in catenate conidia, 13–69 µm long, 3–5 µm broad at the widest part, 1–2 µm at the base, 1–3 µm near the apex, 0–10-septate, olivaceous, verruculose to verrucose, thin-walled.

Comment: Arzanlou et al. (2007) showed that although *Zasmidium* morphologically resembles *Stenella*, the type species of the latter genus clustered in the *Teratosphaeriaceae*, whereas *Zasmidium* in the *Mycosphaerellaceae*, as confirmed by Crous et al. (2009a, b) who described and molecularly characterized new *Zasmidium* species. Furthermore, conidia of *Stenella* (type species: *S. araguata* Syd.) have pileate conidiogenous loci (David

1991), while those of *Zasmidium* [type-species: *Z. cellare* (Pers.) Fr.] and the *Stenella*-like species belonging in the *Mycosphaerellaceae* show thickened dark conidiogenous loci, a morphological character that correlates with the molecular data available (Arzanlou et al. 2007; Crous et al. 2009a, b; Braun et al. 2010).

In the following years a series of *Stenella* species with *Cercospora*-like conidiogenous loci, were recombined into *Zasmidium*, most of them based on morphological characteristics, reaching 198 species names in 2015 (<http://www.indexfungorum.org/Names/Names.asp>, Accessed on September 28, 2015), distributed in 68 different host families. The main host families with seven or more *Zasmidium* species are *Fabaceae* with 19 species, 13 in *Myrtaceae* and *Rubiaceae*, 10 in *Rutaceae*, 8 in *Apocynaceae*, 7 in *Araceae* and *Asteraceae*. The *Zasmidium* species on *Fabaceae* are distributed among 14 different host genera, six of them on *Cassia* species (Braun & Urtiaga 2013).

There are no previous records of *Zasmidium* species on *S. paniculatum*. The following dichotomous key, based on Table 3, segregates those *Zasmidium* species that infect hosts belonging in family *Fabaceae*, most of them from India.

Table 3. Morphotaxonomic features of *Zasmidium* species, including the new *Z. sclerolobii*, found on host belonging in family *Fabaceae*

<i>Zasmidium</i> species	Stromata	Conidiophores / Fascicle*	Conidiophores		Conidia		
			(µm)	Septation	(µm)	Septation	Catenate / Single
<i>Z. baubinia</i> (1)	Present	10–14 conidio- phores/fascicle	16.5–69 × 2.5–3.5	0–5	5–102.5 × 1.5–3	0–10	S and C
<i>Z. browneicola</i> (2)	Lacking	S from EH*	4.5–62.5 × 2.5–3	0–7	20–71 × 2.5–5.5	1–15	C
<i>Z. buteae</i> (3)	13–16 µm diam.	S from EH	4–30 × 2–5	0–5	64–157 × 1–5	5–12	C
<i>Z. canavaliae</i> (4)	Lacking	Fasciculate	30–300 × 3–4.5		10–50 × 3.0–5.5*	1–5	C
<i>Z. cassiae-fistulae</i> (5)	Substomatal 10–30 µm diam.	Small loose fas- cicles on super- ficial stromata	40–150 × 2–4.5	Plu- risep- tate	15–100 × 2–6	3–22	S
<i>Z. cassiae-grandis</i> (6)	Lacking	S from EH	5–50 × 2.5–7	0–3	15–90 × 3–7	0–10	S and C
<i>Z. cassiae-occidentalis</i> (7)	Present 15– 20 µm diam.	Fasciculate on stromata or EH	48–140 × 2.5–5	2–6	20–80 × 2–7	1–4	C
<i>Z. cassiae-torae</i> (8)	Small 7–10 µm diam.	Solitary or fas- ciculate	3.5–54 × 3–5	1–5	17–76 × 3.5–5	1–5	C
<i>Z. cassicola</i> (9)	Lacking	S from EH	33–90 × 1.5–4	4–5	15–51 × 1.5–4.5	2–9	C
<i>Z. citri-griseum</i> (10)	Lacking or small	S from EH	5–80 × 2.5–6	0–6	6–120 × 2–4.5	0–10	S and C
<i>Z. crotalariicola</i> (11)	Lacking	S from EH	80–140 × 4.0–5.0	2–4	22–75 × 3.5–5.0*		C

Table 3. (continued)

<i>Zasmidium</i> species	Stromata	Conidiophores / Fascicle*	Conidiophores (µm)	Septation	Conidia (µm)	Septation	Catenate / Single
<i>Z. dalbergiae</i> (12)	Lacking	S from EH	45–290 × 3–4	3–11	48–105 × 2–3	1–3	S and C
<i>Z. fabacearum</i> (13)	Lacking	S from EH	100–310 × 2–4		12–60 × 2–6	0–4	C
<i>Z. fabaceicola</i> (14)	Substromatal 17–19 µm diam.	Fascicle from stromata or ex- ternal hyphae	75–210 × 1.5–5	4–12	13.5–40 × 1.5–5	0–3	C
<i>Z. milletiae</i> (2)	Lacking	S from EH	54–70 × 3.5–5.0	7–9	20–80 × 2.5–5.5	3–17	C
<i>Z. periandrae</i> (15)	Lacking	S from EH	10–80 × 3–5	Pluri- sep- tate	15–50 × 3–4	1–4	C
<i>Z. prosopidis</i> (16)	10–75 µm diam.	Dense sporodochial fascicles on erumpent stromata	5–40 × 2–5	0–1	20–110 × 2.5–5	0–14	S
<i>Z. pterocarpigenum</i> (17)	Lacking	Small fascicles	30–110 × 3–6		20–55 × 4–7	1–5	C
<i>Z. satpurens</i> (18)	2–8 cells	Fascicles with 2–4 conidio- phores	25–72.5 × 3–4		10–42.5 × 2.5–5	1–8	S
<i>Z. sclerolobii</i> sp. nov.	44–125 µm diam.	Large stromatal fascicles	30–74 × 2–3	2–8	13–69 × 3–5	0–10	C
<i>Z. tephrosiae</i> (19)	Lacking	Solitary or on fascicle with 2–15 conidio- phores	15–150 × 3.5–5	Plu- risep- tate	40–130 × 3–5	Plu- risep- tate	S

(1) Haldar et al (2003), (2) Chaudhary et al. (2001), (3) Misra et al. (1997), (4) Deighton (1971), (5) Braun et al. (2003), (6) Braun & Uriaga (2013), (7) Kumar et al. (2006), (8) Singh et al. (2001), (9) Misra et al. (1999), (10) Fisher (1961), Braun et al. (2014), Huang et al. (2015), (11) Chaudhary et al. (1991), (12) Phengsintham et al. (2013), (13) Srivastava et al. (1994), (14) Kharwar et al. (2015), (15) Braun & Freire (2006), (16) Heald & Wolf (1911), and Braun et al. (2010), (17) Braun (2003), (18) Sharma et al. (2006), (19) Braun et al. (2010)
S from EH = Solitary (mononematous) conidiophores originated from external hyphae

Key to *Zasmidium* species on fabaceous hosts

- 1 Stromata well-structured, reaching 125 µm diam; conidiophores 2–8-septate, 30–74
× 2–3 µm, forming dense fascicle on top of the stromata; on *Sclerolobium paniculatum*,
Brazil *Z. sclerolobii*
- 1 Stromata when present with a maximum of 75 µm diam. 2
- 2 Conidiophores fasciculate on top of stromata 3

- 2 Conidiophores with loose fascicles on poorly structured stromata, or single and mostly arising from external hyphae 5
- 3 Conidiophores 2–6-septate, up to 140 µm long; conidia 1–4-septate, 20–80 µm long; on *Cassia occidentalis*, Varanasi, India *Z. cassiae-occidentalis*
- 3 Conidiophores less than 70 µm long; conidia up to 14-septate, over 100 µm long . . . 4
- 4 Conidia catenate, 0–10-septate, 5–102.5 × 1.5–3 µm; on *Bauhinia vahlii*, Bengal, India *Z. bauhiniae*
- 4 Conidia solitary, 0–14-septate, 20–110 × 2.5–5 µm; on *Prosopis*, USA . . . *Z. prosopidis*
- 5 Conidiophores on poorly structured stromata 6
- 5 Conidiophores solitary on external hyphae; stromata lacking 8
- 6 Conidiophores up to 150 µm long; conidia solitary, 5–12 septate, 64–157 × 1–5 µm; on *Butea parviflora*, Uttar Pradesh, India *Z. buteae*
- 6 Conidia up to 8-septate; on other hosts 7
- 7 Conidia 1–5 septate, 17–76 × 3.5–5 µm; on *Cassia tora*, Uttar Pradesh, India *Z. cassiae-torae*
- 7 Conidia 1–8-septate, 10–42.5 × 2.5–5 µm; on *Cassia fistula*, Madhya Pradesh, India *Z. satpurensis*
- 8 Conidiophores over 300 µm long; conidia 0–4-septate, 12–60 × 2–6 µm; on *Dolichos* sp., Uttar Pradesh, India *Z. fabacearum*
- 8 Conidiophores < 300 µm long 9
- 9 Conidiophores less than 100 µm long 10
- 9 Conidiophores over 100 µm long 15
- 10 Conidia over 100 µm long, 0–10-septate, 6–120 × 2–4.5 µm; conidiophores 0–6-septate, 5–80 × 2.5–6 µm; on *Acacia mangium*, Gabon, Africa *Z. citri-griseum*
- 10 Conidia less than 100 µm long 11
- 11 Conidia reaching 80 to 90 µm long 12
- 11 Conidia reaching 50 to 71 µm long 13
- 12 Conidiophores 7–9-septate, 54–70 × 3.5–5.0 µm; conidia 3–17-septate, 20–80 × 2.5–5.5 µm; on *Millettia ovalifolia*, Uttar Pradesh, India *Z. millettiae*
- 12 Conidiophores 0–3-septate, 5–50 × 2.5–7 µm; conidia 0–10-septate, 15–90 × 3–7 µm; on *Cassia grandis*, Cuba *Z. cassiae-grandis*
- 13 Conidiophores up to 90 µm, 4–5-septate, 33–90 × 1.5–4 µm; conidia 2–9-septate, 15–51 × 1.5–4.5 µm; on *Cassia fistula*, Uttar Pradesh, India *Z. cassicola*
- 13 Conidiophores up to 80 µm 14
- 14 Conidiophores 4.5–62.5 × 2.5–3 µm; conidia 1–15-septate, 20–71 × 2.5–5.5 µm; on *Brownea hybrida*, Uttar Pradesh, India *Z. browneicola*

- 14 Conidiophores 10–80 × 3–5 µm; conidia 1–4-septate, 15–50 × 3–4 µm; on *Periandra coccinea*, Ceará, Brazil *Z. periandrae*
- 15 Conidia 100 µm or more long 16
- 15 Conidia up to 75 µm long 18
- 16 Conidia up to 100 µm long; conidiophores 40–150 × 2–4.5 µm; on *Cassia-fistulae*, Uttar Pradesh, India *Z. cassia-fistulae*
- 16 Conidia over 100 µm long 17
- 17 Conidia pluriseptate, 40–130 × 3–5 µm; conidiophores 15–150 × 3.5–5 µm; on *Tephrosia hispida*, Alabama, USA *Z. tephrosiae*
- 17 Conidia, 48–105 × 2–3 µm; conidiophores 3–11-septate, 45–290 × 3–4 µm; on *Dalbergia cultrata*, Laos *Z. dalbergiae*
- 18 Conidiophores over 200 µm long 19
- 18 Conidiophores up to 140 µm long 20
- 19 Conidiophores 75–210 × 1.5–5 µm; conidia 0–3-septate, 13.5–40 × 1.5–5 µm; on *Vigna unguiculata*, Chitwan, Nepal *Z. fabaceicola*
- 19 Conidiophores 30–300 × 3–4.5 µm; conidia 1–5-septate, 10–50 × 3.0–5.5 µm; on *Canavalia ensiformis*, Los Banos, Philippines *Z. canavaliae*
- 20 Conidiophores 80–140 × 4.0–5.0 µm; conidia 22–75 × 3.5–5.0 µm; on *Crotalaria* sp., Gorakhpur, India *Z. crotalariicola*
- 20 Conidiophores 30–110 × 3–6 µm; conidia 1–5-septate, 20–55 × 4–7 µm; on *Pterocarpus santalinus*, Kerala, India *Z. pterocarpigenum*

Finally, following Braun et al. (2010), four cercosporoid *Stenella* species described on non-fabaceous hosts from the Brazilian Cerrado are herein transferred to *Zasmidium* because they are characterized by having typically cercosporoid conidiogenous loci and conidial hila, and rather cercosporoid conidia:

Zasmidium erythroxylicolum (Dorn.-Silva & Dianese) Dorn.-Silva, A. Hern.-Gut. & Dianese, **comb. nov.** (Mycobank, MB 814807)

Bas.: *Stenella erythroxylicola* Dorn.-Silva & Dianese, Mycologia 99: 755, 2007.

Zasmidium erythroxyli-campestris (Dorn.-Silva, Pereira-Carv. & Dianese) Dorn.-Silva, A. Hern.-Gut. & Dianese, **comb. nov.** (Mycobank, MB 814808)

Bas.: *Stenella erythroxyli-campestris* Dorn.-Silva, Pereira-Carv. & Dianese, Mycologia 99: 753, 2007.

Zasmidium erythroxyli-suberosi (Dorn.-Silva, Pereira-Carv. & Dianese) Dorn.-Silva, A. Hern.-Gut. & Dianese, **comb. nov.** (Mycobank, MB 814809)

Bas.: *Stenella erythroxyli-suberosi* Dorn.-Silva, Pereira-Carv. & Dianese, Mycologia 99:755, 2007.

Zamidium ocotei (Dorn.-Silva & Dianese) Dorn.-Silva, A. Hern.-Gut. & Dianese, **comb. nov.** (MycoBank, MB 814810)

Bas.: *Stenella ocoteae* Dorn.-Silva & Dianese, Mycologia 99:759, 2007.

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Fig. 1. *Asperisporium chapadensis* on *Galactia peduncularis*. Lesions on a leaf (top right) (scale = 10 mm); erumpent-subcuticular stroma with a fascicle of primary conidiophores (scale = 10 μ m); detailed view of a conidiophore bearing conidiogenous cells with protuberant thickened loci (right) (scale 5 μ m); representative sample of the conidia. (scale = 10 μ m). Based on the holotype UB – Mycol. Col. 11332.

Fig. 2. *Pseudocercospora acosmii-subelegantis* on *Acosmium subelegans*. Lesions on a leaf (top right) (scale = 10 mm); stomatal condiophore fascicle originated from internal hyphae (scale = 10 μ m); a representative sample of conidia with thickened walls and septa (scale = 10 μ m); at the right side of the conidiophore fascicle, a detailed view of two conidiogenous cells showing aplanate conidiogenous loci (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 7397.

Fig. 3. *Pseudocercospora aquae-emendadasensis* on *Chamaecrista orbiculata*. Lesions on a leaf (top right) (scale = 10 mm); stomatal conidiophore fascicle originated from internal hyphae (scale = 10 μ m); a representative sample of conidia with thickened walls and septa (scale = 10 μ m); at the right side of the conidiophore fascicle, a detailed view of a conidiogenous cell showing aplanate conidiogenous loci (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 13421.

Fig. 4. *Pseudocercospora sennae* on *Senna rugosa*. Lesions on a leaf (top right) (scale = 10 mm); erumpent-subepidermal wide stroma bearing tightly packed conidiophores (scale = 10 µm); a representative sample of polymorphic conidia (scale = 10 µm); at the bottom right, detailed view of a conidiogenous cell (scale = 5 µm). Based on the holotype UB – Mycol. Col. 1132.

Fig. 5. *Pseudocercospora sennae-rugosae* on *Senna rugosa*. Lesions on a leaf (top right) (scale = 10 mm); erumpent subepidermal stroma bearing a compact fascicle of highly septate conidiophores (scale = 10 μ m); a representative sample of conidia (scale = 10 μ m); a pluriseptate conidiophore with an apical conidiogenous cell (bottom right) (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 3033.

Fig. 6. *Pseudocercospora stryphnodendri* on *Stryphnodendron adstringens*. Lesions on a leaf (top right) (scale = 10 mm); stomatal poorly developed stroma with a lax fascicle of short 1-septate conidiophores (scale = 10 μ m); a representative sample of conidia (scale = 10 μ m); a detailed view of two conidiophores, one reduced to a poliblastic conidiogenous cell (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 894.

Fig. 7. *Pseudocercospora subcuticularis* on *Senna rugosa*. Lesions on a leaf (top right) (scale = 10 mm); erumpent-subepidermal stroma with a compact fascicle of conidiophores (scale = 10 μ m); a representative sample of conidia (scale = 10 μ m); a detailed view of three conidiogenous cells (bottom right) (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 4092.

Fig. 8. *Sirosporium sclerolobii* on *Sclerolobium paniculatum*. Lesions on a leaf (scale = 10 mm); erumpent-subepidermal stroma with a conidiophore fascicle, also giving rise to fertile external hyphae (scale = 10 µm); a representative sample of polymorphic conidia (scale = 10 µm); a detailed view of two polyblastic conidiogenous cells bearing dark thickened conidiogenous loci (scale = 5 µm). Based on the holotype UB – Mycol. Col. 4933.

Fig. 9. *Zasmidium sclerolobii* on *Sclerolobium paniculatum*. Lesions on a leaf (top right) (scale = 10 mm); erumpent-subepidermal stroma with a conidiophore fascicle (scale = 10 μ m); a representative sample of conidia and fertile external hyphae (scale = 10 μ m); a detailed view of three conidiogenous cells (scale = 5 μ m). Based on the holotype UB – Mycol. Col. 6838.