

Some cercosporoid hyphomycetes from Brazil – II

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Abstract – New and interesting collections of cercosporoid hyphomycetes from Brazil are reported in the present paper. *Passalora annonigena* sp. nov., *P. davillae* sp. nov., *P. mimosigena* sp. nov., *P. polygalae* sp. nov., *Pseudocercospora astroniicola* sp. nov., *P. castaneae* sp. nov., *P. cecropiigena* sp. nov., *P. chamaecristae* sp. nov., *P. combreticola* sp. nov., *P. coperniciae* sp. nov., *P. genipicola* sp. nov., *P. heliotropii* sp. nov., *P. luetzelburgiae* sp. nov., *P. mimosigena* sp. nov., *P. simaroubae* sp. nov., *P. struthanthi* sp. nov., *P. talisiae* sp. nov., *P. tetraulaciicola* sp. nov., *P. tiglii* var. *densa* var. nov., *P. velutinomaculans* sp. nov., *Ramularia minax* var. *melampodii* var. nov., *Stenella simaroubacearum* sp. nov. and *S. stemodiicola* sp. nov. are described and *Passalora atropunctata* (Racib.) comb. nov., *P. capsicicola* (Vassiljevsky) comb. nov., *P. mikaniae* (F. Stevens) comb. nov., *Pseudocercospora commonsii* (Sacc.) comb. nov., *P. couratori* (Chupp) comb. nov., *P. cupaniae* (Syd.) comb. nov., *P. hypsophila* (Syd.) comb. nov., *P. montrichardiae* (Henn.) comb. nov., *P. turnericola* (Syd.) comb. nov. and *P. vataireae* (Henn.) comb. nov. are introduced.

cercosporoid hyphomycetes / taxonomy / new species / new combinations / Brazil

Résumé – Quelques hyphomycètes cercosporoïdes du Brésil inédits ou intéressants, sont décrits ou réévalués sur la base de collections originales. Sont proposés les espèces nouvelles suivantes : *Passalora annonigena* sp. nov., *P. davillae* sp. nov., *P. mimosigena* sp. nov., *P. polygalae* sp. nov., *Pseudocercospora astroniicola* sp. nov., *P. castaneae* sp. nov., *P. cecropiigena* sp. nov., *P. chamaecristae* sp. nov., *P. combreticola* sp. nov., *P. coperniciae* sp. nov., *P. crotonigena* sp. nov., *P. genipicola* sp. nov., *P. heliotropii* sp. nov., *P. luetzelburgiae* sp. nov., *P. mimosigena* sp. nov., *P. simaroubae* sp. nov., *P. struthanthi* sp. nov., *P. talisiae* sp. nov., *P. tetraulaciicola* sp. nov., *P. tiglii* var. *densa* var. nov., *P. velutinomaculans* sp. nov., *Stenella simaroubacearum* sp. nov. et *S. stemodiicola* sp. nov. Sont également établies la variété nouvelle *Ramularia minax* var. *melampodii* var. nov. et les huit combinaisons nouvelles suivantes : *Passalora atropunctata* (Racib.) comb. nov., *P. capsicicola* (Vassiljevsky) comb. nov., *P. mikaniae* (F. Stevens) comb. nov., *Pseudocercospora commonsii* (Sacc.) comb. nov., *P. couratori* (Chupp) comb. nov., *P. cupaniae* (Syd.) comb. nov., *P. hypsophila* (Syd.) comb. nov., *P. montrichardiae* (Henn.) comb. nov., *P. turnericola* (Syd.) comb. nov. and *P. vataireae* (Henn.) comb. nov.

hyphomycètes cercosporoïdes / taxonomie / espèce nouvelle / combinaison nouvelle / Brésil

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INTRODUCTION

Between 1999 and 2001 various cercosporoid hyphomycetes were collected by the second author in different parts of Brazil, mainly in the State of Ceará. Braun *et al.* (1999) published a first contribution to the knowledge of cercosporoid fungi of the State of Ceará in Brazil, which is continued by the present paper. Numerous new species, some new combinations, new records for Brazil and new host plants are included. The cercosporoid hyphomycetes of the southern part of Brazil are relatively well-known by Viégas (1945) and numerous papers published by Batista and co-workers (da Silva & Minter, 1995), mainly from Pernambuco and Minas Gerais, whereas data from the State of Ceará are rather limited (Braun *et al.*, 1999). The latter state is one of the driest parts of Brazil, although the climate, and consequently the crops, is tropical. The great biodiversity of host plants in this area is reflected in the diversity of phytopathogenic fungi shown in the present paper

LIST OF THE SPECIES

All fungal genera and species are alphabetically arranged. Most records are from different counties of the State of Ceará, but since some other collections are from other Brazilian states, it is necessary to give detailed data of the particular localities. If not otherwise stated, the collections have been made by F. Freire. All specimens are deposited at HAL (Martin-Luther-University, Institute of Geobotany, Herbarium, Halle, Germany), duplicates are in F. Freire's private herbarium. The abbreviations 'Co.' = County and 'Distr.' = District are used.

- (1) *Camptomeris leucaenae* (F. Stevens & Dalby) Syd., Ann. Mycol. 28: 222 (1930)
On *Leucaena leucocephala* (*Mimosaceae*), Ceará, Tianguá Co., 10 Jul. 1999.

Known from Brazil on this host, but new to Ceará.

- (2) *Cercospora apii* Fres., Beitr. Mykol. 3: 91, Frankfurt a.M. 1863, *s.lat.*
On *Amaranthus* sp., Ceará, São Benedito City, 30 Oct. 2001; *Anthurus* sp. (new hosts), Ceará, Fortaleza City, 24 Oct. 2001; *Carica papaya*, Ceará, Limoeiro do Norte City, 14 Jul. 2000; *Chamaecrista* sp., Ceará, Cascavel Co., Preaoca Distr., 8 Oct. 2000 (new host); *Chenopodium ambrosioides*, Ceará, Pacajus City, 30 Nov. 2001; *Citrullus vulgaris*, Ceará, Beberibe Co., 5 Jul. 1999; *Cucumis melo*, Ceará, Quixerá Co., 9 Sept. 2000; *Hydrocotyle* sp. (new host), Ceará, Pacoti Co., 22 Sept. 2000; *Momordica charantia*, Ceará, Itaíçaba Co., 14 Jan. 2001; *Physalis* sp., Ceará, Cascavel Co., Preaoca Distr., 23 Apr. 2000; *Senna alata*, Ceará, Cascavel Co., Preaoca Distr., 23 Apr. 2000; *Spigelia anthelmia*, Ceará, Fortaleza City, 1 June 1999 (new host); *Tagetes* sp., Ceará, São Benedito City, 30 Oct. 2001; *Vitex agnus-castus*, Ceará, Fortaleza City, 25 Sept 1999; *Wedelia paludosa*, Ceará, Fortaleza City, 20 Jul. 2000 (new host); *Zinnia elegans*, Ceará, Limoeiro do Norte City, 14 Jul. 2000.

Collections of *C. apii s.lat.* on different hosts were described under different names (on *Amaranthus* = *Cercospora brachiata* Ellis & Everh., *Carica* = *C. papayae* Hansf., *Chenopodium* = *C. beticola* Sacc., *Citrullus*, *Cucumis* and *Momor-*

dica = *C. citrullina* Cooke, *Physalis* = *C. physalidis* Ellis, *Tagetes* = *C. tageticola* Ellis & Everh. and *Zinnia* = *C. zinniae* Ellis & G. Martinn. Collection on *Chamaecrista* and *Senna* (= *Cassia s.lat.*) agree with *Cercospora canescens*. All of these names are synonyms of *C. apii s.lat.* The collection on *Chenopodium ambrosioides* is also infected by *Erysiphe betae* (Vanha) Weltzien (anamorph only), which is new to Brazil. Mendes *et al.* (1998) only recorded *Oidium* sp. on *Beta vulgaris* from Brazil.

(3) *Cercospora spermacoces* Thirum. & Govindu, Sydowia 10: 286 '1962' (1963)
(Fig. 1)

On *Borreria verticillata* (*Rubiaceae*), Ceará, Cascavel Co., Preaoca Distr., 30 May 1990.

This species differs from *Cercospora borreriae-strictae* Bagyan., Jagad. & U. Braun (Bagyanarayana *et al.*, 1991) in having subcylindrical-fusiform to subcylindrical conidia with truncate to usually distinctly obconically truncate base and narrower hila and conidiogenous loci, 1-2 μm diam. *C. borreriae-strictae* is characterised by acicular conidia with truncate base, 2-3 μm diam., larger conidiogenous loci, also 2-3 μm diam., and must be reduced to synonym with *Cercospora apii s.lat.*

(4) *Cercospora zae-maydis* Tehon & E.Y. Daniels, Mycologia 17: 248 (1925)

On *Zea mays* (*Poaceae*), Minas Gerais, Sete Lagoas Co., 5 Oct. 2000, C.R. Casela.

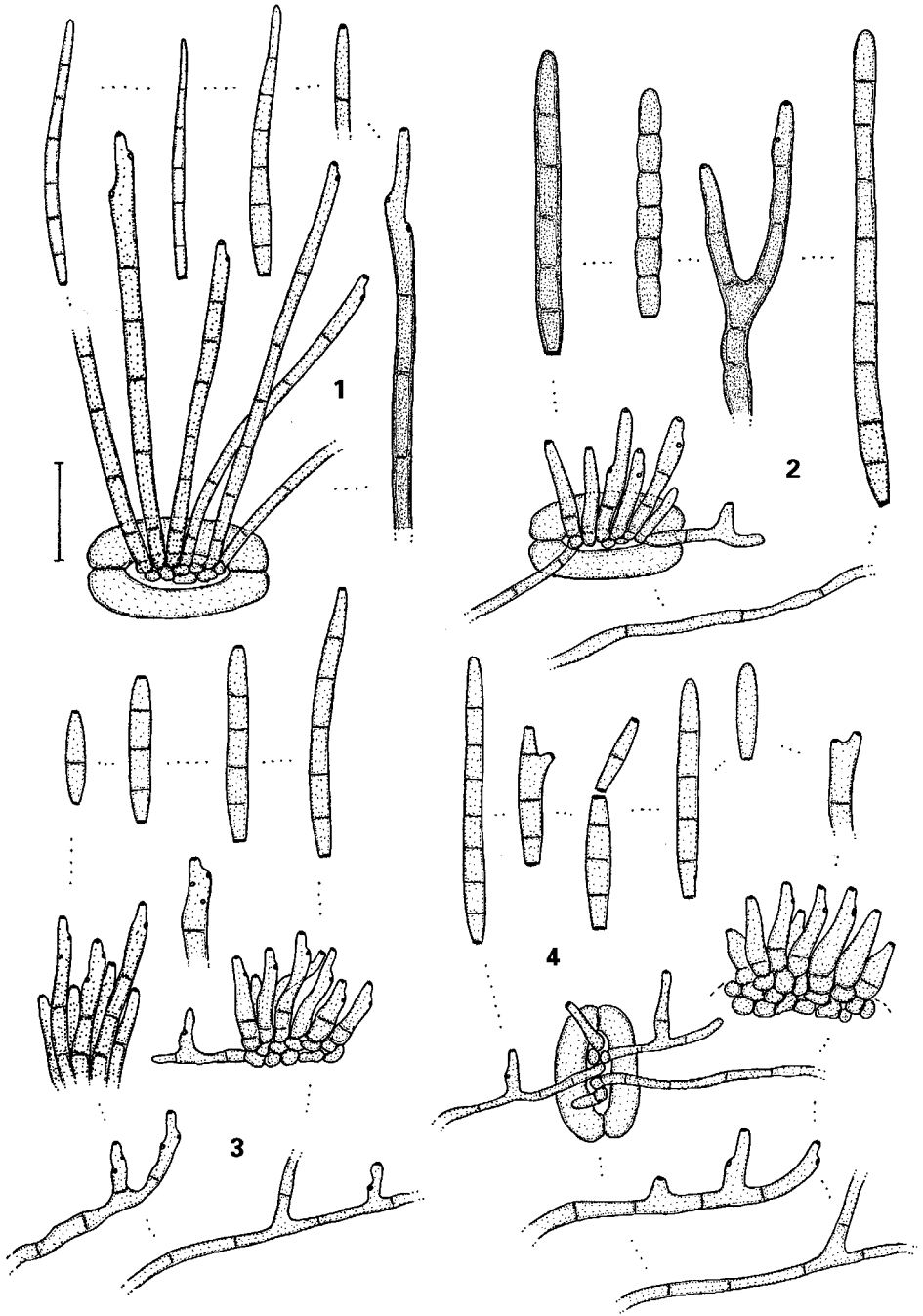
This species is not included in Mendes *et al.* (1998), but recorded from Brazil by Chupp (1954).

(5) *Passalora annonigena* sp. nov. (Fig. 2)

Maculae amphigenae, angulares-irregulares, 2-20 mm diam., atro-brunneae vel subnigrae, deinde sordide griseo-brunneae, margine indistincto vel margine tenui atro-brunneo cinctae. Caespituli hypophylli, punctiformes, nigro-brunnei. Mycelium primarium immersum; mycelium secundarium externum, superficiale. Hyphae repentes, sparse ramosae, septatae, 1.5-4 μm diam., pallide olivaceae, leves vel subleves. Stromata substomatalia, 10-30 μm diam., brunnea. Conidiophora fasciculata, pauca vel modice numerosa, laxa vel modice densa, ex cellulis stromatibus oriunda, per stoma emergentia, interdum solitaria, ex cellulis repentibus lateraliter vel terminaliter oriunda, erecta, recta, subcylindrica vel leviter geniculata-sinuosa, simplicia, raro ramosa, 10-60 \times 3-5 μm , continua vel pluri-septata, pallide olivacea vel rubro-brunnea, apice pallidiora, levia, tenui- vel leniter crassitunicata; cellulae conidiogenae integratae, terminales, 10-20 μm longae; cicatrices conidiales conspicuae, incrassatae et fuscatae, 1.5-2 μm diam. Conidia solitaria, cylindrica, cylindrico-obclavata, 25-80 \times 3-6 μm , 3-8-septata, interdum constricta, subhyalina, pallide olivacea vel olivaceo-brunnea, levia, apice obtuso, basi obconice truncata, hila leviter incrassata et fuscata, 1.5-2.5 μm diam.

Holotypus: on *Annona* sp. (*Annonaceae*), Brazil, State of Ceará, Cascavel Co., Preaoca Distr., 5 Sept. 1999, F. Freire (HAL 1701).

Leaf spots amphigenous, angular-irregular, 2-20 mm diam., dark brown to blackish, later dingy greyish brown, margin indefinite or with a narrow darker border or marginal line, sometimes with a pale yellowish to ochraceous halo. Caespituli hypophyllous, punctiform, blackish brown. Primary mycelium internal; secondary mycelium external, superficial; hyphae creeping, sparingly branched, septate, 1.5-4 μm wide, pale olivaceous, smooth or almost so. Stromata substomatal, 10-30 μm diam., brown. Conidiophores in small to moderately large fascicles,



Figs. 1-4. Conidiophore fascicles, conidiophores, conidia, superficial hyphae, 1 = *Cercospora spmacoces*, 2 = *Passalora annonigena*, 3 = *Passalora mikaniae*, 4 = *Passalora mimosigena* (bar: 20 μ m), drawn by U. Braun.

loose to moderately dense, arising from stromata, through stomata, occasionally solitary, arising from creeping hyphae, lateral or terminal, erect, straight, subcylindrical to slightly geniculate-sinuous, simple, rarely branched, $10\text{--}60 \times 3\text{--}5 \mu\text{m}$, continuous to pluriseptate throughout, pale olivaceous to reddish brown, tips paler, smooth, wall thin to somewhat thickened; conidiogenous cells integrated, terminal, $10\text{--}20 \mu\text{m}$ long; conidiogenous loci conspicuous, somewhat thickened and darkened, $1.5\text{--}2 \mu\text{m}$ diam. Conidia solitary, cylindrical, cylindrical-obclavate, $25\text{--}80 \times 3\text{--}6 \mu\text{m}$, 3-8-septate, occasionally constricted at the septa, subhyaline to pale olivaceous or olivaceous-brown, smooth, apex obtuse, base short obconically truncate, hila somewhat thickened and darkened, $1.5\text{--}2.5 \mu\text{m}$ diam.

Passalora annonigena is the only member of *Passalora* Fr. *emend.* on *Annona* spp. There is no comparable species.

(6) *Passalora atropunctata* (Racib.) **comb. nov.**

Bas.: *Cercospora atropunctata* Racib., Parasitische Pilze und Algen Javas III: 38, Batavia 1900.

Phaeoisariopsis atropunctata (Racib.) U. Braun, Nova Hedwigia 55: 220 (1992).

On *Desmodium* sp. (*Fabaceae*), Ceará, Pacajus Co., 14 June 1999.

The taxonomy of *Phaeoisariopsis* Ferraris has been discussed in detail by Crous *et al.* (2000a, 2001). Synnematosus species with geniculate (sympodial) conidiogenous cells and slightly thickened and darkened conidiogenous loci should be placed in *Passalora* (Deighton 1990, Crous *et al.* 2001). These species are only distinguished from *Passalora* by having synnematosus conidiomata, but the arrangement of conidiophores, ranging from being formed singly to arranged in sporodochia or synnemata, is not tenable for the separation of genera, which has been proven on the base of morphological as well as molecular examinations (Crous *et al.* 2001).

(7) *Passalora calotropidis* (Ellis & Everh.) U. Braun, Schlechtendalia 5: 60 (2000)

Cercospora calotropidis Ellis & Everh., Ann. Rep. Missouri Bot. Garden 9: 120 (1898).

On *Calotropis procera* (*Asclepiadaceae*), Ceará, Limoeiro do Norte, 27 Jul. 1999.

New host species for Brazil; known from Ceará on *Calotropis gigantea* (Mendes *et al.* 1998).

(8) *Passalora capsicicola* (Vassiljevsky) **comb. nov.**

Bas.: *Cercospora capsicicola* Vassiljevsky, in Vassiljevsky & Karakulin, Fungi imperfecti parasitici, 1. Hyphomycetes: 344 (1937).

Phaeoramularia capsicicola (Vassiljevsky) Deighton, Trans. Brit. Mycol. Soc. 67: 140 (1976).

On *Capsicum annum* (*Solanaceae*), Ceará, Ibiapina Co., 24 Feb. 2000.

Based on morphological as well as molecular examinations, Crous *et al.* (2001) proposed to reduce *Phaeoramularia* Munt.-Cvetk. to synonym with *Passalora*.

(9) *Passalora davillae* U. Braun, J. David & F. Freire **sp. nov.**

Cercospora davillae A.S. Mull. & Chupp, Arq. Inst. Biol. Veg. Rio de Janeiro 1: 216 (1935), *nom. inval.* (without Latin diagnosis).

Passalora davillae (A.S. Mull. & Chupp) U. Braun, J. David & F. Freire, Cryptog. Mycol. 20(2): 96 (1999), *comb. inval.*

Maculae amphigenae, suborbiculares vel angulares-irregulares, 1-5 mm diam., interdum per venas limitatae, primo purpureae, purpureo-brunneae, modice brunneae vel rubro-brunneae, deinde pallide brunneae, griseae vel griseo-albidae, margine tenui vel modice lato cinctae. Caespituli amphigeni, saepe hypophylli, atro-brunnei vel nigri, laxe vel dense aggregati. Mycelium immersum. Stromata bene evoluta, substomatalia vel intraepidermalia, 20-50 µm diam., interdum oblonga vel confluentes, atro-brunnea, ex cellulis inflatis, 2-7 µm latis composita. Conidiophora laxe vel dense fasciculata, pauca vel numerosa, ex cellulis stromatibus oriunda, per stoma emergentia vel erumpentia, erecta, recta, subcylindrica vel apicem versus attenuata, vix geniculata-sinuosa, simplicia, raro ramosa, 5-50 × 3-6 µm, 0-3-septata, pallide olivacea vel brunnea, modice vel rubro-brunnea, apice pallidiora, levia, tenui-vel leniter crassitunicata; cellulae conidiogenae integratae, terminales, 10-30 µm longae; cicatrices conidiales conspicuae, leviter incrassatae et fuscatae, 1 µm diam. Conidia solitaria, obclavata(-subcylindrica), interdum cylindrica, (15-)30-80(-100) × 2.5-4.5 µm, (0-)2-6-septata, subhyalina vel pallide olivacea, apice obtuso vel subobtusato, basi obconice truncata, hila leviter incrassata et fuscata, 1-1.5 µm diam.

Holotypus: on *Davilla* sp. (*Dilleniaceae*), Brazil, Minas Gerais, Viçosa-Escola, 5 Jun. 1933, A.S. Muller 596 (CUP-MG 596).

Braun *et al.* (1999) re-allocated *Cercospora davillae* to *Passalora* and described and illustrated this species based on material from Cuba and a new collection from Brazil on *Davilla cearensis*. However, they overlooked that *C. davillae* is an invalid name published in 1935 without Latin description, so that the present formal validation being necessary.

(10) *Passalora henningsii* (Allesch.) R.F. Castañeda & U. Braun, Cryptog. Bot. 1: 46 (1989)

Cercospora henningsii Allesch., in Engler, Pflanzenwelt Ostafrikas, Teil C: 35 (1895).

On *Manihot esculenta* (*Euphorbiaceae*), Ceará, Guaraciba do Nore City, 15 Nov. 1999 and Cascavel Co., Preaoca Distr., 5 Sept. 1999.

(11) *Passalora hydrocotyles* (Ellis & Everh.) U. Braun, Delhey & Kiehr, Fungal Diversity 6: 27 (2001)

Cercospora hydrocotyles Ellis & Everh., J. Mycol. 3: 16 (1887).

On *Hydrocotyle* sp. (*Apiaceae*), Ceará, Pacoti Co., 22 Sept. 2000.

The specimen cited is a mixed collection of *Passalora hydrocotyles* and *Cercospora apii* s.lat. *P. hydrocotyles* is new to Brazil.

(12) *Passalora mikaniae* (F. Stevens) **com. nov.** (Fig. 3)

Bas.: *Cladosporium mikaniae* F. Stevens, Trans. Ill. Acad. Sci. 10: 208 (1917).

Mycovellosiella mikaniae (F. Stevens) Deighton, Mycol. Pap. 137: 45 (1974).

On *Mikania* sp. (*Asteraceae*), Ceará, Cascavel Co., Preaoca Distr., 22 Apr. 2000.

This collection agrees well with Deighton's (1974) description and illustration of this species, which was based on the examination of type material, and is characterised as follows: Primary mycelium internal; secondary mycelium external; superficial hyphae creeping; stromata almost absent to well-developed, usually

intraepidermal, 10-50 μm diam.; conidiophores solitary, arising from creeping hyphae, or in small to moderately large, loose to usually dense fascicles, arising from stromata, subcylindrical to moderately geniculate-sinuuous, simple or occasionally branched, 10-60 \times 2-5 μm , 0-3-septate, pale olivaceous to olivaceous-brown or yellowish brown, smooth; conidiogenous loci thickened and darkened, 0.75-1.5 μm ; conidia solitary or catenate, cylindrical or subcylindrical, 10-60 \times 2-4 μm , (0-)1-6-septate, ends obtuse to truncate, 1-1.5 μm diam., hila slightly thickened and darkened.

Based on morphological as well as molecular examinations, Crous *et al.* (2001) proposed to reduce *Mycovellosiella* Munt.-Cvetk. to synonymy with *Passalora*.

(13) *Passalora mimosigena* sp. nov. (Fig. 4)

Differt a *P. mimosae* hyphis secundariis bene evolutis, conidiophoris secundariis solitariis, lateraliter oriundis et conidiis catenatis.

Holotypus: on *Mimosa caesalpiniiifolia* (*Mimosaceae*), Brazil, State of Ceará, Preaoca Distr., Cascavel County, 10 Oct. 2000, F. Freire (HAL 1712).

Leaf spots amphigenous, angular-irregular, often vein-limited, pale to medium dark brown, 1-5 mm diam. or confluent and larger. Caespituli hypophyllous, punctiform to subeffuse, dingy grey. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, creeping, sparingly branched, 1.5-4 μm wide, septate, smooth, pale olivaceous. Stromata absent to well-developed, substomatal, 10-50 μm diam., composed of swollen hyphal cells, 2-6 μm diam., yellowish to olivaceous-brown. Conidiophores solitary, arising from creeping hyphae, lateral or terminal or in small to moderately large fascicles, loose to dense, arising from stromata, emerging through stomata, erect, straight, subcylindrical to moderately geniculate-sinuuous, unbranched or occasionally branched, 5-35 \times 2.5-5 μm , 0-2-septate, pale olivaceous to olivaceous-brown, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-20 μm long; conidiogenous loci conspicuous, somewhat thickened and darkened, 1.5-2 μm diam. Conidia solitary or catenate, in simple or branched chains, cylindrical, obclavate-cylindrical, short conidia occasionally ellipsoid-ovoid, (10-)20-60 \times 2.5-4 μm , 0-9-septate, subhyaline, pale olivaceous to olivaceous-brown, smooth, apex obtuse or truncate in catenate conidia, base obconically truncate, hila slightly thickened and darkened, 1.5-2 μm diam.

Passalora mimosae (F. Stevens & Dalbey) U. Braun (1995) is the only comparable and superficially similar *Passalora* on *Mimosa* spp., which is, however, quite distinct by having solitary conidia and lacking secondary hyphae with solitary conidiophores.

(14) *Passalora polygalae* sp. nov. (Fig. 5)

Differt a *Cercospora grisea* hyphis secundariis bene evolutis, stromatibus nullis vel minutis et cicatricibus conspicuis, leniter incrassatis et fuscatis.

Holotypus: on *Polygala* sp. (*Polygalaceae*), Brazil, State of Ceará, Cascavel County, Preaoca, 11 June 1999, F. Freire (HAL 1654).

Leaf spots absent or almost so, only with diffuse or subcircular patches caused by abundant fructification. Caespituli amphigenous, usually hypophyllous, effuse, dull olivaceous, greyish olivaceous-brown to violet-brown. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, creeping, sparingly branched, 1.5-4.5 μm diam., septate, subhyaline to pale olivaceous or olivaceous-brown, smooth. Stromata absent or only composed of a few swollen

hyphal cells, brown, substomatal. Conidiophores solitary, arising from creeping hyphae, lateral, occasionally terminal, or in small, loose fascicles, arising from internal hyphae or small substomatal hyphal aggregations, emerging through stomata, erect to decumbent, straight, subcylindrical to flexuous, geniculate-sinuous, unbranched to branched, $10-80 \times 3-7 \mu\text{m}$, aseptate to pluriseptate, pale to medium brown throughout or tips paler, smooth; conidiogenous cells integrated, terminal, short conidiophores often reduced to conidiogenous cells, $10-30 \mu\text{m}$ long; conidiogenous loci somewhat thickened and darkened, $1-1.5 \mu\text{m}$ diam. Conidia solitary, obclavate-cylindrical, 1-6-septate, pale olivaceous, smooth, apex obtuse to subacute, base obconically truncate, $1-1.5 \mu\text{m}$ diam., hila slightly thickened and darkened.

Pseudocercospora grisea (Cooke & Ellis) U. Braun (= *Cercospora grisea* Cooke & Ellis) is a superficially similar cercosporoid hyphomycete of *Polygala* spp. in South America (Chupp 1954, Braun 1999), which is, however, quite distinct from *Passalora polygalae* by having well-developed, large stromata and conidiophore fascicles, sparingly developed secondary mycelium and, above all, inconspicuous conidiogenous loci.

(15) *Pseudocercospora abricola* (Boedijn) U. Braun, Nova Hedwigia 73: 419 (2001)
Cercospora abricola Boedijn, Nova Hedwigia 3: 421 (1961).

Pseudocercospora abri Deighton Trans. Brit. Mycol. Soc. 88(3): 365 (1987).

On *Abrus precatorius* (*Fabaceae*), Ceará, Cascavel Co., Preaoca, 7 Jul. 1999.

New to Brazil.

(16) *Pseudocercospora abelmoschi* (Ellis & Everh.) Deighton, Mycol. Pap. 140: 138 (1976)

Cercospora abelmoschi Ellis & Everh., J. Inst. Jamaica 1: 347 (1893).

On *Hibiscus esculentus* (*Malvaceae*), Ceará, Pacajus, 2 June 1999.

(17) *Pseudocercospora abutiloncola* (Chupp) U. Braun & Crous, Feddes Repert. 113: 113 (2002). (Fig. 6)

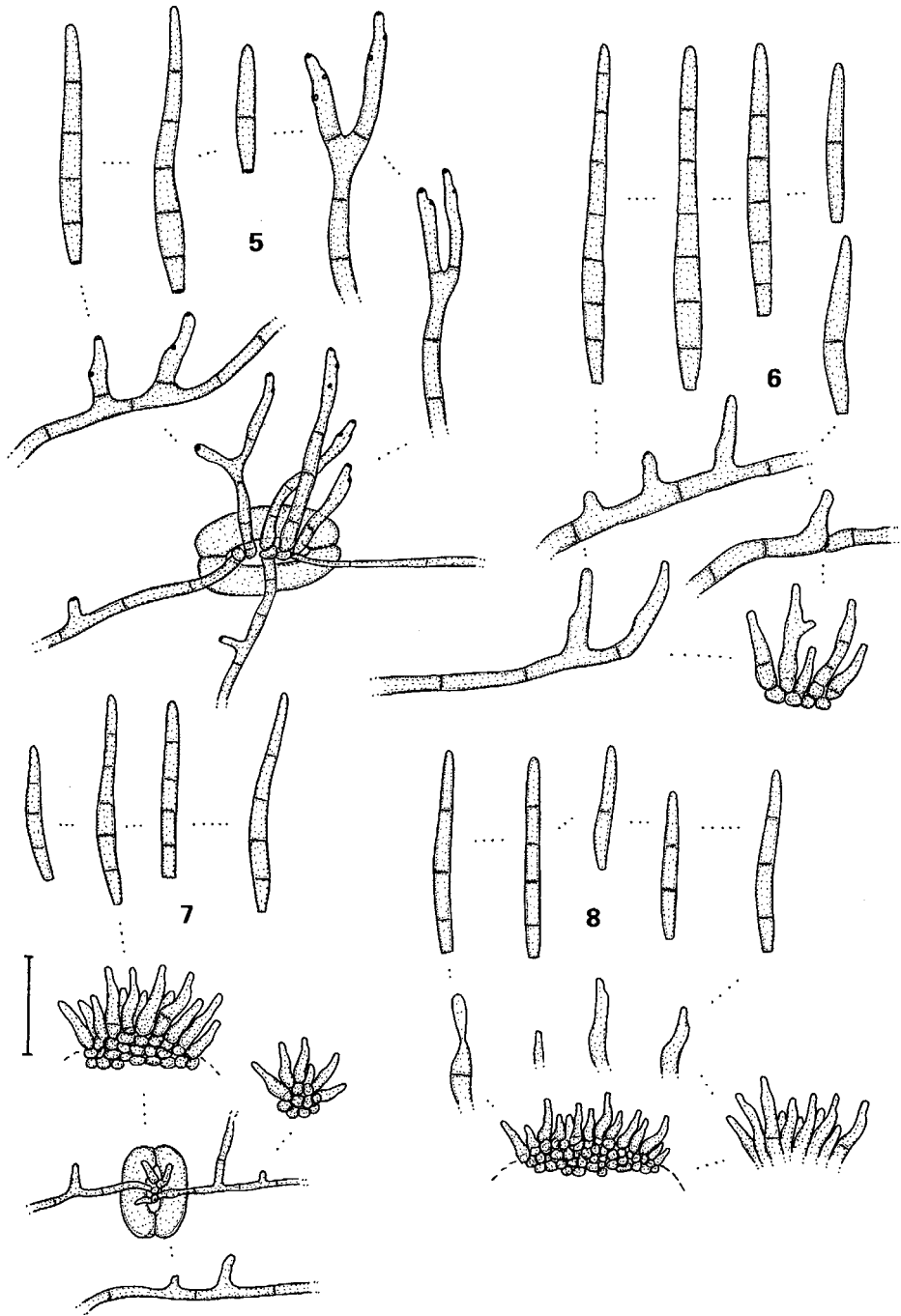
Cercospora abutiloncola Chupp, A monograph of the fungus genus *Cercospora*: 368 (1954).

Cercospora micranthae A.S. Mull. & Chupp, Arch. Inst. Biol. Veg. Rio de Janeiro 3: 95 (1936), *nom. inval.* (without Latin diagnosis).

Pseudocercospora micranthae (A.S. Mull. & Chupp) Crous *et al.*, Mycotaxon 64: 420 (1997), *comb. inval.*

On *Abutilon* sp. (*Malvaceae*), Ceará, Beberibe Co., 3 Jul. 1999; *Sida* sp., Ceará, Quixeré Co., 28 Jul. 1999; *Wissadula* sp. (*Malvaceae*), Ceará, Fortaleza City, 2000.

Pseudocercospora collections on host species of the allied genera *Abutilon*, *Sida* and *Wissadula* (*Malvaceae*, *Malveae*) are morphologically indistinguishable and should be referred to *P. abutiloncola*, the oldest valid name for this fungus. *C. micranthae*, described from Brazil on *Sida micrantha*, is an invalid name. This fungus is characterised by having well-developed superficial hyphae with solitary lateral conidiophores and cylindrical-obclavate conidia formed singly, $(15-20-80 \times 3-5 \mu\text{m})$, 1-7-septate. *Pseudocercospora pavoniae* (Petr. & Cif.) U. Braun [= *Cercospora urenae* Viégas & Chupp, *Pseudocercospora urenae* (Viégas & Chupp) Hernandez-Gutierrez & Dianese], distributed in South America on host species



Figs. 5-8. Conidiophore fascicles, conidiophores, conidia, superficial hyphae, 5 = *Passalora polygalae*, 6 = *Pseudocercospora abutilonicola* (from *Wissadula* sp.), 7 = *Pseudocercospora astronicola*, 8 = *Pseudocercospora cecropiigena* (bar: 20 μ m), drawn by U. Braun.

of the allied genera *Pavonia* and *Urena* (Malvaceae, Ureneae) is very close to *P. abutilonicola*, but differs in having broader conidia, $20\text{-}100 \times 4\text{-}6.5 \mu\text{m}$.

(18) *Pseudocercospora annonae-squamosae* U. Braun & R.F. Castañeda, Cryptog. Bot. 1: 50 (1989)

On *Annona muricata* (Annonaceae), Ceará, Pacajus Co., 19 Sept. 1999; *A. squamosa*, Ceará, Pacajus Co., 11 May 1999.

This species is new to Brazil, and *Annona muricata* being a new host species.

(19) *Pseudocercospora astroniicola* sp. nov. (Fig. 7)

Differt a *P. comocladiae* and *P. mombin* hyphis secundariis, cum conidiophoris solitariis lateraliter oriundis.

Holotypus: on *Astronium fraxinifolium* (Anacardiaceae), Brazil, State of Ceará, Cascavel County, Preaoca, 19 Sept. 1999, F. Freire (HAL 1715).

Leaf spots amphigenous, subcircular to somewhat angular-irregular, 1-8 mm diam., brown, later greyish brown to dingy grey, margin indefinite or with a darker marginal line, often vein-limited, finally centre dropping out, forming 'shot-holes'. Caespituli amphigenous, punctiform to subeffuse, dark brown, on the upper leaf surface conspicuous, punctiform by large sporodochial conidiomata, on the lower leaf surface less conspicuous. Primary mycelium internal; secondary mycelium external; secondary hyphae emerging through stomata, superficial, creeping, sparingly branched, 1-3 μm wide, subhyaline to pale olivaceous, smooth. Stromata almost absent to well-developed, 10-80 μm diam., substomatal to intraepidermal, olivaceous-brown. Conidiophores solitary, arising from creeping hyphae, lateral, or in small to very large fascicles, arising from stomata, through stomata or erumpent, erect, straight, subcylindrical-conical to moderately geniculate-sinuous, unbranched, $5\text{-}25 \times 2\text{-}5 \mu\text{m}$, 0-1-septate, subhyaline to pale olivaceous, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells; conidiogenous loci inconspicuous. Conidia solitary, obclavate-cylindrical, subfusiform, $20\text{-}55 \times 2\text{-}4 \mu\text{m}$, (1-)2-4(-5)-septate, subhyaline to pale olivaceous, smooth, apex obtuse or subacute, base truncate to obconically truncate, 1-1.5 μm diam., hila unthickened, not darkened.

Pseudocercospora astroniicola sp. nov. belongs to a group of morphologically similar *Pseudocercospora* spp. of various hosts of the Anacardiaceae, viz., *P. comocladiae* (Petr. & Cif.) Deighton and *P. mombin* (Petr. & Cif.) Deighton, which are, however, distinguished by lacking secondary hyphae with solitary lateral conidiophores.

(20) *Pseudocercospora bixae* (Allesch. & F. Noack) Crous, Alfenas & P.W. Barreto, Mycotaxon 64: 418 (1997)

Cercospora bixae Allesch. & F. Noack, Bot. Inst. Agron. Est. São Paulo em Campinas 9: 85 (1898).

On *Bixa orellana* (Bixaceae), Ceará, Preaoca, 3 Jul. 1999.

Holotype material of this species has recently been traced and re-examined: on *Bixa orellana*, Brazil, Campinas, Nov. 1897, F. Noack (B).

(21) *Pseudocercospora borrieriae* (Ellis & Everh.) Deighton, Mycol. Pap. 140: 140 (1976)

Cercospora borrieriae Ellis & Everh., Proc. Acad. Nat. Sci. Philad. 46: 379 (1894).

On *Borreria* sp. (*Rubiaceae*), Ceará, Quixeré City, 14 Jul. 2000; *B. verticillata*, Ceará, Cascavel Co., Preaoca Distr., 23 Apr. 2000.

Borreria verticillata is a new host species for this fungus.

(22) *Pseudocercospora bradburiae* (E. Young) Deighton, Mycol. Pap. 140: 140 (1976)

Cercospora bradburyae E. Young, Mycologia 8: 46 (1916).

On *Centrosema brasilianum* (*Fabaceae*), Ceará, Tianguá Co., 9 Jul. 1999.

This species is new to Brazil and *C. brasilianum* is a new host species.

(23) *Pseudocercospora cassiae-fistulae* Goh & W.H. Hsieh, *Cercospora* and Similar Fungi from Taiwan: 180 (1990)

On *Senna rizzinii* (*Caesalpinaceae*), Ceará, Cascavel Co., Preaoca, 22 Aug. 1999.

This is the first record of this species from Brazil on a new host species.

(24) *Pseudocercospora cecropiigena* sp. nov. (Fig. 8)

Differt a *P. cecropiae* et *P. cecropiicola* stromatibus 10-60 μm diam. et conidiophoris fasciculatis.

Holotypus: on *Cecropia* sp. (*Cecropiaceae*), Brazil, State of Ceará, Preaoca District, Cascavel County, 10 Dec. 2000, F. Freire (HAL 1707).

Leaf spots epiphyllous, subcircular to angular-irregular, 1-5 mm diam. or confluent and larger, brown, later greyish white or dingy grey, with a narrow dark margin. Caespituli epiphyllous, punctiform, dark brown to black, scattered. Mycelium internal. Stromata intraepidermal, 10-60 μm diam., immersed to somewhat erumpent, olivaceous-brown. Conidiophores in small to moderately large fascicles, loose to dense, arising from stromata, erumpent, erect, straight, subcylindrical-conical to moderately geniculate-sinuous, unbranched, 5-30 \times 2-5 μm , 0-1 (-2)-septate, pale olivaceous to olivaceous-brown, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-20 μm long; conidiogenous loci inconspicuous. Conidia solitary, subcylindrical to obclavate-subcylindrical (-fusiform), (15-)20-40 \times 2-4 μm , 1-4-septate, subhyaline to pale olivaceous, apex obtuse to subacute, base obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

Pseudocercospora cecropiigena sp. nov. is well-distinguished from *P. cecropiae* (F. Stevens) Deighton and *P. cecropiicola* Deighton (Deighton (1976) by having well-developed stromata and fasciculate conidiophores.

(25) *Pseudocercospora chamaecristae* sp. nov. (Fig. 9)

Differt a *P. vitis* synnematibus 120-280 μm longis, conidiis 25-35 μm longis, 1-4-septatis, apice obtuso.

Holotypus: on *Chamaecrista* (*Cassia*) sp. (*Caesalpinaceae*), Brazil, State of Ceará, Preaoca District, Cascavel County, 9 Nov. 2000, F. Freire (HAL 1718).

Leaf spots amphigenous, subcircular to angular-irregular, 1-5 mm diam., pale to dark brown, finally greyish brown, margin indefinite, narrow, dark. Conidiomata hypophyllous, scattered, brown. Mycelium internal. Stromata immersed, substomatal to intraepidermal, 30-50 μm diam., medium to dark brown. Numerous conidiophores aggregated in dense synnematous conidiomata, synnematata 120-280 μm long and 15-60 μm wide, apically splaying out, individual conidiophores 2-4 μm wide, apex up to 6 μm wide, pluriseptate throughout, olivaceous to olivaceous-brown, smooth; conidiogenous cells integrated, terminal, subcylin-

drical to subclavate, moderately geniculate-sinuous, 10-35, long; conidiogenous loci inconspicuous or subconspicuous (somewhat refractive, but not darkened, 1.5-2 µm diam.). Conidia solitary, subcylindrical(-obclavate), ellipsoid-fusiform, straight to curved, 25-35 × 5-8(-10) µm, 1-4-septate, pale olivaceous-brown, smooth, wall thin to somewhat thickened, apex obtuse, base obconically truncate, 1.5-2.5 µm diam., hila unthickened, not darkened.

Pseudocercospora chamaecristae sp. nov. belongs to *Pseudocercospora* Lév. sect. *Pseudocercospora* and is morphologically close to *P. vitis* (Lév.) Speng., the type species of this genus, but the latter species differs in having much longer synnemata and longer, more or less rostrate, 3-17-septate conidia (Deighton 1976).

(26) *Pseudocercospora chamaesyces* (F. Stevens & Dalbey) Deighton, Trans. Brit. Mycol. Soc. 88(3): 390 (1987)

Septoriopsis chamaesyces F. Stevens & Dalbey, Mycologia 11: 4 (1919).

On *Chamaesyce hyssopifolia* (*Euphorbiaceae*), Ceará, Cascavel Co., Praela, 20 Mar. 2000.

(27) *Pseudocercospora combreticola* sp. nov. (Fig. 10)

Differt a *P. combretigena* hyphis secundariis evolutis et conidiophoris brevibus.

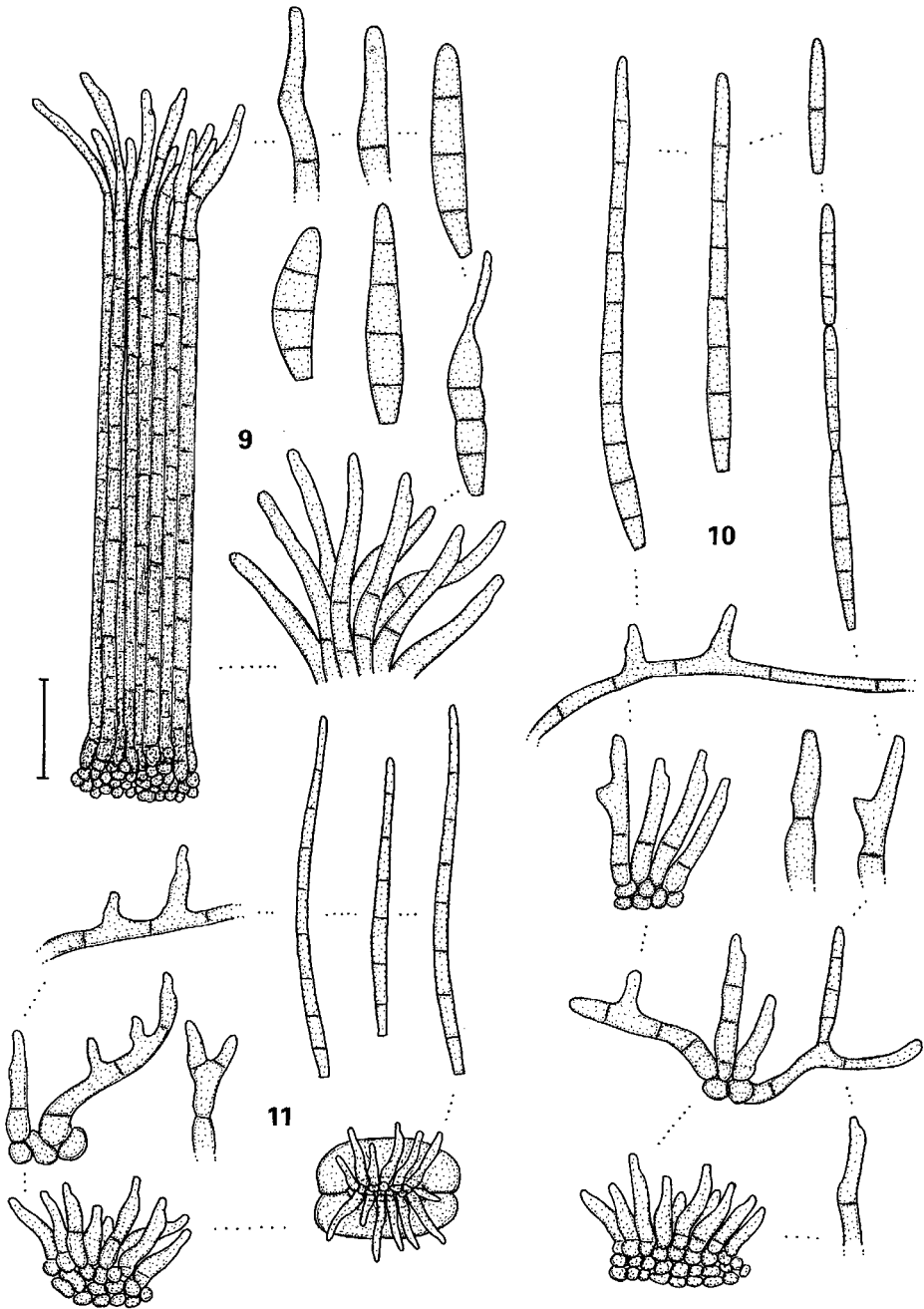
Holotypus: on *Combretum* sp. (*Combretaceae*), Brazil, State of Ceará, Limoeiro do Norte County, 28 Jul. 1999, F. Freire (HAL 1702).

Leaf spots amphigenous, subcircular to angular-irregular, 1-3 mm diam., brown, later greyish brown to greyish white, margin indefinite or with a dark marginal line, often somewhat raised. Caespituli hypophyllous, punctiform, brown to greyish white by the formation of abundant conidia. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, creeping, sparingly branched, septate, olivaceous to olivaceous-brown, 1.5-3 µm wide, smooth or faintly rough-walled. Stromata substomatal, 10-30 µm diam., olivaceous-brown. Conidiophores solitary, arising from creeping hyphae, lateral, or conidiophores in small to moderately large fascicles, loose to moderately dense, arising from stromata, through stomata, erect, subcylindrical-conical to moderately geniculate-sinuous, unbranched or rarely branched, 5-60 × 3-8 µm, 0-6-septate, pale olivaceous, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 µm long; conidiogenous loci inconspicuous. Conidia solitary, occasionally in short chains, narrowly cylindrical or obclavate-cylindrical, 25-90 × 2-4 µm, 1-9(-10)-septate, subhyaline to pale olivaceous, smooth to faintly rough-walled, apex acute to obtuse, base truncate to obconically truncate, 1-3 µm diam., hila unthickened, not darkened.

Pseudocercospora combreticola sp. nov. differs from *P. combretigena* U. Braun (= *Cercospora combreti* Boedijn, non *Pseudocercospora combreti* A.K. Singh & Kamal, see Braun 2001) in having superficial secondary mycelium and much shorter conidiophores. *Cercospora combreti-ovalifolii* Patw. & Sathe (Patwardhan & Sathe 1966) is characterised by having very long, fasciculate conidiophore and secondary mycelium is absent. Various *Pseudocercospora* spp. are known from *Terminalia* spp. (see 'IMI Descriptions of Fungi and Bacteria, Set 119, 1181-1190, 1994'), but all of these taxa are quite distinct from *P. combreticola*.

(28) *Pseudocercospora commonsii* (Sacc.) comb. nov. (Fig. 11)

Cercospora commonsii Sacc., Syll. Fung. 10: 623 (1892).



Figs. 9-11. Conidiophore fascicles, conidiophores, conidia, superficial hyphae, 9 = *Pseudocercospora chamaecristae*, 10 = *Pseudocercospora combreticola*, 11 = *Pseudocercospora commonsii* (bar: 20 μ m), drawn by U. Braun.

Cercospora stylosanthis Ellis & Everh., J. Mycol. 3: 13 (1887), non Spieg. 1883.

On *Stylosanthes elatior* (*Fabaceae*), USA, Del., Faulkland, 12 Sept. 1886, A. Commons, No. 336 (NY), lectotype of *C. commonsii* (selected here, isolectotypes: Ellis & Everh., North American Fungi 1764).

On *Stylosanthes* sp. (*Fabaceae*), Ceará, Cascavel Co., Preaoca, 11 Jun. 1999 and 10 Sept. 2000.

Leaf spots amphigenous, diffuse or subcircular to angular-irregular, oblong, dull medium to dark brown or greyish brown, 1-5 mm diam. or confluent, sometimes occupying entire leaves, margin indefinite. Caespituli mainly hypophyllous, punctiform to effuse, dense. Primary mycelium internal; secondary mycelium almost absent to well-developed, superficial, hyphae creeping, sparingly branched, septate, smooth, 1-3 μm wide, subhyaline to pale olivaceous-brown. Stromata lacking to well-developed, substomatal to intraepidermal, 10-40 μm diam. Conidiophores in small to moderately large fascicles, loose to dense, arising from internal hyphae or stromata, emerging through stomata or erumpent through the cuticle or conidiophores solitary, arising from creeping hyphae, solitary, lateral or terminal, erect to decumbent, decumbent threads often developing into creeping secondary hyphae, straight, subcylindrical to geniculate-sinuous, unbranched to branched, 5-40 \times (2-)3-5(-6) μm , width often irregular, often with constrictions and swellings, aseptate to pluriseptate, smooth, pale olivaceous to medium olivaceous-brown; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 μm long; conidiogenous loci inconspicuous. Conidia solitary, narrowly obclavate-filiform, (30-)40-80(-90) \times 2-4 μm , pluriseptate, mostly 4-10-septate, smooth, subhyaline to pale olivaceous, apex obtuse or acute, base short obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

Based on inconspicuous conidiogenous loci, *Cercospora commonsii* has to be reallocated to *Pseudocercospora*.

(29) *Pseudocercospora coperniciae* sp. nov.

(Fig. 12)

Differt a *P. manuensis* conidiis laxe (0-)1-4(-6)-septatis.

Holotypus: on *Copernicia prunifera* (*Arecaceae*), Brazil, State of Ceará, Cascavel County, Preaoca District, 28 Feb. 2001, F. Freire (HAL 1709). **Paratypus:** on *C. prunifera*, Brazil, State of Ceará, Cascavel County, Preaoca District, 20 Sept. 1999, F. Freire (HAL 1706).

Leaf spots amphigenous, subcircular to irregular, 3-15 mm diam. or confluent and larger, pale brown, greyish brown, finally dingy grey, margin indefinite or with a diffuse dark border. Caespituli amphigenous, punctiform, loose to dense, dark brown. Mycelium internal. Stromata substomatal to intraepidermal, 10-30(-40) μm diam., olivaceous-brown. Conidiophores in small to moderately large fascicles, loose to moderately dense, arising from stromata, erect, straight, subcylindrical-conical to moderately geniculate-sinuous, unbranched, 5-15 \times 2-5 μm , 0(-1)-septate, pale olivaceous, smooth; conidiophores usually reduced to conidiogenous cells; conidiogenous loci inconspicuous, occasionally subdenticulate, but wall neither thickened nor darkened. Conidia solitary, cylindrical, obclavate-cylindrical, fusiform, (10-)15-50(-60) \times 2-3.5 μm , (0-)1-4(-6)-septate, subhyaline to pale olivaceous, apex obtuse to subacute, base truncate to obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

There are several *Pseudocercospora* spp. on hosts belonging to the *Arecaceae*. *P. manuensis* Matsush. (Matsushima 1993: 63), isolated from rotten petioles of *Palmae* in Peru, is morphologically close to *P. coperniciae* sp. nov., but

differs in having densely pluriseptate (3-13-septate) conidia. *P. carpentariae* Deighton (1987: 403) is characterised by having very long and wide conidiophores, up to $160 \times 5-6.5(-8) \mu\text{m}$, and obclavate conidia, $32-43 \times 6.5-8 \mu\text{m}$, and *P. rhapsicola* (Tominaga) Goh & W.H. Hsieh (Hsieh & Goh 1990) possesses much longer, pluriseptate conidia, much longer conidiophores and quite distinct lesions.

(30) *Pseudocercospora corchorifoliae* (Thirum. & Govindu) Deighton, Mycol. Pap. 140: 142 (1976) (Fig. 13)

Cercospora corchorifoliae Thirum. & Govindu, Sydowia 8: 347 (1954).

On *Melochia pyramidata* (Sterculiaceae), Ceará, Cascavel Co., 21 Aug 1999.

This species is new to Brazil.

(31) *Pseudocercospora cylindrosporioides* (Solheim & Chupp) Y.L. Guo & X.J. Liu, Acta Mycol. Sinica 11: 131 (1992) (Fig. 14)

Cercospora cylindrosporioides Solheim & Chupp, in Chupp (1954: 236).

On *Casearia* sp. (Flacourtiaceae), Ceará, Carato Co., 16 Nov. 1999.

This species is new to Brazil.

(32) *Pseudocercospora formosana* (Yamam.) Deighton, Mycol. Pap. 140: 144 (1976)

Cercospora formosana Yamam., J. Soc. Trop. Agric. 6: 600 (1934).

On *Lantana camara* (Verbenaceae), Ceará, Cascavel Co., Preaoca Distr., 21 Jan 2001 (mixed collection with *Cladosporium cladosporioides* (Fresen.) de Vries and some other moulds).

New to the State of Ceará.

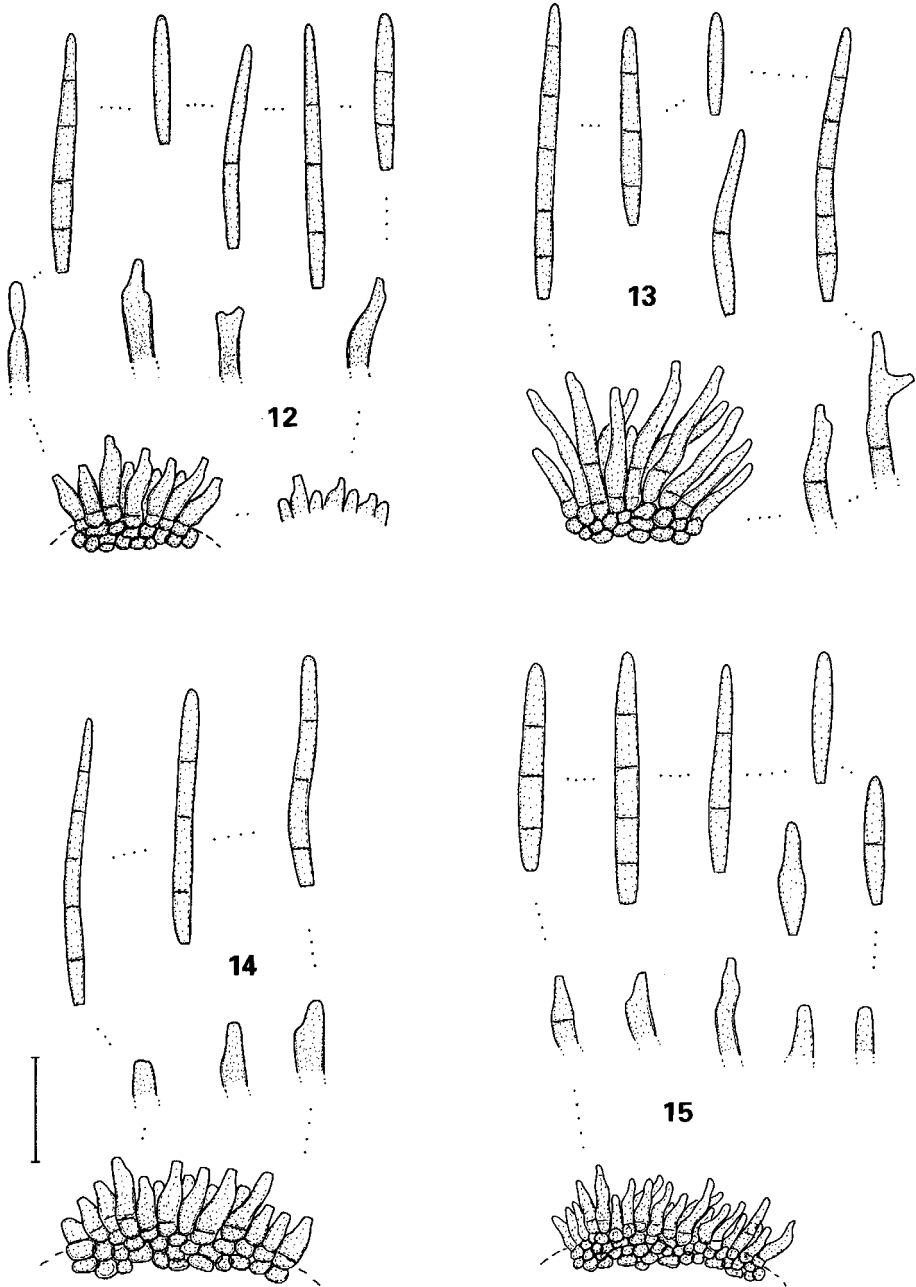
(33) *Pseudocercospora genipicola* sp. nov. (Fig. 15)

Differs a *Cercospora genipae* et *Pseudocercospora morindae* conidiis $10-40(-55) \times 3-4.5 \mu\text{m}$.

Holotypus: on *Genipa americana* (Rubiaceae), Brazil, State of Ceará, Cascavel County, Preaoca District, 15 Nov. 1999, F. Freire (HAL 1655).

Leaf spots amphigenous, subcircular to irregular, 2-10 mm diam., greyish white on the upper leaf surface, yellowish-ochraceous to brownish on the lower leaf surface, margin indefinite or narrow and darker. Caespituli amphigenous, mostly epiphyllous, punctiform, blackish. Mycelium internal. Stromata intraepidermal, occasionally substomatal, 20-100 μm diam., olivaceous-brown, composed of swollen hyphal cells, 2-6 μm diam. Conidiophores in large, dense fascicles, arising from stromata, mostly erumpent, erect, straight, subcylindrical to slightly geniculate-sinuuous, unbranched, $5-20 \times 2-5 \mu\text{m}$, 0-1-septate, pale olivaceous to olivaceous-brown, smooth; conidiophores mostly reduced to conidiogenous cells; conidiogenous loci inconspicuous. Conidia solitary, cylindrical-obclavate, fusiform, small conidia sometimes ellipsoid-ovoid, $10-40(-55) \times 3-4.5 \mu\text{m}$, (0-)1-4(-5)-septate, subhyaline to pale olivaceous, smooth, apex obtuse to subacute, base truncate to obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

The South American *Cercospora genipae* Rangel, described from the same host genus, differs in having much longer and wider conidia, $20-100 \times 5-7 \mu\text{m}$ (Chupp 1954: 496). *Pseudocercospora morindae* (Syd.) K.K. Sarbajna (= *Cercospora morindae* Syd., see Chupp 1954), which is morphologically very close to *P. genipicola*, is distinguished by having much longer conidia, up to 80 μm .



Figs. 12-15. Conidiophore fascicles, conidiophores, conidia, 12 = *Pseudocercospora coperniciae*, 13 = *Pseudocercospora corchorifoliae*, 14 = *Pseudocercospora cylindrosporioides*, 15 = *Pseudocercospora genipicola* (bar: 20 μ m), drawn by U. Braun.

Pseudocercospora guettardae is characterised by similar conidia and large sprodochial conidiomata but forms secondary hyphae with solitary conidiophores.

(34) *Pseudocercospora heliotropii* sp. nov. (Fig. 16)

Differt a *P. symphyti* hyphis secundariis nullis, conidiophoris solum fasciculatis, brevioribus et latoribus, conidiis brevioribus, 1-4(-5)-septatis.

Holotypus: on *Heliotropium* sp. (*Boraginaceae*), Brazil, State of Ceará, Quixeré County, Quixeré City, 9 Sept. 2000, F. Freire (HAL 1713).

Leaf spots lacking or almost so, only with diffuse to subcircular or irregular sooty discolorations, 2-5 mm diam. or confluent and larger, mainly caused by dense fungal colonies. Caespituli amphigenous, rather inconspicuous to effuse, sooty. Mycelium internal. Stromata lacking or only with small substomatal hyphal aggregations, 10-20 µm diam., olivaceous-brown. Conidiophores in small to moderately large fascicles, loose to moderately dense, arising from internal hyphae or stromata, emerging through stomata, erect, occasionally decumbent, flexuous, usually geniculate-sinuous, unbranched or occasionally branched, width often irregular, usually attenuated towards the apex, 5-50 × 2-8 µm, 0-4-septate, pale to medium dark olivaceous or olivaceous-brown, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 µm long; conidiogenous loci inconspicuous. Conidia solitary, obclavate-cylindrical, 25-60 × (3-)4-5(-6) µm, 1-4(-5)-septate, pale to medium olivaceous, smooth, apex obtuse or subobtuse, base obconically truncate, 1.5-2 µm diam., hila unthickened, not darkened.

Several cercosporoid hyphomycetes are known from *Heliotropium* spp. (see Pons & Sutton 1996), but the present new species being the only member of *Pseudocercospora* on hosts of this genus. *P. symphyti* Goh & W.H. Hsieh (see Hsieh & Goh 1990), described on *Symphytum officinale* from Taiwan, resembles *P. heliotropii*, but differs in having secondary hyphae with solitary conidiophores, longer, narrower conidiophores (25-90 × 3-4 µm) and longer conidia (40-90 × 4-5 µm) with 2-10 septa.

(35) *Pseudocercospora jussiaeae* (G.F. Atk.) Deighton, Mycol. Pap. 140: 146 (1976)

Cercospora jussiaeae G.F. Atk., J. Elisha Mitchell Sci. Soc. 8: 50 (1892).

C. ludwigiae G.F. Atk., J. Elisha Mitchell Sci. Soc. 8: 58 (1892).

On *Ludwigia* sp. (*Onagraceae*), Ceará, Paraipaba Co., 5 Jul. 1999 and Ceará, Limoeiro do Norte City, 14 Jul. 2000.

This species is new to Brazil.

(36) *Pseudocercospora lippiae-albae* U. Braun & R.F. Castañeda, Cryptog. Bot. 1: 52 (1989)

On *Lippia alba* (*Verbenaceae*), Ceará, Tianguá Co., 9 Jul. 1999.

This species, known from Cuba on *Lippia alba* and Uruguay on *L. geminata*, is new to Brazil.

(37) *Pseudocercospora luetzelburgiae* sp. nov. (Fig. 17)

Differt a *P. ceratoniae* et *P. urariae* conidiis brevioribus, 0-5-septatis.

Holotypus: on *Luetzelburgia auriculata* (*Fabaceae*), Brazil, State of Ceará, Paraipaba County, 15 Oct. 1999, F. Freire (HAL 1711).

Leaf spots amphigenous, angular-irregular, 1-15 mm diam., pale to medium brown, later greyish brown to greyish white, but finally often dark brown to blackish by dense fungal colonies, margin indefinite or with a dark border.

Caespituli amphigenous, punctiform, often dense and confluent, dark brown to blackish, later greyish by abundant formation of conidia. Mycelium internal. Stromata well-developed, large, 25-150 μm diam., immersed, brown. Conidiophores very numerous, in dense fascicles or layers, arising from stromata, forming large sporodochia, erumpent, erect, straight, subcylindrical to somewhat geniculate-sinuous, unbranched, rarely branched, 5-40 \times 3-5 μm , sometimes enlarged at the base, up to 8 μm wide, 0-1-septate, pale olivaceous to olivaceous-brown, smooth; conidiophores mostly reduced to conidiogenous cells, mostly monoblastic, determinate, occasionally polyblastic, sympodial; conidiogenous loci truncate, flat, 1.5-2 μm diam., but unthickened and not darkened. Conidia solitary, cylindrical-obclavate, subclavate, fusiform, (15-)25-55 \times 4-6 μm , 0-5-septate, subhyaline to pale olivaceous, smooth, apex obtuse, base truncate, obconically truncate, occasionally rounded, 1.5-2.5 μm diam., hila unthickened, not darkened.

Pseudocercospora luetzelburgiae belongs to a group of *Pseudocercospora* species on legumes with large sporodochial conidiomata and numerous short, dense conidiophores. *P. ceratoniae* (Pat. & Trab.) Deighton and *P. urariae* Deighton are closely allied, but differ in having longer, pluriseptate conidia. Many other species are similar, but possess much narrower conidia (e.g., *P. dalbergiae* (S.H. Sun) J.M. Yen, *P. glycines* (Cooke) Deighton, *P. pachyrrhizi* (Sawada & Katsuki) Goh & W.H. Hsieh, *P. taichungensis* Goh & W.H. Hsieh) or secondary hyphae (e.g., *P. cassiae-fistulosae* Goh & W.H. Hsieh, *P. lespedezicola* Goh & W.H. Hsieh).

(38) *Pseudocercospora melochiae* (Henn.) Deighton, Mycol. Pap. 140: 147 (1976)

Cercospora melochiae Henn., Hedwigia 43: 395 (1904).

On *Waltheria indica* (*Sterculiaceae*), Ceará, Ibiapaba, 2 Jun. 1999.

Mendes *et al.* (1998) recorded this species from Brazil on *Waltheria americana*.

(39) *Pseudocercospora mimosigena* sp. nov. (Fig. 18)

Differt a *Pseudocercospora hypsophila* et *P. mimosae* hyphis secundariis et conidiophoris solitariis evolutis, conidiis (3-)4-8 μm latis.

Holotypus: on *Mimosa* sp. (*Mimosaceae*), Brazil, State of Ceará, Cascavel County, Preaoca, 7 Aug. 1999, F. Freire (HAL 1716).

Leaf spots lacking, diffuse or angular-irregular, 0.5-3 mm diam., brown, reddish brown, finally greyish brown, margin indefinite. Caespituli amphigenous, mainly hypophyllous, punctiform, blackish. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, sparingly branched, septate, pale olivaceous or olivaceous-brown, smooth, 1-4 μm wide. Stromata substomatal, 10-50 μm diam., brown. Conidiophores solitary, arising from creeping secondary hyphae, lateral, or conidiophores in moderately large to large sporodochial fascicles, dense, arising from stromata, erect, straight, subcylindrical-conical, occasionally slightly geniculate-sinuous, unbranched, 5-20 \times 3-8 μm , 0(-1)-septate, pale olivaceous to olivaceous-brown, smooth; conidiophores usually reduced to conidiogenous cells; conidiogenous loci inconspicuous. Conidia solitary, cylindrical, obclavate-cylindrical, 40-80 \times (3-)4-8 μm , 3-6-septate, subhyaline to pale olivaceous or olivaceous-brown, smooth, apex obtuse, base obconically truncate, 2-3 μm diam., hila unthickened, not darkened.

Pseudocercospora mimosae (Pat.) U. Braun (1993) on *Mimosa floribunda* in Ecuador differs from *P. mimosigena* sp. nov. in having very pale conidiophores and subhyaline, narrower conidia. Furthermore, superficial hyphae with solitary conidiophores are lacking in the latter species. Braun (1993) supposed that

Cercospora hypsophila Syd., also described from Ecuador on *Mimosa floribunda*, could be conspecific with *Pseudocercospora mimosae*. The two species are, indeed, morphologically very similar, but based on the re-examination of type material of *C. hypsophila* it could be demonstrated that two distinct species are involved. The latter species differs from *Pseudocercospora mimosae* in having dark brown caespituli, distinctly pigmented conidiophores and conidia as well as quite distinct leaf spots. *C. hypsophila* is a typical member of *Pseudocercospora* with inconspicuous conidiogenous loci:

(40) *Pseudocercospora hypsophila* (Syd.) **comb. nov.** (Fig. 19)

Bas.: *Cercospora hypsophila* Syd., Ann. Mycol. 37: 430 (1939).

Lectotypus: on *Mimosa floribunda*, Ecuador, Prov. Pichincha, Guapulo, 9 Sept. 1937, H. Sydow, Fungi Aequatorienses 22 (S), selected here.

Leaf spots amphigenous, subcircular to angular-irregular, 2-15 mm diam., pale to medium dark brown, finally dull greyish brown or grey, margin indefinite or darker, narrow, occasionally with a diffuse yellowish to ochraceous halo. Caespituli epiphyllous, punctiform, dark brown, scattered. Mycelium internal. Stromata immersed, 30-80 μm diam. Conidiophores numerous, in dense fascicles, arising from stromata, erumpent, erect, straight, subcylindrical-conical, none or only very slightly geniculate-sinuuous, unbranched, 5-30 \times 2-4 μm , 0(1-)-septate, olivaceous brown, smooth; conidiophores usually reduced to conidiogenous cells; conidiogenous loci inconspicuous. Conidia solitary, cylindrical, subacicular, cylindrical-obclavate, 30-90 \times 2.5-5.5 μm , 3-8-septate, subhyaline, pale olivaceous to olivaceous-brown, smooth, apex obtuse to subacute, base truncate to obconically truncate, 2-4 μm diam., hila unthickened, not darkened.

(41) *Pseudocercospora montrichardiae* (Henn.) **comb. nov.** (Fig. 20)

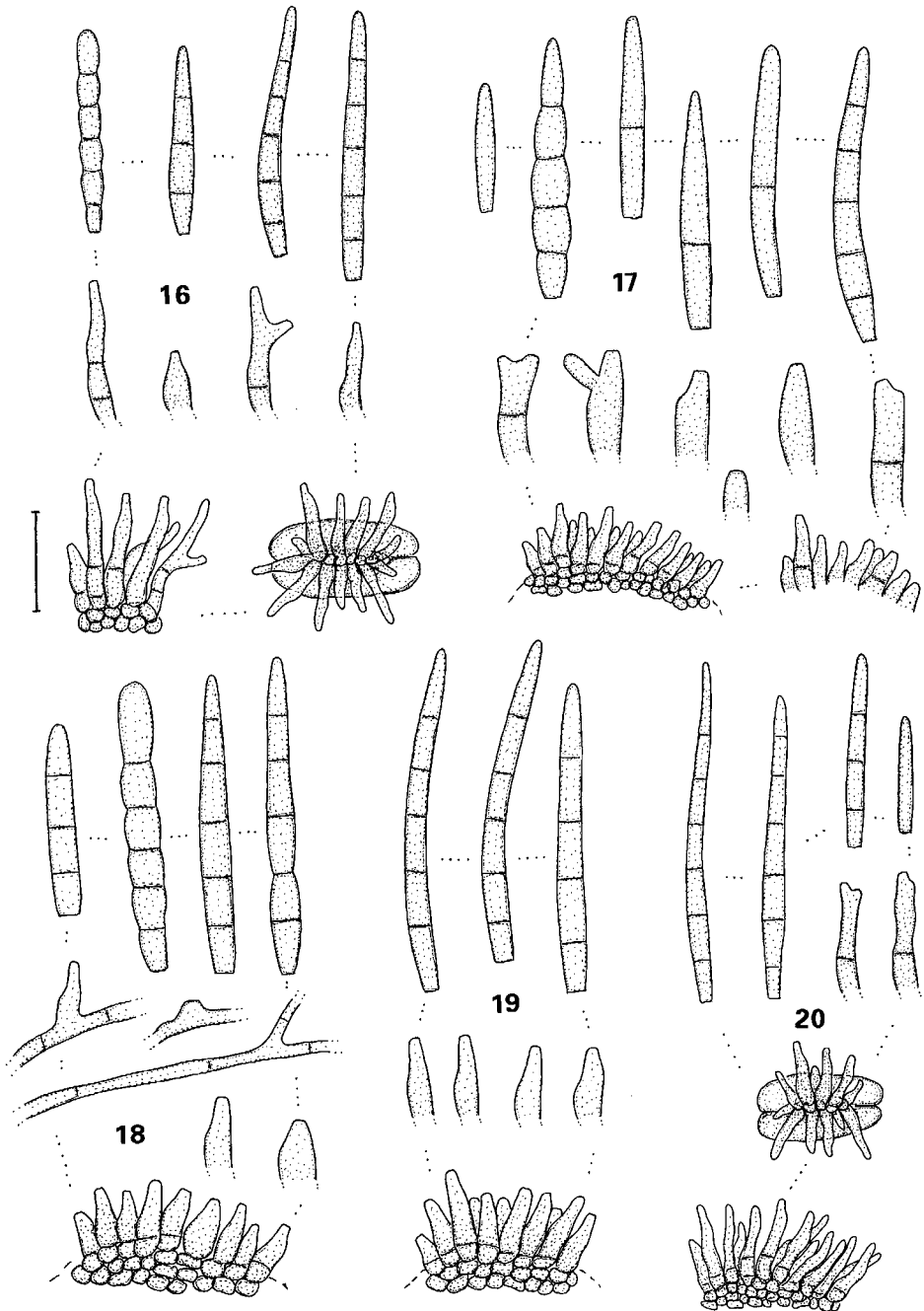
Bas.: *Cercospora montrichardiae* Henn., Hedwigia 48: 115 (1909).

Lectotypus: on *Montrichardia arborescens* (*Araceae*), Brazil, Para, Ilha das Oncas, Oct. 1903, Huber 96 (S), selected here.

On *Montrichardia linifera* (*Araceae*), Ceará, Paraipaba Co., 18 Aug. 1999.

Leaf spots amphigenous, subcircular to angular-irregular, 1-15 mm diam., yellowish to ochraceous, finally greyish brown to greyish white, margin indefinite or narrow, dark, often vein-limited. Caespituli amphigenous, punctiform, dark brown, Mycelium internal. Stromata variable, almost absent to well-developed, substomatal, 10-70 μm diam., olivaceous to yellowish brown. Conidiophores in small to usually large fascicles, often almost sporodochial, loose to dense, arising from stromata, through stomata, erect, straight, subcylindrical-conical to strongly geniculate-sinuuous, unbranched or occasionally branched, 5-25 \times 2-4 μm , 0-2-septate, subhyaline to pale olivaceous, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-20 μm long; conidiogenous loci inconspicuous or subdentate, but wall always unthickened and not darkened. Conidia solitary, narrowly obclavate-subcylindrical, subacicular, (8-)15-70 \times 2.5-4.5 μm , (0-)1-7-septate, subhyaline to pale olivaceous, smooth, apex obtuse to subacute, base truncate to obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

As already mentioned by Chupp (1954), the type material of *C. montrichardiae* is in poor condition with little fructification, but based on traces of conidiophores and conidia with inconspicuous conidiogenous loci and unthickened, non-darkened hila, this species has to be re-allocated to *Pseudocercospora*. The



Figs. 16-20. Conidiophore fascicles, conidiophores, conidia, superficial hyphae (in 18), 16 = *Pseudocercospora heliotropii*, 17 = *Pseudocercospora luetzelburgiae*, 18 = *Pseudocercospora mimosigena*, 19 = *Pseudocercospora hypsophila*, 20 = *Pseudocercospora montrichardiae* (bar: 20 μm), drawn by U. Braun.

new collection on *Montrichardia linifera* agrees well with Chupp's (1954) description of *C. montrichardiae* and the own observations based on type material.

(42) *Pseudocercospora ocimicola* (Petr. & Cif.) Deighton, Mycol. Pap. 140: 149 (1976) (Fig. 21)

Cercospora ocimicola Petr. & Cif., Ann. Mycol. 30: 324 (1932).

On *Marsypianthes chamaedrys* (Lamiaceae), Ceará, Cascavel Co., Preaoca, 12 Jun. 1999; *Ocimum* sp., Ceará, Pentecoste Co., 2 Mar. 2001.

This species is new to Brazil with *Marsypianthes chamaedrys* as a new host genus and host species. The specimen on the latter host agrees perfectly with collections from *Ocimum* spp. *Marsypianthes* and *Ocimum* are allied genera belong to the Lamiaceae (Ocimoideae).

(43) *Pseudocercospora phyllanthi* (Chupp) Deighton, Mycol. Pap. 140: 150 (1976)
Cercospora phyllanthi Chupp, in Toro, J. Dept. Agric Porto Rico 15: 12 (1931).

On *Phyllanthus* sp. (Euphorbiaceae), Ceará, Cascavel Co., Preaoca, 10 May 2001.

Cercospora phyllanthi is not included in da Silva & Minter (1995) as well as Mendes *et al.* (1998), but Chupp (1954) recorded it from Brazil. Deighton (1959) described *C. phyllanthi* with smooth conidia, but later he reduced *Cercospora pakistanica* Shakil A. Khan & Kamal to synonymy with the latter species (Deighton 1976) and regarded it as a special geographical race with verruculose conidia. The present collection from Brazil is also characterised by having rough-walled conidia, but otherwise it agrees very well with Deighton's (1959) description.

(44) *Pseudocercospora puerariicola* (Yamam.) Deighton, Mycol. Pap. 140: 151 (1976)

Cercospora puerariicola Yamam., Trans. Sapporo Nat. Hist. Soc. 13: 142 (1934).

On *Dioclea guianensis* (Fabaceae), Ceará, Cascavel Co., Preaoca, 15 Nov. 1999, F. Freire; *Dioclea* sp., Ceará, Cascavel Co., Preaoca, 10 Dec. 2000.

The two specimens on *Dioclea* spp. agree perfectly with collections of *Pseudocercospora puerariicola* from *Pueraria* spp. *Dioclea* and *Pueraria* are two allied genera of the legumes belonging to the Phaseoleae (Diocleinae).

(45) *Pseudocercospora sesami* (Hansf.) Deighton, Trans. Brit. Mycol. Soc. 88: 390 (1987)

Cylindrosporium sesami Hansf., Rep. Dept. Agric. Uganda 1936-1937, 2: 47 (1938).

Cercoseptoria sesami (Hansf.) Deighton, Mycol. Pap. 140: 161 (1976).

On *Sesamum indicum* (Pedaliaceae), Ceará, Pacajus City, 10 Aug. 2001.

New to Ceará. Mendes *et al.* (1998) recorded this species only from Maranhão.

(46) *Pseudocercospora simaroubae* sp. nov. (Fig. 22)

Differt a *P. ailanthicola*, *P. ailanthigena* et *P. qinlingensis* conidiophoris (0-)1-6-septatis, cicatricibus subconspicuis et conidiis 3-7 µm latis.

Holotypus: on *Simarouba versicolor* (*Simaroubaceae*), Brazil, State of Ceará, Cascavel Co., Preaoca, 18 Jul. 1999, F. Freire (HAL 1717A), mixed infection with *Stenella simaroubacearum* sp. nov. (B).

Leaf spots amphigenous, subcircular to angular-irregular, 2-12 mm diam., greyish brown to greyish white on the upper leaf surface, medium to dark brown on the lower leaf surface, margin indefinite or with a narrow dark border, dark brown to blackish. Caespituli hypophyllous, subeffuse, dark brown. Mycelium internal. Stromata absent or small, composed of a few swollen hyphal cells, substomatal to intraepidermal. Conidiophores in small to moderately large fascicles, loose to moderately dense, arising from internal hyphae or hyphal aggregations, through stomata or erumpent, erect, straight, subcylindrical to sinuous or slightly geniculate-sinuous, usually unbranched, occasionally branched, 10-70 × 3-7 µm, (0-)1-6-septate, medium olivaceous or olivaceous-brown, smooth, wall thin to somewhat thickened; conidiogenous cells integrated, terminal, 10-25 µm long; conidiogenous loci variable, ranging from being inconspicuous to subconspicuous (ultimate rim slightly thickened and darkened, i.e., *Paracercospora*-like), 1.5-2 µm diam. Conidia solitary, obclavate-cylindrical, (15-)20-60 × 3-7 µm, 1-8-septate, pale to medium olivaceous-brown, smooth, apex obtuse, often broadly rounded, base obconically truncate, 1.5-3 µm diam., hila unthickened, not darkened.

This species is the first member of *Pseudocercospora* on a species of the genus *Simarouba*. Several *Pseudocercospora* spp. have been described from species of *Ailanthus*, but all of them are distinguished by having consistently inconspicuous conidiogenous loci. Otherwise, *P. ailanthicola* (Patwardhan) Deighton (1976) and *P. ailanthigena* H.S.G. Rao, Archana Singh & Kamal (1995) are distinguished by having much narrower conidia with much smaller hila. *P. qinlingensis* Y.L. Guo (1996), described from China on *Ailanthus* sp., is characterised by large stromata, 40-75(-100) µm diam., densely arranged, short, aseptate conidiophores and densely pluriseptate conidia.

(47) *Pseudocercospora struthanthi* U. Braun, F. Freire & N. Pons **sp. nov.**

(Fig. 23)

Cercospora struthanthi Chupp & A.S. Mull., Bol. Soc. Venez. Ci. Nat. 8(52): 57 (1942), *nom. inval.* (without Latin description).

Differt a *Cercospora loranthi* et *Passalora loranthincola* cicatricibus conidiales inconspicuis, non incrassatis, non fuscatis.

Holotypus: on *Struthanthus* sp. (*Loranthaceae*), Venezuela, Caracas, El Valle, 15 Apr. 1941, A. S. Müller (CUP 3991). **Isotypus:** VIA.

Paratypus: on *Struthanthus* sp., Brazil, State of Ceará, Fortaleza City, 20 Jun. 2000, F. Freire (HAL 1719).

Leaf spots amphigenous, circular to somewhat angular-irregular, 2-20 mm diam., blackish, dingy greyish brown, grey, margin indefinite or with a narrow to moderately broad darker border. Caespituli amphigenous, punctiform, loose to dense, dark brown to blackish. Mycelium internal. Stromata small to large, 10-80 µm diam., substomatal to intraepidermal, brown. Conidiophores in small to very large, loose to usually dense fascicles, arising from stromata, emerging through stomata or erumpent, large conidiomata almost sporodochial, conidiophores erect, straight, subcylindrical-conical to moderately geniculate-sinuous, unbranched or occasionally branched, 5-30 × 2-5 µm, 0-1-septate, olivaceous-brown, tips often paler, smooth; conidiophores usually reduced to conidiogenous cells; conidiogenous loci inconspicuous. Conidia solitary, narrowly obclavate, obclavate-subcylindrical (-acicular), 15-70 × 2-4 µm, (1-)3-10(-12)-septate, sub-

hyaline to pale olivaceous, smooth, apex subobtuse or subacute, base truncate to obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

Cercospora struthanthi was introduced by Chupp & Müller (in Müller & Chupp 1942) for a species on *Struthanthus* sp. from Venezuela, but since a Latin description or diagnosis being absent this name has to be considered a *nomen invalidum*. There are two other cercosporoid hyphomycetes on hosts of the Loranthaceae, viz., *Cercospora loranthi* McAlpine and *Passalora loranthicola* (Petr.) U. Braun, which differ in having conspicuous conidial scars.

(48) *Pseudocercospora talisiae* sp. nov. (Fig. 24)

Differt a *P. cupaniae* stromatibus 10-60 μm diam., conidiophoris interdum ramosis, conidiis solitariis vel catenulatis.

Holotypus: on *Talisia esculenta* (*Sapindaceae*), Brazil, State of Ceará, Cascavel County, 5 Aug. 1999, F. Freire (HAL 1704).

Leaf spots amphigenous, angular-irregular, 1-3 mm diam. or confluent and larger, brown, reddish brown, later greyish brown, finally greyish white, margin indefinite. Caespituli hypophyllous, punctiform, blackish, scattered to confluent. Mycelium internal. Stromata absent to well-developed, 10-60 μm diam., substomatal to intraepidermal, brown. Conidiophores in small to large fascicles, loose to moderately dense, arising from stromata, through stomata or erumpent, erect, straight, subcylindrical to geniculate-sinuous, unbranched to branched, 5-60 \times 3-6 μm , 0-2-septate, pale olivaceous to olivaceous-brown, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 μm long; conidiogenous loci inconspicuous. Conidia solitary, occasionally catenate, sometimes even in branched chains, cylindrical, obclavate-cylindrical, 15-55 \times 3-5 μm , 1-7-septate, olivaceous-brown, smooth, apex obtuse or subobtuse, truncate in catenate conidia, base obconically truncate, 1.5-2 μm wide, hila unthickened, not darkened.

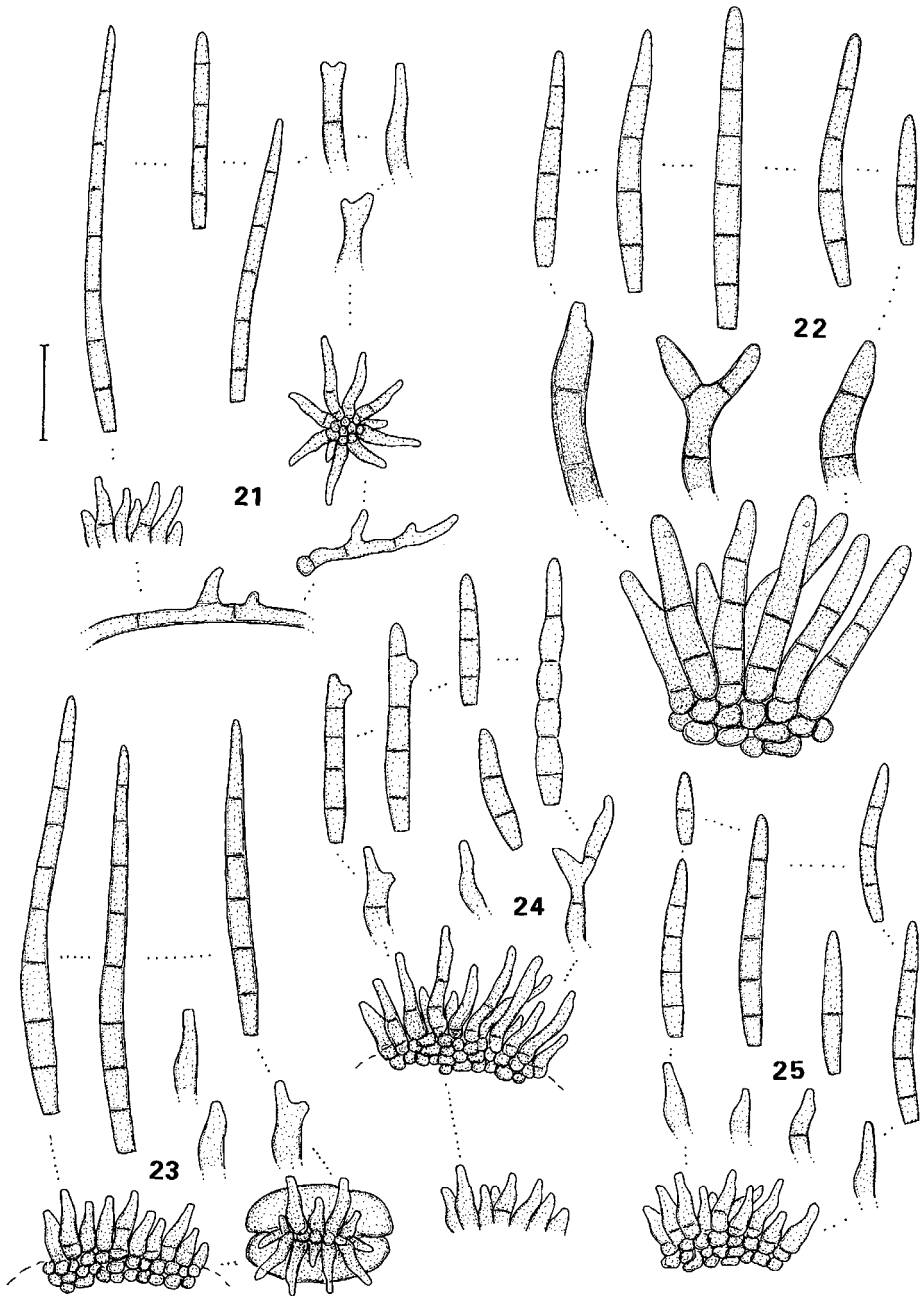
Pseudocercospora talisiae sp. nov. is close to *Cercospora cupaniae* Syd., described from Costa Rica on *Cupania guatemalensis*. Type material of the latter species has been re-examined and compared with the present collection on *Talisia esculenta*, which differs, however, in having smaller stromata, branched conidiophores and conidia formed singly as well as in short chains. *Cupania* and *Talisia* are two genera belonging to the Sapindaceae, but they are not closely allied to each other. *Cercospora cupaniae* is also characterised by having inconspicuous conidiogenous loci and conidia with unthickened, non-darkened hila, so that this species has to be re-allocated to *Pseudocercospora*:

(49) *Pseudocercospora cupaniae* (Syd.) comb. nov. (Fig. 25)

Bas.: *Cercospora cupaniae* Syd., Ann. Mycol. 23: 424 (1925).

Holotypus: on *Cupania guatemalensis* (*Sapindaceae*), Costa Rica, Grecia, 13 Jan. 1925, H. Sydow, Fungi in itinere costaricensi collecti 351 (S).

Leaf spots amphigenous, subcircular to angular-irregular, 2-4 mm diam., occasionally confluent and larger, brown, margin indefinite or slightly darker. Caespituli amphigenous, punctiform, scattered to dense, dark brown to blackish. Mycelium internal. Stromata almost absent to well-developed, substomatal to intraepidermal, 20-100 μm diam. Conidiophores in moderately large to very large fascicles, mostly dense, arising from stromata, through stomata or erumpent, straight, subcylindrical to slightly geniculate-sinuous, unbranched, 5-40 \times 2-5 μm , 0-1-septate, subhyaline to pale olivaceous, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 μm long; conidiogenous loci inconspicuous. Conidia solitary, obclavate-cylindrical,



Figs. 21-25. Conidiophore fascicles, conidiophores, conidia, superficial hyphae (in 21), 21 = *Pseudocercospora ocimicola* (on *Marsypianthes chamaedrys*), 22 = *Pseudocercospora simaroubae*, 23 = *Pseudocercospora struthanthi*, 24 = *Pseudocercospora talisiae*, 25 = *Pseudocercospora cupaniae* (bar: 20 μ m), drawn by U. Braun.

15-55 × 2-5 µm, 1-6(-8)-septate, pale olivaceous to olivaceous-brown, smooth, apex obtuse or subacute, base obconically truncate, 1-2 µm diam., hila unthickened, not darkened.

(50) *Pseudocercospora tetraulacicola* sp. nov. (Fig. 26)

Differt a *P. mulderi* conidiophoris et conidiis pallide olivaceis vel olivaceo-brunneis, conidiis 3-14-septatis et cicatricibus conidiales subconspicuis (paracercosporoidibus).

Holotypus: on *Tetraulacium* sp. (*Scrophulariaceae*), Brazil, State of Ceará, Cascavel County, Preaoca District, 18 Mar. 2001, F. Freire (HAL 1708).

Leaf spots amphigenous, subcircular to angular-irregular, at first yellowish, later brown, finally greyish brown to dull grey, 1-12 mm diam., margin indefinite or with a somewhat raised border line or narrow dark margin, occasionally with a yellowish halo. Caespituli amphigenous, subeffuse to punctiform, brown, often not very conspicuous. Mycelium internal. Stromata lacking or small, 10-35 µm diam., brown, intraepidermal to substomatal. Conidiophores solitary or in small fascicles, loose to dense, arising from internal hyphae or stromata, through stomata or erumpent, erect, straight, subcylindrical-conical to flexuous, somewhat geniculate-sinuuous, unbranched, 5-30 × (2-)3-4(-5) µm, 0-1-septate, pale olivaceous or olivaceous-brown, smooth; conidiophores mostly reduced to conidiogenous cells, proliferation sympodial or occasionally percurrent; conidiogenous loci inconspicuous or subconspicuous, *Paracercospora*-like, only ultimate rim slightly thickened and darkened-refractive, 0.75-1.5 µm diam. Conidia solitary, narrowly obclavate-filiform, 40-85(-110) × 2-3.5(-4) µm, indistinctly 3-14-septate, hyaline or subhyaline, very pale greenish-olivaceous, smooth, apex subacute, base obconically truncate, 1-1.5 µm diam., hila unthickened, not darkened, but often somewhat refractive.

This species is characterised by having conidiogenous loci intermediate between *Cercospora*-like and *Pseudocercospora*-like. The scars range from being inconspicuous to subconspicuous, i.e., the conidiogenous loci are visible as minute circles with very slightly thickened and darkened-refractive ultimate rims. Deighton (1979) introduced the new genus *Paracercospora* for cercosporoid hyphomycetes with conidiogenous loci of this type, but molecular examinations carried out by Crous *et al.* (2001) showed that *Paracercospora* should better be reduced to synonymy with *Pseudocercospora*. *P. mulderi* (Tyagi) U. Braun (Braun 1995) is similar, but all structures of this species are very pale, the conidia have only few septa and the conidiogenous loci (scars) are quite inconspicuous. *P. scopariicola* (J.M. Yen) Deighton (see Yen & Lim 1980) is another comparable species on a host belonging to the Scrophulariaceae, which differs, however, in having well-developed secondary hyphae. *P. paulowniae* Goh & W.H. Hsieh (Hsieh & Goh 1990) has much larger, pluriseptate conidia and *P. collinsiae* (U. Braun & Rogerson) U. Braun & Crous (Braun & Hill 2002) is quite distinct by having unilocal, percurrent conidiogenous cells.

(51) *Pseudocercospora tiglii* (Henn.) Crous, U. Braun & Alfenas, Mycotaxon 72: 179 (1999)

Cercospora tiglii Henn., Hedwigia 47: 265 (1908).

On *Croton lobatus* (*Euphorbiaceae*), Ceará, Cascavel Co., Preaoca, 13 May 1999; *Croton* sp., Ceará, Quixeré Co., 26 Jul. 1999.

Type material of this species has been examined (on *Croton tiglii*, Philippines, Balut Island, 8 Oct. 1906, E.D. Merrill No. 5423, B). *P. tiglii* is charac-

terised by having fasciculate conidiophores, short to rather long, erect to decumbent and frequently branched. Decumbent threads often develop into creeping secondary hyphae with lateral solitary conidiophores. The development of secondary hyphae ranges from being absent to well-developed. In collections on *Croton* sp. from Venezuela (Sugre State, Camanagoa, Mar. 1971, P. Urtiaga, IMI 156502) and on *Croton oblongifolius* from India (Midnapur, Ghatal, 31 Jan. 1978, M. Mandal, IMI 226652), secondary mycelium was very abundant, whereas in the type collection of *C. tiglii*, it is almost absent. The conidia are obclavate-cylindrical, 20-110 × 2.5-5 µm, subhyaline, pale olivaceous to brownish and 3-10-septate.

Crous *et al.* (1999) placed a collection on *Croton* sp. from Brazil (São Paulo, Cerrado, 28 Feb. 1941, A.P. Viégas, IACM 3721) in *Cercospora crotoniphila* Speg., re-allocated this species to *Pseudocercospora* and distinguished it from *Pseudocercospora tiglii* by short, unbranched, fasciculate conidiophores and lacking secondary hyphae. Later, Crous *et al.* (2000b) re-examined type material of *C. crotoniphila* and found that the conidiogenous loci and hila of the conidia are thickened and darkened, so that this species had to be assigned to *Passalora*, and the collection on *Croton* sp. from Brazil was tentatively referred to *Pseudocercospora tiglii* s.lat. A second specimen on *Croton* sp. from Brazil, which agrees with IACM 3721, has recently been found. The conidia agree well with those of *Pseudocercospora tiglii* and fascicles of short, unbranched conidiophores are also not uncommon in the latter species. However, the specimens concerned differ from typical collections of *P. tiglii* in having consistently short, unbranched, fasciculate conidiophores and lacking secondary hyphae, so that their accommodation in a special variety seems to be appropriate.

Pseudocercospora tiglii var. **densa** var. nov.

Illustration: Crous *et al.* (1999: 178, Fig. 5).

Differt a var. *tiglii* hyphis secundariis nullis, conidiophoris dense fasciculatis, brevis, saepe 0-1-septatis, non-ramosis.

Holotypus: on *Croton* sp. (*Euphorbiaceae*), Brazil, State of Ceará, Trairi County, 28 Aug. 1999, F. Freire (HAL 1703).

(52) *Pseudocercospora timorensis* (Cooke) Deighton, Mycol. Pap. 140: 154 (1976)
Cercospora timorensis Cooke, Grevillea 12: 38 (1883).

On *Ipomoea asarifolia* (*Convolvulaceae*), Ceará, Cascavel Co., Preaoca, 7 Jul. 1999.

Mendes *et al.* (1998) listed this species from Brazil on *Ipomoea batatas*.

(53) *Pseudocercospora turnerae* (Ellis & Everh.) Deighton, Mycol. Pap. 140: 155 (1976) (Fig. 27)

Cercospora turnerae Ellis & Everh., Ann. Rept. Montana Bot. Garden 9: 119 (1898).

On *Turnera ulmifolia* (*Turneraceae*), Ceará, Cascavel Co., Preaoca, 22 Apr. 2000, F. Freire; *Turnera* sp., Ceará, Cascavel Co., Preaoca, 6 Jun. 1999.

Additional material examined: on *Turnera ulmifolia*, Bahamas, Nassau, Nov. 1890, A.S. Hitchcock, holotype of *C. turnerae* (NY); Puerto Rico, 6 Apr. 1916, H.H. Whetzel & E.G. Olive (NY); USA, Florida, Homestead, 24 Jan. 1931, G.F. Weber (NY).

Leaf spots amphigenous, subcircular to somewhat irregular, occasionally angular, 1-8 mm diam., greyish green, greyish brown, finally often greyish white, with a narrow dark brown to blackish margin or marginal line, often somewhat raised. Caespituli amphigenous, punctiform to subeffuse, brown to blackish.

Primary mycelium internal. Secondary mycelium external; secondary hyphae superficial, creeping, sparingly branched, 1-4 μm wide, septate, subhyaline to pale olivaceous, smooth. Stromata intraepidermal, occasionally substomatal, 10-80 μm diam., yellowish brown to medium brown. Conidiophores solitary, arising from creeping hyphae, lateral, rarely terminal, or in small to large fascicles, loose to very dense, arising from stromata, erumpent or occasionally emerging through stomata, erect, straight, subcylindrical-conical to flexuous, geniculate-sinuuous, unbranched or rarely branched, 5-60 \times 2-5 μm , 0-2-septate, subhyaline to pale olivaceous or olivaceous-brown, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5-25 μm long; conidiogenous loci inconspicuous. Conidia solitary, cylindrical, obclavate-cylindrical, 20-100 \times 2-5 μm , (1-)3-8-septate, subhyaline to pale olivaceous, apex obtuse to subacute, base truncate to obconically truncate, 1-2 μm diam., hila unthickened, not darkened.

Pseudocercospora turnerae is not listed in Mendes *et al.* (1998). It is new to Brazil. Chupp (1954) reduced *Cercospora turnericola* Syd., described from Brazil on *Turnera pumila*, to synonymy with *C. turnerae*. Type collections of *C. turnerae* and *C. turnericola* have been re-examined and compared with each other, and they proved to be two morphologically distinct species. *Pseudocercospora turnerae* seems to be confined to *Turnera ulmifolia*. *Cercospora turnericola* occurs on *Turnera pumila* and differs from the latter species in having quite distinct lesions, fasciculate conidiophores, up to 80 μm long, unbranched or branched, pluriseptate, broader conidia, 4-6 μm wide, subcylindrical, and lacking superficial hyphae. Since the conidiogenous loci and hila of the conidia are unthickened and not darkened, *C. turnericola* has to be re-allocated to *Pseudocercospora*.

(54) *Pseudocercospora turnericola* (Syd.) **comb. nov.** (Fig. 28)

Bas.: *Cercospora turnericola* Syd., Ann. Mycol. 14: 97 (1916).

Holotypus: on *Turnera pumila* (*Turneraceae*), Brazil, Rio Blanco, San Marcos, Jun. 1909, E. Ule 3362 (S).

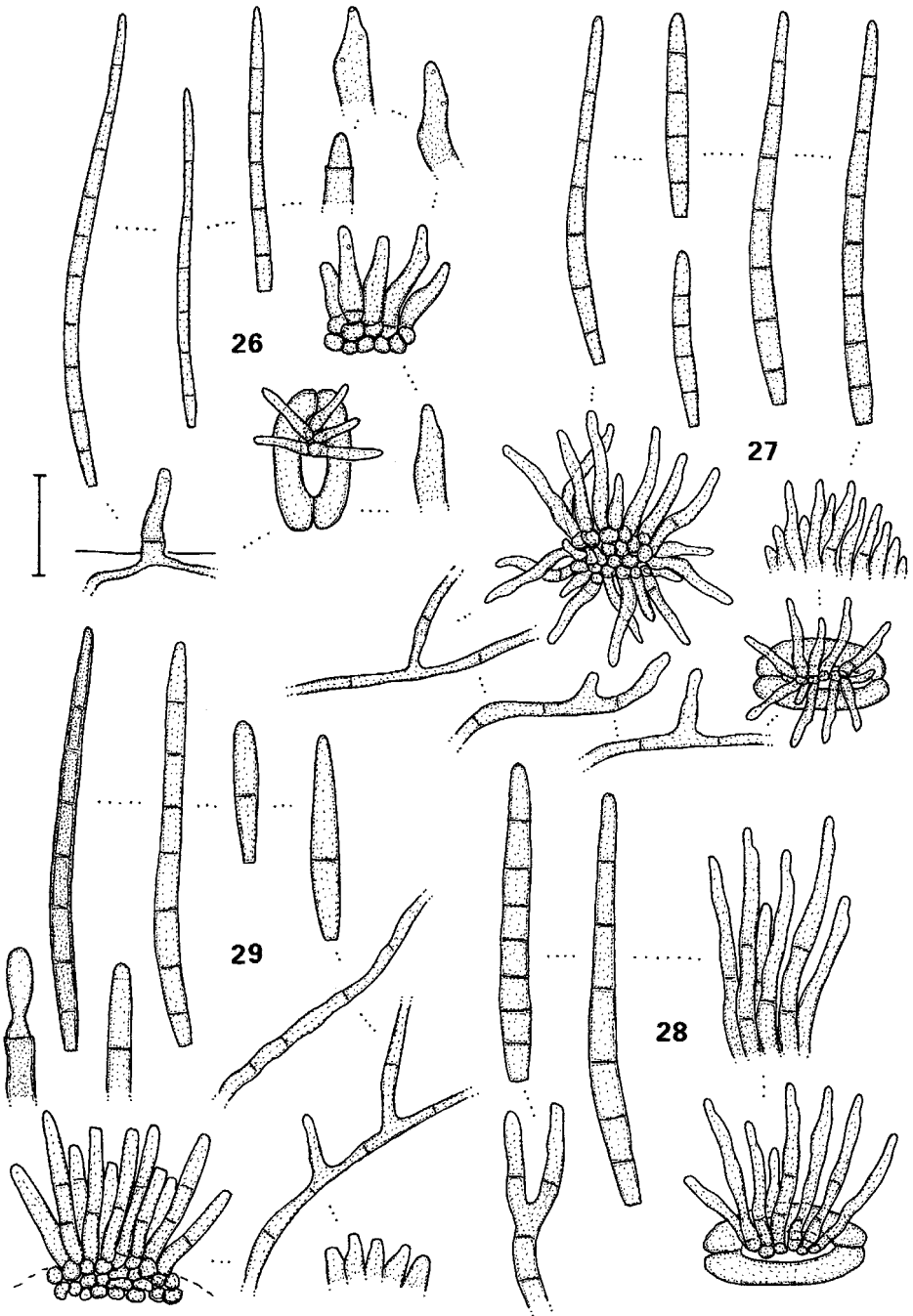
Leaf spots lacking. Caespituli amphigenous, punctiform to effuse, brown, loose to dense. Mycelium internal. Stromata almost lacking or small, substomatal. Conidiophores in small to moderately large fascicles, loose to usually dense, arising from internal hyphae or stromata, emerging through stomata, erect, straight, subcylindrical-filiform to flexuous, somewhat geniculate-sinuuous, unbranched or branched, 20-80 \times 4-6 μm , aseptate to usually pluriseptate, pale olivaceous or olivaceous-brown, smooth; conidiogenous cells usually integrated, terminal, 10-30 μm long; conidiogenous loci inconspicuous. Conidia solitary, subcylindrical, 70-85 \times 4-6 μm , 3-8-septate, occasionally with constrictions, subhyaline to pale olivaceous, smooth, apex obtuse, base short to long obconically truncate, 1.5-3 μm diam., hila unthickened, not darkened.

(55) *Pseudocercospora vataireae* (Henn.) **comb. nov.** (Fig. 29)

Bas.: *Cercospora vataireae* Henn., Hedwigia 48: 115 (1909).

On *Derris* sp. (*Deguelia* sp.) (*Fabaceae*), Ceará, São Raimundo Nonato Co., 27 Aug. 1999.

Leaf spots amphigenous, angular-irregular, 1-20 mm diam., brown, margin indefinite. Caespituli amphigenous, on the upper leaf surface conspicuous, punctiform, dark brown to black, less conspicuous on the lower leaf surface. Primary mycelium internal; secondary mycelium lacking or sparingly developed, hypophyllous; secondary hyphae superficial, branched, septate, 1.5-4 μm wide, smooth. Stromata well-developed, 10-150 μm diam., circular in outline to oblong,



Figs. 26-29. Conidiophore fascicles, conidiophores, conidia, superficial hyphae (in 27 and 29), 26 = *Pseudocercospora tetraulacicola*, 27 = *Pseudocercospora turnerae*, 28 = *Pseudocercospora turnericola*, 29 = *Pseudocercospora vataireae* (bar: 20 μ m), drawn by U. Braun.

immersed, olivaceous-brown. Conidiophores fasciculate, on the upper leaf surface in large to very large, sporodochial conidiomata, dense, erumpent, on the lower leaf surface in smaller fascicles, loose to dense, occasionally solitary, arising from creeping hyphae, erect, straight, subcylindrical, usually non-geniculate, occasionally slightly geniculate-sinuuous, unbranched, $5\text{-}50 \times 3\text{-}6 \mu\text{m}$, olivaceous to olivaceous-brown, 0-3-septate, smooth or verruculose, above all in the upper half; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, $5\text{-}25 \mu\text{m}$ long, monoblastic, determinate or percurrent, occasionally polyblastic, sympodial; conidiogenous loci inconspicuous, unthickened, not darkened. Conidia solitary, obclavate, obclavate-subcylindrical, short conidia sometimes ellipsoid-ovoid, $20\text{-}90 \times 3\text{-}6 \mu\text{m}$, 0-8-septate, olivaceous or olivaceous-brown, smooth, wall thin to somewhat thickened, apex obtuse, base obconically truncate, $1.5\text{-}2 \mu\text{m}$ diam., hila unthickened, not darkened.

Chupp (1954) published a comprehensive description of *C. vataireae* based on the examination of type material deposited at B. This species was described from Brazil on *Derris guianensis*, but the type collection has recently been lost. However, the present collection on *Derris* sp. agrees well with Chupp's (1954) description and since the conidiogenous loci and hila of the conidia are unthickened and not darkened, this species must be re-allocated to *Pseudocercospora*.

(56) *Pseudocercospora velutinomaculans* sp. nov. (Fig. 30)

Differt a *P. lycopidis* et *P. ocimicola* conidiophoris modo solitariis, ex hyphis superficialibus oriundis.

Holotypus: on *Melissa officinalis* (*Lamiaceae*), Brazil, State of Ceará, Cascavel County, Preaoca District, 1 Sept. 2001, F. Freire (HAL 1700).

Leaf spots absent or only with diffuse, irregular, yellowish, brownish or somewhat reddish-purplish discolorations on the upper leaf surface, on the lower leaf surface with angular-irregular patches caused by dense fungal fructification, 1-10 mm diam. or confluent and larger, brownish. Colonies hypophyllous, loose to mostly dense, often velvety, brownish. Primary mycelium internal; secondary mycelium external; hyphae superficial, emerging through stomata, creeping, forming ropes and climbing leaf hairs, sparingly branched, $1\text{-}3 \mu\text{m}$ wide, septate, subhyaline, pale olivaceous to olivaceous-brown, thin-walled, smooth. Stromata lacking. Conidiophores solitary, arising from creeping hyphae, lateral and terminal, erect to decumbent, straight, subcylindrical-conical to conspicuously geniculate-sinuuous, usually unbranched, $5\text{-}70 \times 3\text{-}5 \mu\text{m}$, 0-5-septate, pale to medium dark olivaceous or olivaceous-brown, smooth, wall thin to slightly thickened; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, $5\text{-}20 \mu\text{m}$ long; conidiogenous loci inconspicuous, unthickened, not darkened. Conidia solitary, obclavate-cylindrical (-fusiform), $(10\text{-})30\text{-}100 \times 3\text{-}4 \mu\text{m}$, (1-)3-10-septate, pale olivaceous to olivaceous-brown, smooth, thin-walled, apex subacute to obtuse, base obconically truncate, $1\text{-}2 \mu\text{m}$ diam., hila unthickened, not darkened.

This species is close to *Pseudocercospora lycopidis* (Ellis & Everh.) Deighton and *P. ocimicola* (Petr. & Cif.) Deighton, but differs in having consistently solitary, non-fasciculate conidiophores arising from creeping hyphae and lacking stromata.

(57) *Pseudocercospora venezuelae* (Chupp) Deighton, Mycol. Pap. 140: 113 (1976)
Cercospora venezuelae Chupp, Monogr. Univ. P. Rico, Ser. B, 2: 254 (1934).

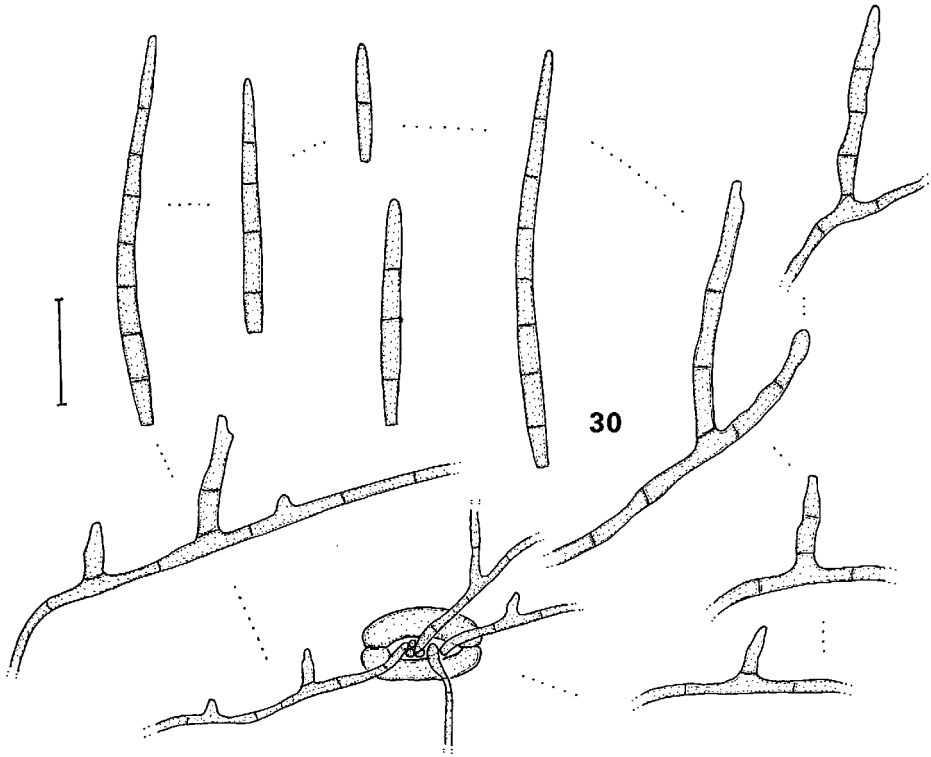


Fig. 30. *Pseudocercospora velutinomaculans*, solitary conidiophores arising from superficial hyphae, conidia (bar: 20 μ m), drawn by U. Braun.

On *Solanum* sp. (*Solanaceae*), Ceará, Cascavel Co., Preaoca, 21 Feb. 2001.

This species is not included in the list of fungi from Brazil of Mendes *et al.* (1998), but was reported from Brazil by Chupp (1954). It is new to Ceará.

(58) *Ramularia minax* (Davis) U. Braun var. ***melampodii* var. nov.** (Fig. 31)

Differt a var. *minax* conidiophoris saepe per cuticulam erumpentibus.

Holotypus: on *Melampodium* sp. (*Asteraceae*), Brazil, State of Ceará, Cascavel Co., Preaoca, 13 May 1999, F. Freire (HAL 1705).

Leaf spots amphigenous, diffuse discolorations or subcircular to angular-irregular, 2-8 mm diam. or confluent and larger, ochraceous to brown, finally greyish brown to dull grey, margin indefinite. Caespituli hypophyllous, subeffuse, greyish white. Primary mycelium internal; secondary mycelium external; secondary hyphae emerging through stomata, superficial, creeping, sparingly branched, septate, 1-4 μ m diam., hyaline, smooth. Stromata lacking or only with a few substomatal to intraepidermal swollen hyphal cells, colourless. Conidiophores in small, loose fascicles, emerging through stomata or often erumpent through the cuticle, or solitary, arising from creeping hyphae, lateral or terminal, erect, straight, subcylindrical-conical to geniculate-sinuous, unbranched, 5-30 \times 2-5 μ m, 0-2(-3)-septate, hyaline, smooth; conidiophores usually reduced to conidiogenous cells;

conidiogenous loci conspicuous, somewhat thickened and darkened, 1-1.5 μm diam. Conidia catenate, often in branched chains, ellipsoid-ovoid, cylindrical, (10-)15-40 \times (2-)2.5-4.5(-5) μm , 0-3-septate, hyaline or subhyaline, smooth, ends rounded to truncate, hila somewhat thickened and darkened, 1-1.5 μm diam.

The collection on *Melampodium* sp. is morphologically very close to *Ramularia minax*, which is known from North America on host species of the genus *Solidago* (Braun 1998), and is tentatively considered a variety of the latter species.

(59) *Ramulariopsis cnidoscoli* Speg., Anales Mus. Nac. Hist. Nat. B. Aires 20: 422 (1910) (Fig. 32)

On *Cnidocolus vitifolius* (Euphorbiaceae), Piauí, São Raimundo Nonato Co., 26 Aug. 1999.

This species is new to Brazil. The present collection agrees well with Braun's (1998: 313) description and illustrations of this species. The conidia are more or less cylindrical, formed singly or in chains, (15-)30-75 \times 4-7 μm , (0-)1-4-septate, with hila 1-3 μm diam.

(60) *Scolecostigmina mangiferae* (Koord.) U. Braun & Mouch., New Zealand J. Bot. 37: 323 (1999)

Cercospora mangiferae Koord., Verh. Akad. Wet. Amsterdam 2, 13: 236 (1907).

On *Mangifera indica* (Anacardiaceae), Ceará, Cascavel Co., Preaoca, 28 Feb. 2001.

This species is listed in Mendes *et al.* (1998) from São Paulo, but is new to Ceará.

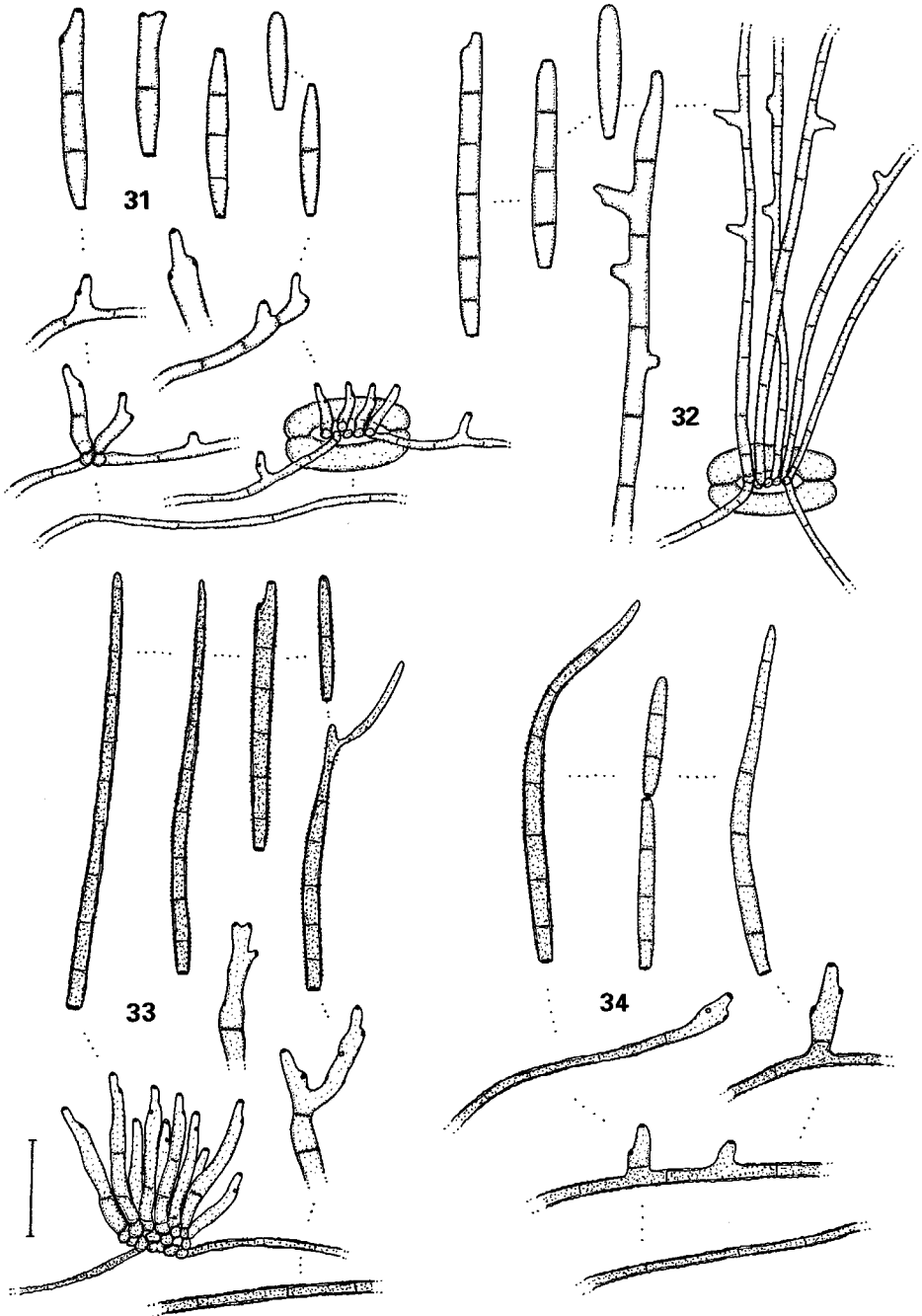
(61) *Stenella simaroubacearum* sp. nov. (Fig. 34)

Differt a *S. bougainvilleae* conidiophoris saemper solitariis, conidiis interdum catenulatis.

Holotypus: on *Simarouba versicolor* (Simaroubaceae), Brazil, State of Ceará, Cascavel County, Preaoca, 18 Jul. 1999, F. Freire (HAL 1717B), mixed infection with *Pseudocercospora simaroubae* sp. nov.

Leaf spots amphigenous, subcircular to angular-irregular, 2-12 mm diam., greyish brown to greyish white on the upper leaf surface, medium to dark medium brown on the lower leaf surface, margin indefinite or with a narrow darker border, dark brown to blackish. Caespituli amphigenous, usually hypophyllous, but rather inconspicuous. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, creeping, sparingly branched, 1-3 μm wide, septate, thin-walled, subhyaline to pale olivaceous or olivaceous-brown, verruculose. Stromata lacking. Conidiophores solitary, arising from creeping hyphae, lateral, occasionally terminal, straight, subcylindrical-conical to geniculate-sinuous, unbranched, 10-20 \times 2.5-4 μm , aseptate, pale olivaceous to olivaceous-brown, smooth; conidiophores reduced to conidiogenous cells; conidiogenous loci conspicuous, slightly thickened and darkened, 1.5-2 μm diam. Conidia solitary or catenate, cylindrical-filiform to acicular, 30-90 \times 2-4 μm , 2-8-septate, subhyaline, pale olivaceous to olivaceous-brown, thin-walled, verruculose, apex acute to obtuse or truncate in catenate conidia, base truncate to obconically truncate, 1.5-2 μm diam., hila slightly thickened and darkened.

Stenella simaroubacearum sp. nov. is associated with *Pseudocercospora simaroubae* sp. nov. This is the first species of *Stenella* on hosts of the Simaroubaceae. It belongs to a group of *Stenella* spp. with short conidiophores,



Figs. 31-34. Conidiophore fascicles, conidiophores, conidia, superficial hyphae, 31 = *Ramularia minax* var. *melampodii*, 32 = *Ramulariopsis cnidoscoli*, 33 = *Stenella stemodiicola*, 34 = *Stenella simaroubacearum* (bar: 20 μ m), drawn by U. Braun.

which are consistently formed singly, arising from creeping superficial hyphae, and long conidia formed singly as well as in short chains. There are only few comparable species. *S. bougainvilleae* J.M. Yen & Lim (1982) on *Bougainvillea spectabilis* (Nyctaginaceae) from Malaysia is morphologically close to this species, but differs in having conidia consistently formed singly.

(62) *Stenella stemodiicola* sp. nov. (Fig. 33)

Differt a *S. plectroniae* conidiophoris saepe solitariis, ex hyphis secundariis oriundis, non-ramosis.

Holotypus: on *Stemodium* sp. (*Scrophulariaceae*), Brazil, State of Ceará, Cascavel Co., Preaoca, 23 Apr. 2000, F. Freire (HAL 1714).

Leaf spots amphigenous, subcircular to somewhat angular-irregular, 2-5 mm diam., ochraceous, pale brown, later pale greyish brown to greyish white, margin narrow, dark brown or reddish brown. Caespituli amphigenous, punctiform to subeffuse, dark brown. Primary mycelium internal; secondary mycelium external; secondary hyphae superficial, sparingly branched, septate, 1-3 µm wide, subhyaline, pale olivaceous to brownish, verruculose. Stromata lacking or small, 10-20 µm diam., substomatal to intraepidermal, composed a few swollen hyphal cells, brown. Conidiophores in small to moderately large fascicles, loose to dense, arising from internal hyphae or stromata, through stomata or erumpent, rarely formed singly, arising from creeping hyphae, lateral, conidiophores erect, straight, subcylindrical to geniculate-sinuuous, unbranched to branched, 10-50 × 2-5 µm, 0-3-septate, pale olivaceous to olivaceous-brown, thin-walled, smooth to faintly rough-walled; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10-20 µm long; conidiogenous loci conspicuous, somewhat thickened and darkened, 1-1.5 µm diam. Conidia solitary or catenate, occasionally in branched chains, cylindrical-filiform, subacicular or narrowly obclavate-subcylindrical, 10-120 × 2-4 µm, 0-13-septate, subhyaline to pale olivaceous, almost smooth to verruculose, apex subacute to subobtuse or truncate in catenate conidia, base truncate to obconically truncate, 1-2 µm diam., hila slightly thickened and darkened.

There is no comparable species of *Stenella* on hosts of the Scrophulariaceae. *S. stemodiicola* belongs to a group of *Stenella* spp. with stromata and well-developed conidiophore fascicles and conidia variable in length and formation. There are only few comparable species. *S. plectroniae* Ponnappa (see Ellis 1976) on *Plectronia parviflora* (*Rubiaceae*) from India is morphologically similar, but differs in having unbranched conidiophores, frequently formed singly, arising from creeping hyphae.

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