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## Cercosporoid hyphomycetes from Brunei

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U. Braun<sup>1\*</sup> and A. Sivapalan<sup>2</sup>

<sup>1</sup> Martin-Luther-Universität, Institut für Geobotanik und Botanischer Garten, Neuwerk 21, D-06099 Halle, Germany; \* e-mail: braun@botanik.uni-halle.de

<sup>2</sup> Brunei Agricultural Research Centre, Department of Agriculture, Ministry of Industry and Primary Resources, Kilanas, Jalan Tutong 2780, Brunei Darussalam

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Distribution and host range data of *Cercospora*-like hyphomycetes from Brunei Darussalam are summarized in the present paper. *Pseudocercospora bruneiensis* sp. nov. on *Aglaonema* sp., *P. jasminicola* var. *effusa* var. nov. on *Jasminum sambac*, *P. pangiiicola* sp. nov. on *Pangium edule*, and *Stenella orchidacearum* sp. nov. on *Vanda* sp. are described, and the new combinations *Passalora caladii*, *Pseudocercospora caseariae*, and *P. thunbergiae* are introduced. *Cercoseptoria caseariae* is reduced to synonymy with *Pseudocercospora samydacearum*.

**Key words:** Brunei, cercosporoid hyphomycetes, mitosporic fungi, new species, new combinations, pathogenic fungi, taxonomy

### Introduction

Peregrine and Ahmad (1982) published the first list of plant diseases recorded from Brunei Darussalam, which included records of cercosporoid hyphomycetes. Numerous new specimens, which have been collected by A. Sivapalan and collaborators, have been examined, and added to a new list. The latter is composed of records of cercosporoid fungi, including those listed in Peregrine and Ahmad (1982), other data scattered in literature, and new, unpublished collections. Nomenclature and taxonomy of fungal names in older records have been checked and, if necessary, actualized. *Cercospora apii* is characterized by having a wide host range, but the taxonomy of the whole complex is neither proven nor clear. Therefore, the names of the particular *Cercospora* species which are morphologically indistinguishable from *C. apii* are nevertheless used in this checklist, but the note "(= *C. apii* s.l.)" is added. Host range and distribution data are separated into records published by Ellis (1976), Peregrine and Ahmad (1982), others, and "material examined". Duplicates of the collections examined are deposited in the "Brunei Agricultural Research Centre, Kilanas, Brunei" and in the "Herbarium of the Institute of Geobotany, Martin-

Luther-University, Halle (Saale), Germany" (HAL). The numbers cited are collection numbers from the herbarium in Brunei. Uncertain and doubtful records, e.g. *Cercospora* sp., *Pseudocercospora* sp., are excluded.

### Materials and methods

Microscopical examinations, measurements, descriptions, and the presentation of drawings follow the standard procedures outlined by Braun (1995b). In these illustrations, thin-walled structures are depicted by a single line, thick-walled ones by double lines, and the stippling is used to accentuate shape and pigmentation.

### List of cercosporoid hyphomycetes from Brunei

#### *Cercospora* Fresen.

1. *Cercospora apii* Fresen., Beiträge zur Mykologie 3: 91, Frankfurt a. M. (1863).

Reference: on *Apium graveolens*, *Coriandrum sativum*, *Petroselinum crispum* (Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Kilanas, 7 Aug. 1996, on *Centella asiatica*, J. Noridah (7714); Lumapas, on *Petroselinum crispum*, 2 May 1996, J. Aslin (7583).

2. *Cercospora apii* s.l.

Reference: on *Drejerella guttata* (as *C. sp. apii* group), *Bixa orellana*, *Coleus* sp., as *C. canescens*, *Abelmoschus esculentus* (as *C. citrullina*) (Peregrine and Ahmad, 1982).

3. *Cercospora asparagi* Sacc., Michelia 1: 88 (1877).

Reference: on *Asparagus officinalis* (Ellis, 1976; Peregrine and Ahmad, 1982).

4. *Cercospora begoniae* Hori, Lectures on Plant Diseases 2: 181 (1916).

Reference: on *Begonia* sp. (Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Rimba, on *Begonia* sp., 28 Aug. 1996, A. Sivapalan (7744).

5. *Cercospora brachiata* Ellis and Everh., Journal of Mycology 4: 5 (1888).

(= *C. apii* s.l.)

Reference: on *Amaranthus gangeticus* (Peregrine and Ahmad, 1982).

6. *Cercospora calendulae* Sacc., Michelia 1: 267 (1879).

(= *C. apii* s.l.)

Reference: on *Calendula officinalis* (Peregrine and Ahmad, 1982).

7. *Cercospora canescens* Ellis and Everh., American Naturalist 16: 1003 (1882).

(= *C. apii* s.l.)

Reference: on *Dolichos lablab*, *Glycine max*, *Phaseolus aureus*, *P. vulgaris*, *Psophocarpus tetragonolobus*, *Vigna sesquipedalis*, *V. umbellata*, *V. unguiculata* (Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Sungai Tajau, on *Vigna sesquipedalis*, 20 Mar. 1997, J. Noridah (7927).

8. *Cercospora celosiae* Syd., Annales Mycologici 27: 430 (1929).

(= *C. apii* s.l.)

Reference: on *Celosia cristata*, *C. plumosa* (Ellis, 1976; Peregrine and Ahmad, 1982).

9. *Cercospora citrullina* Cooke, Grevillea 12: 31 (1883).

(= *C. apii* s.l.)

Reference: on *Citrullus vulgaris*, *Cucumis melo*, *C. sativus*, *Cucurbita maxima*, *C. pepo*, *Luffa acutangula*, *L. cylindrica*, *Momordica charantia* (Ellis, 1976; Peregrine and Ahmad, 1982).

10. *Cercospora cocciniae* Munjal, Lall and Chona, Indian Phytopathology 12: 86 (1959). (Fig. 1)

Material examined: BRUNEI, Batang Mitus, on *Momordica charantia*, 5 June 1996, A. Maslinia (7633).

Notes: Munjal *et al.* (1959) described and illustrated this species, based on Indian material on *Coccinia indica*. *Momordica charantia* is frequently attacked by *Cercospora citrullina*, which is characterized by having acicular conidia, (1.5-)2-4(-5)  $\mu\text{m}$  wide, with truncate bases. *Cercospora cocciniae* is a true member of the genus *Cercospora* s.s., but differs from *C. citrullina* in having distinctly obclavate conidia, (3-)4-10  $\mu\text{m}$  wide in the present collection, with obconically truncate, often long obconically truncate bases.

11. *Cercospora coffeicola* Berk. and Cooke, Grevillea 9: 99 (1881).

Reference: on *Coffea liberica*, *C. robusta* (Peregrine and Ahmad, 1982).

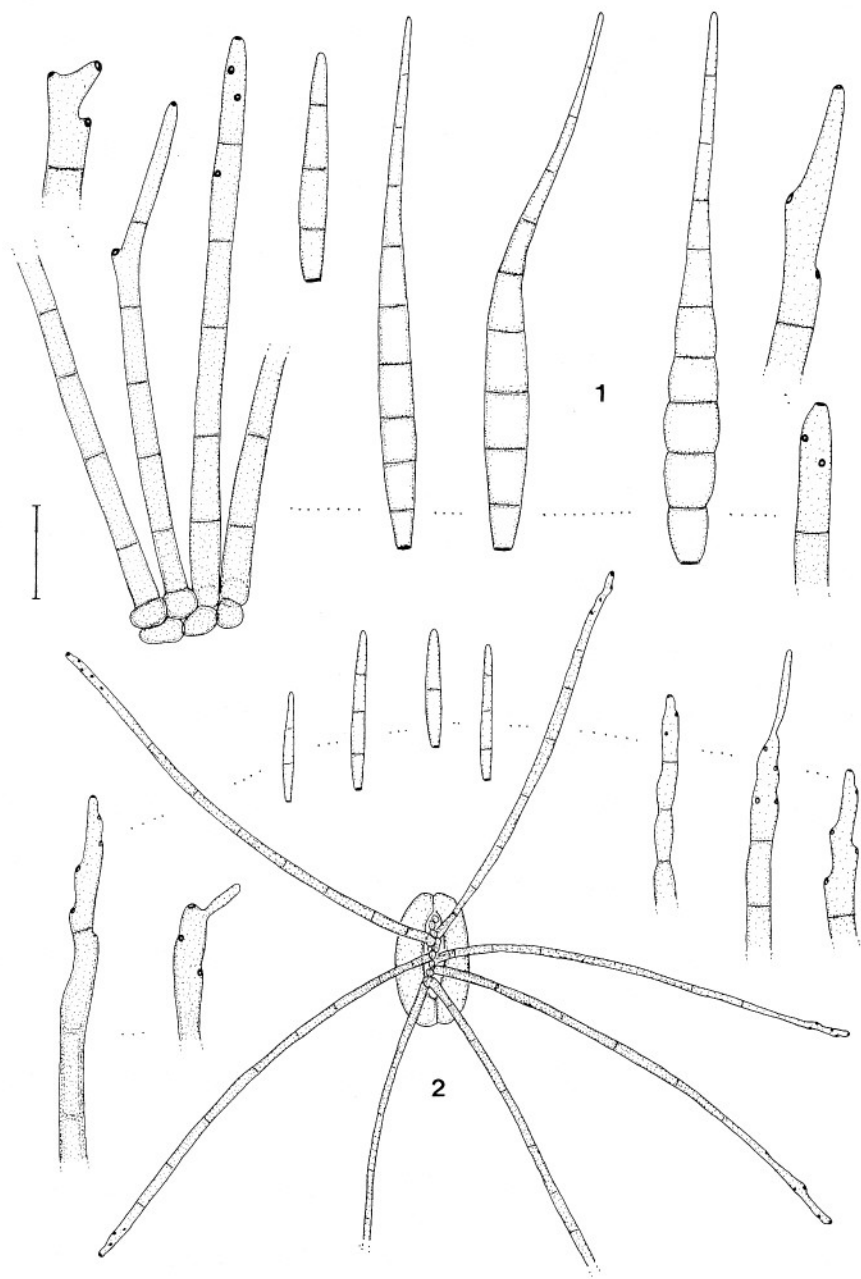
12. *Cercospora fukushiana* (Matsuura) W. Yamam., Journal of the Society of Tropical Agriculture 6: 601 (1934).

$\equiv$  *Cercosporina fukushiana* Matsuura, Journal of Plant Protection 14: 699 (1927).

Material examined: BRUNEI, Temburong, on *Impatiens balsamina*, 27 Apr. 1996, K. Sawal (7571).

13. *Cercospora gerberae* Chupp and Viégas, Boletim da Sociedade Brasileira de Agronomia 8: 27 (1945).

Material examined: BRUNEI, Sungai Tampoi, on *Gerbera jamesonii*, 6 Nov. 1996, A. Ali (7822).



**Figs. 1, 2.** Conidiophore fascicles, conidiophores, conidia. **1.** *Cercospora cocciniae*. **2.** *C. glauciana*. Bar = 20  $\mu$ m.

14. *Cercospora glauciana* Viégas, Boletim da Sociedade Brasileira de Agronomia 8: 27 (1945). (Fig. 2)

*Material examined:* BRUNEI, Kampong Bukit, on grass-like leaves belonging to the *Cyperaceae*, 30 Nov. 1996, J. Aslin (7873).

*Notes:* This collection agrees perfectly with *C. glauciana*. The conidiophores, formed in divergent fascicles, are 80-200 × 3-5 µm, and the conidia are cylindrical-fusoid, colourless, 1-3-septate, 15-35 × 2-3.5(-4) µm.

15. *Cercospora grandissima* Rangel, Boletim de Agriculture São Paulo XVI A, 4: 322 (1915).

(= *C. apii* s.l.)

*Reference:* on *Dahlia variabilis* (Peregrine and Ahmad, 1982).

16. *Cercospora helianthi* Ellis and Everh., Journal of Mycology 3: 20 (1887).

*Reference:* on *Helianthus annuus* (Peregrine and Ahmad, 1982).

*Notes:* Since the conidia are pigmented (Chupp, 1954), this species does not belong in *Cercospora* s.s., but its generic affinity is not yet clear, because type material has not yet been examined.

17. *Cercospora hydrangeae* Ellis and Everh., Journal of Mycology 8: 71 (1902).

(= *C. apii* s.l.)

*Reference:* on *Hydrangea macrophylla* (Ellis, 1976; Peregrine and Ahmad, 1982).

*Material examined:* BRUNEI, Rimba, on *Hydrangea* sp., 12 Nov. 1996, J. Aslin (7834).

18. *Cercospora instabilis* Rangel, Boletim de Agriculture São Paulo XVI A, 2: 154 (1915).

*Reference:* on *Cajanus cajan* (Peregrine and Ahmad, 1982).

19. *Cercospora ipomoeae* G. Winter, in Rabenh., Fungi europaei extraeuropei exsiccati 3585, Leipzig (1886).

(= *C. apii* s.l.)

*Reference:* on *Ipomoea bona-nox* (Peregrine and Ahmad, 1982).

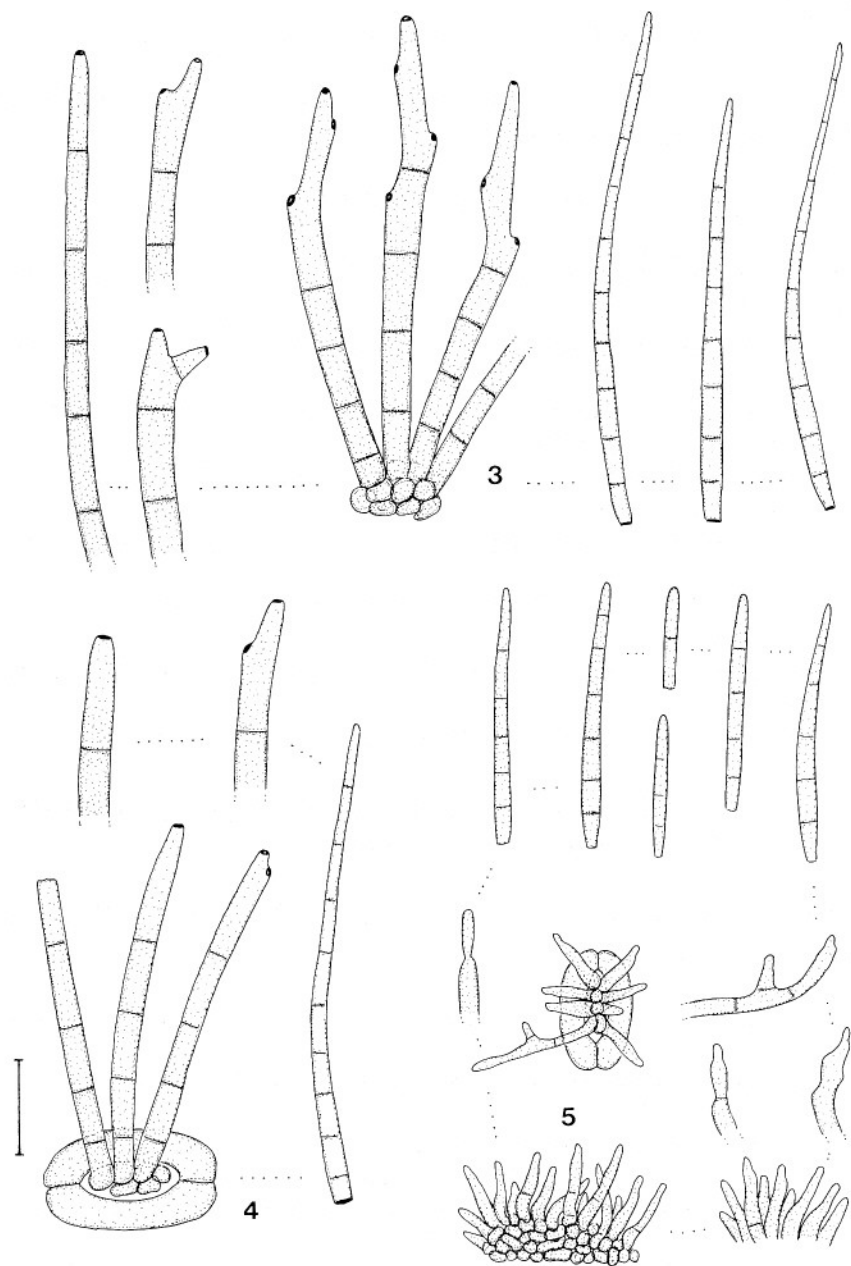
*Material examined:* BRUNEI, Betumpu, on *Ipomoea batatas*, 16 Apr. 1997, K. Sawal (7948).

20. *Cercospora janseana* (Racib.) O. Constant., Cryptogamie Mycologie 3: 63 (1982).

≡ *Napicladium janseanum* Racib., Parasitische Algen und Pilze Java's 2: 41 (1900).

= *Cercospora oryzae* Miyake, Journal of the College of Agriculture of the Imperial University, Tokyo 2: 263 (1910).

*Reference:* on *Oryza sativa* (Peregrine and Ahmad, 1982).



Figs. 3-5. Conidiophore fascicles, conidiophores, conidia. 3. *Cercospora sauropodis*, 4. *C. viegasii*. 5. *Pseudocercospora pangicola*. Bar = 20  $\mu$ m.

21. *Cercospora justiciicola* F.L. Tai, Lloydia 11: 47 (1948).  
 (= *C. apii* s.l.)  
 Reference: on *Jacobinia obtusior* (Ellis, 1976; Peregrine and Ahmad, 1982).
22. *Cercospora kikuchii* T. Matsumoto and Tomoy., Annals of the  
 Phytopathological Society of Japan 1: 1 (1925).  
 (= *C. apii* s.l.)  
 Reference: on *Glycine max* (Peregrine and Ahmad, 1982).
23. *Cercospora lactucae-sativae* Sawada, Formosan Agriculture Institute,  
 Report 35: 111 (1928).  
 = *Cercospora longispora* Cugini ex Trav., Malpighia 17: 217 (1902), homonym (*non* Peck,  
 1884).  
 = *C. longissima* Trav., Malpighia 17: Correzione (correction slip) to p. 217 (1903),  
 homonym (*non* Cooke and Ellis, 1902).  
 = *C. lactucae* Stev., Journal of the Department of Agriculture, Puerto Rico 1: 105 (1917),  
 homonym (*non* Hennings, 1902).  
 = *C. lactucae* Welles, Phytopathology 13: 298 (1923), homonym (*non* Hennings, 1902;  
 Stevenson, 1917).  
 Reference: on *Lactuca sativa* (Ellis, 1976; Peregrine and Ahmad, 1982).
24. *Cercospora malayensis* F. Stevens and Solheim, Mycologia 23: 394 (1931).  
 (= *C. apii* s.l.)  
 Reference: on *Hibiscus mutabilis* (Ellis, 1976; Peregrine and Ahmad, 1982).
25. *Cercospora menthicola* Tehon and Daniels, Mycologia 17: 247 (1925).  
 Reference: on *Mentha arvensis* (Peregrine and Ahmad, 1982).
26. *Cercospora physalidis* Ellis, American Naturalist 16: 810 (1882) *emend.*  
 Braun and Mel'nik (1997).  
 (= *C. apii* s.l.)  
 = *Cercospora solanicola* G.F. Atk., Journal of the Elisha Mitchell Scientific Society 8: 53  
 (1892).  
 = *C. nicotianae* Ellis and Everh., Proceedings of the Academy of Natural Sciences of  
 Philadelphia 1893: 170 (1893).  
 = *C. capsici* Heald and F.A. Wolf, Mycologia 3: 15 (1911).  
 = *C. petuniae* (Saito) Chupp and A.S. Mull., Ceiba 1: 176 (1950).  
 Reference: on *Capsicum frutescens*, *Nicotiana tabacum*, *Petunia violacea*, *Physalis*  
*angulata* (Ellis, 1976; Peregrine and Ahmad, 1982).  
 Material examined: BRUNEI, Birau, on *Capsicum annum*, 22 July 1996, K. Sawal (7694).
27. *Cercospora pulcherrima* Tharp, Mycologia 9: 114 (1917).  
 (= *C. apii* s.l.)  
 Reference: on *Euphorbia pulcherrima* (Ellis, 1976; Peregrine and Ahmad, 1982).

28. *Cercospora sauropodis* ("sauropi") S.Q. Chen and P.K. Chi, Journal of the South China Agriculture University 11: 62 (1990). (Fig. 3)

(= *C. apii* s.l.)

Reference: on *Sauropus androgynus* (A. and P., as *C. phyllanthicola*).

Material examined: BRUNEI, Kilanas, on *Sauropus androgynus*, 30 Sep. 1996, J. Aslin (7796).

*Leaf spots* subcircular to somewhat angular-irregular, 1-6 mm diam., at first yellowish-ochraceous to brownish, later greyish white, margin narrow, reddish to medium dark brown; stromata up to 40 µm diam. *Conidiophores* in loose to dense fascicles, 2-30, simple, rarely branched, subcylindric to somewhat geniculate, 40-90 × 4-7 µm, pale olivaceous to medium brown, often somewhat paler towards the apex, pluriseptate throughout, proliferation usually sympodial, rarely percurrent, conidial scars thickened and darkened, 2-3 µm diam. *Conidia* solitary, acicular, 40-100 × 2.5-4 µm, hyaline, smooth, pluriseptate, distance between septa 5-15 µm, apex subacute, base truncate, hilum thickened and darkened.

*Notes:* This collection agrees very well with the original description of *C. sauropodis*.

29. *Cercospora sorghi* Ellis and Everh., Journal of Mycology 3: 15 (1887).

Reference: on *Sorghum vulgare* (Peregrine and Ahmad, 1982).

30. *Cercospora tageticola* Ellis and Everh., Journal of Mycology 8: 72 (1902).

Reference: on *Tagetes erecta* (Peregrine and Ahmad, 1982).

31. *Cercospora ternateae* Petch, Annals of the Royal Garden Peradeniya V, 4: 306 (1909).

(= *C. apii* s.l.)

Reference: on *Clitoria ternatea* (Ellis, 1976; Peregrine and Ahmad, 1982).

32. *Cercospora tetragoniae* (Speg.) Siemaszko, Materialy po Mikologii i Fitopatologii Rossii 1: 40 (1915).

≡ *Cercosporina tetragoniae* Speg., Anales del Museo Nacional de Historia Natural de Buenos Aires 20: 429 (1910).

Reference: on *Tetragonia expansa* (Peregrine and Ahmad, 1982).

33. *Cercospora thunbergiana* J.M. Yen, Revue de Mycologie (Paris) 30: 198 (1965).

Reference: On *Thunbergia erecta* (Peregrine and Ahmad, 1982).



34. *Cercospora viegasii* Chupp, Boletim da Sociedade Brasileira de Agronomia 8: 57 (1945). (Fig. 4)

(= *C. apii* s.l.)

*Material examined*: BRUNEI, Sungai Tajau, on *Mikania micrantha*, 13 Nov. 1996, A. Ali (7838).

*Notes*: This species has been described from Brazil on *Mikania hirsutissima* (Chupp, 1954). The material from Brunei is rather scarce, but a few fascicles of conidiophores and conidia, agreeing with the original description of *C. viegasii*, have been observed.

35. *Cercospora violae* Sacc., Nuovo Giornale Botanico Italiano 8: 187 (1876).

(= *C. apii* s.l.)

*Reference*: on *Viola odorata* (Peregrine and Ahmad, 1982).

36. *Cercospora volkameriae* Speg., Revista del Museo de La Plata 15: 47 (1908).

*Reference*: on *Clerodendron thomsonae* (Ellis, 1976; Peregrine and Ahmad, 1982).

37. *Cercospora zinniae* Ellis and G. Martin, Journal of Mycology 1: 20 (1885).

(= *C. apii* s.l.)

*Reference*: on *Zinnia elegans* (Peregrine and Ahmad, 1982).

#### *Mycovellosiella* Rangel

38. *Mycovellosiella koepkei* (Krüger) Deighton, Mycological Papers 144: 20 (1979).

≡ *Cercospora koepkei* Krüger, Mededelingen van de Proefstation West-Java, Kagok-Tegal 1: 113 (1890).

*Reference*: on *Saccharum officinarum* (Peregrine and Ahmad, 1982).

#### *Passalora* Fr. (incl. *Cercosporidium*)

39. *Passalora arachidicola* (Hori) U. Braun, in Braun, Mouchacca and McKenzie, New Zealand Journal of Botany (1999).

≡ *Cercospora arachidicola* Hori, Nishigahara Agriculture Experiment Station Tokyo, Annual Report 1917: 26 (1917).

*Reference*: on *Arachis hypogaea* (Peregrine and Ahmad, 1982).

40. *Passalora bougainvilleae* (Muntañola) Castañeda and U. Braun, Cryptogamic Botany 2/3: 291 (1991).

≡ *Cercospora bougainvilleae* Muntañola, Revista Argentina de Agronomía 24: 84 (1957).

*Material examined*: BRUNEI, Kilanas, on *Bougainvillea* sp., 1 Aug. 1996, Y. Muhammad (7712).

41. *Passalora caladii* (F. Stevens) U. Braun and Sivapalan, **comb. nov.**  
 ≡ *Helminthosporium caladii* F. Stevens, Transactions of the Illinois State Academy of Science 10: 209 (1917).  
 ≡ *Cercosporidium caladii* (F. Stevens) Deighton, Mycological Papers 112: 32 (1967).  
 ≡ *Passalora caladii* (F. Stevens) Poonam Srivast., Journal of Living World 1: 113 (1994), *comb. inval.* (basionym not cited).  
*Reference:* on *Caladium* sp. (Peregrine and Ahmad, 1982).  
*Notes:* Deighton (1967) described and illustrated this species in detail and transferred it to *Cercosporidium*. The latter genus is, however, a synonym of *Passalora* (Deighton, 1990; Braun, 1995a).
42. *Passalora colocasiae* (Höhn.) U. Braun, in Braun, Mouchacca and McKenzie, New Zealand Journal of Botany 37: 308 (1999).  
 ≡ *Cercospora caladii* var. *colocasiae* Höhn., Sitzungsberichte der Königlichen Akademie der Wissenschaften Mathematisch-Naturwissenschaftliche Klasse I, 116: 150 (1907).  
 ≡ *Cercospora colocasiae* (Höhn.) Chupp, A Monograph of the Fungus Genus *Cercospora*: 58, Ithaca, New York 1954.  
*Reference:* on *Alocasia* sp. (Peregrine and Ahmad, 1982).
43. *Passalora henningsii* (Allesch.) Castañeda and U. Braun, Cryptogamic Botany 1: 46 (1989).  
 ≡ *Cercospora henningsii* Allesch., in Engler, Pflanzenwelt Ost-Afrikas, Teil C: 35 (1895).  
*Reference:* on *Manihot esculenta* (Peregrine and Ahmad, 1982).  
*Material examined:* BRUNEI, Sinaut, 20 Nov. 1996, on *Manihot esculenta*, J. Aslin (7847).

*Phaeoramularia* Muntañola

44. *Phaeoramularia fusimaculans* (G.F. Atk.) X.J. Liu and Y.L. Guo, Acta Phytopathologica Sinica 12: 9 (1982).  
 ≡ *Cercospora fusimaculans* G.F. Atk., Journal of the Elisha Mitchell Scientific Society 8: 50 (1892).  
*Reference:* on *Zea mays* (Peregrine and Ahmad, 1982).

*Pseudocercospora* Speg.

45. *Pseudocercospora abelmoschi* (Ellis and Everh.) Deighton, Mycological Papers 140: 138 (1976).  
 ≡ *Cercospora abelmoschi* Ellis and Everh., Journal Institute Jamaica 1: 247 (1893).  
*Reference:* on *Abelmoschus esculentus* (Ellis, 1976; Peregrine and Ahmad, 1982).  
*Material examined:* BRUNEI, Betumpu, on *Abelmoschus esculentus*, 22 May 1996, K. Sawal (7606); Tutong, 13 Mar. 1997, J. Aslin (7920).

46. *Pseudocercospora blumeae-balsamiferae* Goh and W.H. Hsieh, Transactions of Mycological Society of the Republic of China 2: 128 (1987).

(Fig. 6)

≡ *Cercospora blumeae-balsamiferae* Sawada, Taiwan Agriculture Research Institute Report 86: 166 (1943), *nom. inval.*

*Material examined*: BRUNEI, Kilanas, on *Blumea* sp. (cf. *balsamifera*), 16 June 1997, A. Sivapalan (7993).

*Notes*: The fructification in this species is variable. Well-developed stromata, about 15-40 µm diam., are usually epiphyllously formed. Secondary mycelium with superficial hyphae and solitary conidiophores are mainly hypophyllous. The original description is based on material with epiphyllous stromata and fasciculate conidiophores (Hsieh and Goh, 1990). Guo and Hsieh (1995) and Guo *et al.* (1998) described and illustrated material of this species with abundant secondary mycelium, but without stromata. The present material from Brunei includes typical epiphyllous stromata as well as hypophyllous fructification with secondary mycelium.

47. *Pseudocercospora bradburyae* (E. Young) Deighton, Mycological Papers 140: 140 (1976).

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

*Reference*: on *Centrosema pubescens* (Ellis, 1976; Peregrine and Ahmad, 1982).

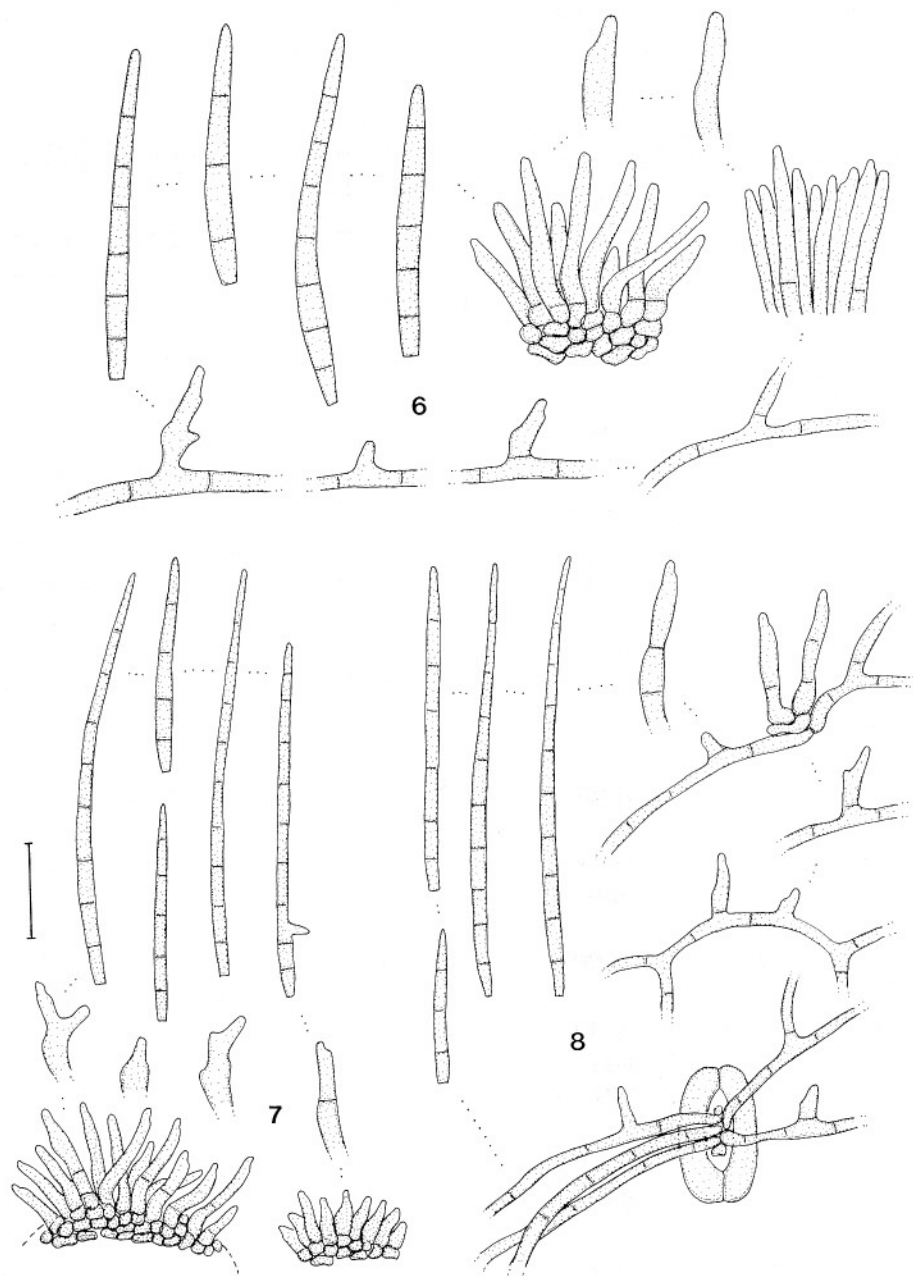
48. *Pseudocercospora bruneiensis* U. Braun and Sivapalan, **sp. nov.** (Fig. 7)

*Maculae* amphigenae, suborbiculares vel leniter irregulares, 3-15 mm diam., sordide griseo-viridulae, griseae, griseo-albidae, margine tenui atriore sordide olivaceo vel atro-griseo-brunneo cinctae. *Caespituli* amphigeni, saepe hypophylli, punctiformes vel subeffusi, sordide griseo-olivacei vel brunnei. *Mycelium* immersum. *Hyphae* septatae, sparse ramosae, brunneae. *Stromata* minuta vel bene evoluta, substomatata, 10-50 µm diam., brunnea, ex cellulis inflatis, 2-7 µm latis composita. *Conidiophora* dense fasciculata, saepe numerosa, ex cellulis stromatibus oriunda, per stoma emergentia, erecta, cylindrica, conica vel flexuosa, geniculata-sinuosa, simplicia, interdum ramosa, 5-40 × 2-5 µm, 0-1-septata, pallide olivacea vel modice olivaceo-brunnea, apice saepe pallidiora, leves. *Cellulae conidiogenae* integratae, terminales. Cicatrices conidiales inconspicuae, rotundatae vel truncatae. *Conidia* solitaria, anguste obclavata, cylindrica-filiformes, 40-110 × 2-4 µm, saepe 4-12-septata, subhyalina vel pallide olivacea, leves, apice saepe subacuta, interdum obtusa, basi obconice truncata, interdum truncata, hila non-incrassata, non-fuscata, 1.5-3 µm lata; conidia raro ramosa.

*Holotype*: BRUNEI, Rimba, on *Aglaonema* sp. (*Araceae*), 28 Aug. 1996, A. Sivapalan 7747 (HAL).

*Isotype*: Herbarium of Brunei Agricultural Research Centre, Kilanas, Brunei.

*Leaf spots* amphigenous, subcircular to somewhat irregular, 3-15 mm diam., dingy greyish green, grey, greyish white, margin narrow, darker, dingy olivaceous to dark greyish brown. *Caespituli* amphigenous, mostly hypophyllous, punctiform to subeffuse, dingy greyish olivaceous to brownish.



**Figs. 6-8.** Conidiophore fascicles, conidiophores, conidia, secondary hyphae with solitary secondary conidiophores. **6.** *Pseudocercospora blumeae-balsamiferae*. **7.** *P. bruneiensis*. **8.** *P. jasminicola* var. *effusa*. Bar = 20  $\mu$ m.

*Mycelium* internal; hyphae septate, sparingly branched, pigmented, forming small to well-developed stromata, substomatal, 10-50 µm diam., brown, composed of swollen hyphal cells, 2-7 µm diam. *Conidiophores* in dense fascicles, usually numerous, arising from stromata, emerging through stomata, erect, cylindrical, conical to flexuous, geniculate-sinuous, simple, occasionally branched, 5-40 × 2-5 µm, 0-1-septate, pale olivaceous to medium olivaceous brown, tips often somewhat paler, smooth; conidiogenous cells integrated, terminal, or conidiophore reduced to a single conidiogenous cell; conidial scars inconspicuous, rounded to truncate. *Conidia* solitary, narrowly obclavate, cylindrical-filiform, 40-110 × 2-4 µm, pluriseptate, usually with 4-12 septa, subhyaline to pale olivaceous, smooth, apex usually subacute, occasionally obtuse, base obconically truncate, sometimes truncate, hila neither thickened nor darkened, 1.5-3 µm wide; conidia rarely with a subbasal lateral branchlet.

*Notes:* This species is the only *Pseudocercospora* sp. on *Aglaonema* spp. Three *Pseudocercospora* species on hosts belonging to the *Araceae* are known. *Pseudocercospora bruneiensis* differs from *P. colocasiae* Deighton (1976) and *P. alocasiicola* U. Braun and McKenzie (in Braun *et al.*, 1999) in having much narrower conidia. *Pseudocercospora aracearum* U. Braun and McKenzie (in Braun *et al.*, 1999), described on *Colocasia esculenta* from Vanuatu, possesses distinct leaf spots, somewhat wider and shorter conidiophores and, above all, wider conidia.

49. *Pseudocercospora chrysanthemicola* (J.M. Yen) Deighton, Mycological Papers 140: 141 (1976).

≡ *Cercospora chrysanthemi* J.M. Yen, Revue de Mycologie (Paris) 29: 216 (1964).

*Reference:* on *Chrysanthemum indicum* (Peregrine and Ahmad, 1982).

50. *Pseudocercospora cruenta* (Sacc.) Deighton, Mycological Papers 140: 142 (1976).

≡ *Cercospora cruenta* Sacc., Michelia 2: 149 (1880).

*Reference:* on legumes, Ellis (1976).

*Material examined:* BRUNEI, Betumpu, on *Vigna sesquipedalis*, 16 Apr. 1997, K. Sawal (7952).

51. *Pseudocercospora eupatorii-formosani* U. Braun and Bagyan., Sydowia 51: 8 (1999).

≡ *Cercospora eupatorii-formosani* Sawada, Taiwan Agriculture Research Institute Report 86: 169 (1943), *nom. inval.*

≡ *Pseudocercospora eupatorii-formosani* (Sawada) J.M. Yen, Gardens' Bulletin, Singapore 33: 175 (1980), *comb. inval.*

≡ *Pseudocercospora eupatorii-formosani* J.M. Yen ex Y.L. Guo and W.H. Hsieh, The genus *Pseudocercospora* in China: 67 (1995), *nom. inval.*

Reference: on *Eupatorium odoratum* (Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Luahan, on *Eupatorium odoratum*, 26 Aug. 1997, J. Aslin (8042).

52. *Pseudocercospora fijiensis* (Morelet) Deighton, Mycological Papers 140: 144 (1976).

≡ *Cercospora fijiensis* Morelet, Annales de la Societe Scientifique Naturelles et d'Archeologie, Toulon 21: 105 (1969).

≡ *Paracercospora fijiensis* (Morelet) Deighton, Mycological Papers 144: 51 (1979).

Material examined: BRUNEI, Birau, on *Musa sapientum*, 22 July 1996, H. Fuziah (7704).

53. *Pseudocercospora formosana* (Yamam.) Deighton, Mycological Papers 140: 144 (1976).

≡ *Cercospora formosana* Yamam., Journal of the Society of Tropical Agriculture 6: 600 (1934).

Reference: on *Lantana aculeata* (Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Rimba, on *Lantana* sp., 28 Aug. 1996, A. Sivapalan (7746).

54. *Pseudocercospora fuligena* (Roldan) Deighton, Mycological Papers 140: 144 (1976).

≡ *Cercospora fuligena* Roldan, Philippine Journal of Science 66: 8 (1938).

Reference: on *Lycopersicon esculentum* (Ellis, 1976; Peregrine and Ahmad, 1982).

Material examined: BRUNEI, Kilanas, on *Lycopersicon esculentum*, 20 May 1997, A. Ali (7980).

55. *Pseudocercospora globosae* (J.M. Yen) Deighton, Mycological Papers 140: 144 (1976).

≡ *Cercospora globosae* J.M. Yen, Revue de Mycologie (Paris) 29: 224 (1964).

Material examined: BRUNEI, Berakas, on *Gomphrena* sp., 23 Aug. 1997, A. Sivapalan (8039).

56. *Pseudocercospora heveae* (Vincens) Deighton, Mycological Papers 140: 145 (1976).

≡ *Cercospora heveae* Vincens, Bulletin de la Societe de Pathologie Vegetale de France 2: 25 (1915).

Reference: on *Hevea brasiliensis* (Peregrine and Ahmad, 1982).

57. *Pseudocercospora ixoricola* (J.M. Yen) J.M. Yen, in Yen and Lim, Gardens' Bulletin, Singapore 33: 179 (1980).

≡ *Cercospora ixoricola* J.M. Yen, Revue de Mycologie (Paris) 31: 119 (1966).

Material examined: BRUNEI, Kampong Kupang, on *Ixora* sp., 14 Apr. 1998, J. Noridah (8190).

58. *Pseudocercospora jasminicola* Deighton var. *effusa* U. Braun and Sivapalan, **var. nov.** (Fig. 8)

*Mycelium* secundarium externum, superficiale; *hyphae* repentes, 1.5-5  $\mu\text{m}$  diam., subhyalinae, pallide olivaceae, olivaceo-brunneae vel flavo-brunneae, leves, septatae. *Conidiophora* secundaria solitaria, ex hyphis repentibus lateraliter vel terminaliter oriunda.

*Holotype*: BRUNEI, Rimba, on *Jasminum sambac* (*Oleaceae*), 28 Aug. 1996, A. Sivapalan 7757 (HAL).

*Isotype*: Herbarium of Brunei Agricultural Centre, Kilanas, Brunei.

With secondary mycelium, superficial. *Hyphae* creeping, 1.5-5  $\mu\text{m}$  wide, subhyaline, pale olivaceous, olivaceous brown to yellowish brown, smooth, septate. *Secondary conidiophores* solitary, arising from creeping hyphae, lateral or terminal.

*Notes*: *Pseudocercospora jasminicola* Deighton (1976) is usually characterized by having internal primary mycelium and fasciculate conidiophores, but collections on *Jasminum sambac* differ in forming superficial secondary mycelium with solitary secondary conidiophores. Guo and Hsieh (1995) described and illustrated Chinese material on this host agreeing with var. *effusa*, and *P. jasminicola* has been recorded on *Jasminum sambac* from Bombay, India (Deighton, 1976: 77). Furthermore, an Indian collection on *Jasminum* sp. from Andhra Pradesh (Mahabubnagar, Dec. 1990, Jagadeeswar, HAL) possesses secondary mycelium with solitary conidiophores as well. The conidiophores in the type collection of var. *effusa* are 5-40  $\times$  1.5-4(-5)  $\mu\text{m}$ , 0-2-septate, and the conidia are narrowly obclavate-filiform, subcylindric(-fusoid), 30-110  $\times$  2-4  $\mu\text{m}$ , 3-12-septate, pale olivaceous to yellowish brown.

59. *Pseudocercospora lythracearum* (Heald and F.A. Wolf) X.J. Liu and Y.L. Guo, *Acta Mycologica Sinica* 11: 294 (1992).

$\equiv$  *Cercospora lythracearum* Heald and F.A. Wolf, *Mycologia* 3: 18 (1911).

*Reference*: on *Lagerstroemia indica* (Peregrine and Ahmad, 1982).

60. *Pseudocercospora musae* (Zimm.) Deighton, *Mycological Papers* 140: 148 (1976).

$\equiv$  *Cercospora musae* Zimm., *Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene, Abteilung 2, 8*: 219 (1902).

*Reference*: on *Musa sapientum*, *M. textilis* (Peregrine and Ahmad, 1982).

*Material examined*: BRUNEI, Birau, on *Musa sapientum*, 22 July 1996, H. Fuziah (7704).

61. *Pseudocercospora pangiiicola* U. Braun and Sivapalan, **sp. nov.** (Fig. 5)

*Maculae* amphigenae, suborbiculares vel angulares-irregulares, 3-15 mm diam., primo viridulae, flavo-ochraceae, deinde brunneae, ultimo in centro griseo-brunneae vel griseo-albidae, 2-6 mm diam., margine diffusi brunneo cinctae. *Caespituli* amphigeni, punctiformes, atro-brunnei vel subnigri. *Mycelium* immersum. *Stromata* substomatalia, 10-40  $\mu\text{m}$  diam., deinde saepe

erumpentia, brunnea, ex cellulis leviter inflatis, 2-5  $\mu\text{m}$  latis composita. *Conidiophora* laxae vel dense fasciculatae, paucae vel numerosae, ex cellulis stromatibus oriunda, per stoma emergentia, erecta, raro decumbentes, simplicia, interdum ramosa, subcylindrica vel geniculata-sinuosa, 10-50  $\times$  2-5  $\mu\text{m}$ , 0-2-septata, pallide olivacea vel olivaceo-brunnea, leves. *Cellulae conidiogenae* integratae, terminales, 10-40  $\times$  2-4  $\mu\text{m}$ , cicatrices conidiales inconspicuae. *Conidia* solitaria, obclavata-cylindrica, 15-60  $\times$  3-4.5  $\mu\text{m}$ , 1-7-septata, subhyalina vel pallide olivacea, leves, apice obtusa vel subacuta, basi truncata vel obconice truncata, raro rotundata, hila non-incrassata, non-fusata, 2-3.5  $\mu\text{m}$  lata.

*Holotype*: BRUNEI, Birau, on *Pangium edule* Reinw. (*Flacourtiaceae*), 1 Mar. 1997, H. Fuziah 7912 (HAL).

*Isotype*: Herbarium of Brunei Agricultural Research Centre, Kilanas, Brunei.

*Leaf spots* amphigenous, subcircular to angular-irregular, 3-15 mm diam., at first greenish, yellowish-ochraceous, later brown, finally with a greyish brown to greyish white centre, about 2-6 mm diam., and a diffuse brown border. *Caespituli* amphigenous, punctiform, dark brown to blackish. *Mycelium* immersed. *Stromata* substomatal, 10-40  $\mu\text{m}$  diam., later often somewhat erumpent, brown, composed of somewhat swollen hyphal cells, 2-5  $\mu\text{m}$  diam. *Conidiophores* loosely to densely fasciculate, few to numerous, arising from stromata, emerging through stomata, erect, occasionally decumbent, simple, occasionally branched, subcylindric to geniculate-sinuosa, 10-50  $\times$  2-5  $\mu\text{m}$ , 0-2-septate, pale olivaceous to olivaceous brown, smooth, conidiogenous cells integrated, terminal or conidiophores reduced to a single conidiogenous cell, 10-40  $\times$  2-4  $\mu\text{m}$ , conidial scars inconspicuous. *Conidia* solitary, obclavate-cylindrical, 15-60  $\times$  3-4.5  $\mu\text{m}$ , 1-7-septate, subhyaline to pale olivaceous, smooth, apex obtuse to subacute, base truncate to obconically truncate, rarely rounded, hila neither thickened nor darkened, 2-3.5  $\mu\text{m}$  wide.

*Notes*: *Pseudocercospora pangii* is the only *Pseudocercospora* on *Pangium* spp. The following cercosporoid hyphomycete species are known from various hosts belonging to the *Flacourtiaceae*:

1. *Cercospora caloncobae* Viégas, *Bragantia* 7: 32 (1943), on *Caloncoba echinata*, Brazil. This is a true *Cercospora* s.s., close to or identical with *C. apii* s.l. The type material has recently been re-examined (Inácio *et al.*, 1996).
2. *Cercospora ciferii* Chupp, *A Monograph of the Fungus Genus Cercospora*: 235, Ithaca, New York 1954, on *Casearia guianensis*, Dominican Republic, Puerto Rico. The generic affinity of this species is not yet clear. Paratype material from BPI has been examined (on *Casearia guianensis*, Dominican Republic, 24 January 1926, ex herb. Estacion Agronomica Moca), but no fructification agreeing with the original description of *C. ciferii* has been found. This species differs from *C. pangii* in having indistinct lesions, long conidiophores, up to 80  $\mu\text{m}$ , and colourless conidia.



3. *Cercospora flacourtiicola* P.C. Gupta, Zeitschrift für Pflanzenkrankheiten und Pflanzenschutz 80: 329 (1973), on *Flacourtia cataphracta*, India. On account of long, pigmented, septate conidiophores and long, acicular, colourless, pluriseptate conidia, this species seems to belong in *Cercospora* s.s., and it is possibly close to or identical with *C. apii* s.l.
4. *Pseudocercospora caseariigena* H.S.G. Rao, S. Chandra and Kamal, Mycological Research 99: 707 (1995), on *Casearia elliptica*, India. This species is distinct from *P. pangiiicola* by much longer, pluriseptate, frequently branched conidiophores and longer conidia.
5. *Pseudocercospora cylindrosporioides* (Solheim and Chupp) Y.L. Guo and X.J. Liu, Acta Mycologica Sinica 11: 131 (1992), on *Casearia guianensis* and *C. sylvestris*, Puerto Rico, and *Xylosma congestum*, China (Fig. 10). This species is a typical "*Cercoseptoria*" with large sporodochial conidiomata and numerous, densely arranged, short conidiophores and small, colourless conidia,  $10-55 \times 1.5-4 \mu\text{m}$ , 1-5-septate. Paratype material of this species has been examined (Puerto Rico, Rio Pietras, on *Casearia sylvestris*, 26 July 1915, J.A. Stevenson 2883 (BPI)).
6. *Pseudocercospora flagellariae* (Sawada ex) Goh and W.H. Hsieh, Transactions of the Mycological Society of the Republic of China 2: 130 (1987), on *Flagellaria indica*, Taiwan. This species is distinguished from *P. pangiiicola* by having short, cylindrical, unbranched conidiophores and longer, somewhat wider cylindrical-obclavate conidia.
7. *Pseudocercospora dovyalidis* (Chupp and Doidge) Deighton, Mycological Papers 140: 143 (1976), on *Dovyalis zeyheri*, South Africa. The conidiophores are pale brown with hyaline tips, and the conidia narrowly linear and very pale.
8. *Pseudocercospora kiggelariae* (Syd.) Crous and U. Braun, Sydowia 46: 215 (1994), on *Kiggelaria africana*, South Africa. *Pseudocercospora pangiiicola* is morphologically close to *P. kiggelariae*, but the conidiophores of the latter species are consistently unbranched and the conidia are olivaceous to pale brownish. Furthermore, the two species are geographically separate and occur on hosts belonging to different genera.
9. *Pseudocercospora samydacearum* A.K. Singh, Kamal and S.K. Singh, Current Science 54: 144 (1985), Fig. 11. = *Cercoseptoria caseariae* Abbasi, R. Kumar and Kamal, in Hasija, Rayak and Singh, Perspectives in Mycological Research - I (G.P. Agarwal Festschrift Volume): 35, New Delhi 1987. Material examined: India, South Gorakhpur Forest Division, on *Casearia elliptica*, Aug. 1979, P. Abbasia 72 (IMI 246785), type of *Cercoseptoria caseariae*; India, U.P., Gorakhpur, on *Casearia elliptica*, A.K. Singh, KA 83 (IMI 254722), type of *Pseudocercospora*

*samydacearum*. *Cercoseptoria caseariae* is indistinguishable from *P. samydacearum*. This species is very close to *Pseudocercospora caseariae*, but differs in having very large leaf spots, hypophyllous caespituli, paler conidiophores, and paler, narrower, mostly subcylindric conidia. *Pseudocercospora pangiiicola* has distinct leaf spots and somewhat longer and narrower, sometimes branched conidiophores.

10. *Pseudocercospora caseariae* (F. Stevens) U. Braun and Sivapalan **comb. nov.** (Fig. 9)

≡ *Cercospora caseariae* F. Stevens, Transactions of the Illinois State Academy of Science 10: 212 (1917).

*Material examined*: PUERTO RICO, Villa Alba, on *Casearia ramiflora*, 3 Jan. 1915, F. Stevens 99 (BPI, lectotype), selected by Chupp (1954).

Since the conidial scars are inconspicuous, this species has to be placed in *Pseudocercospora*. It differs from *P. pangiiicola* in having well-developed epiphyllous caespituli with large, immersed stromata, wider conidia, and distinct leaf spots.

62. *Pseudocercospora polysciatis* (S.H. Sun) J.M. Yen, Bulletin de la Societe Mycologique de France 94: 383 "1978" (1979).

≡ *Cercospora polysciatis* S.H. Sun, Journal of Agriculture and Forestry, Taiwan 4: 45 (1955).

*Material examined*: BRUNEI, Rimba, on *Polyscias* sp., 12 Nov. 1996, H. Fuziah (7836).

The differentiation between *P. polysciatis* and *P. polysciatis-pinnatae* U. Braun and Mouch. has been discussed by Braun *et al.* (1999).

64. *Pseudocercospora psophocarpi* (J.M. Yen) Deighton, Mycological Papers 140: 151 (1976).

≡ *Cercospora psophocarpi* J.M. Yen, Bulletin de la Societe Mycologique de France 83: 338 (1967).

*Reference*: on *Psophocarpus tetragonolobus* (Peregrine and Ahmad, 1982).

64. *Pseudocercospora pterocarpicola* (J.M. Yen) J.M. Yen, Gardens' Bulletin, Singapore 33: 183 (1980).

≡ *Cercospora pterocarpicola* J.M. Yen, Revue de Mycologie (Paris) 42: 147 (1978).

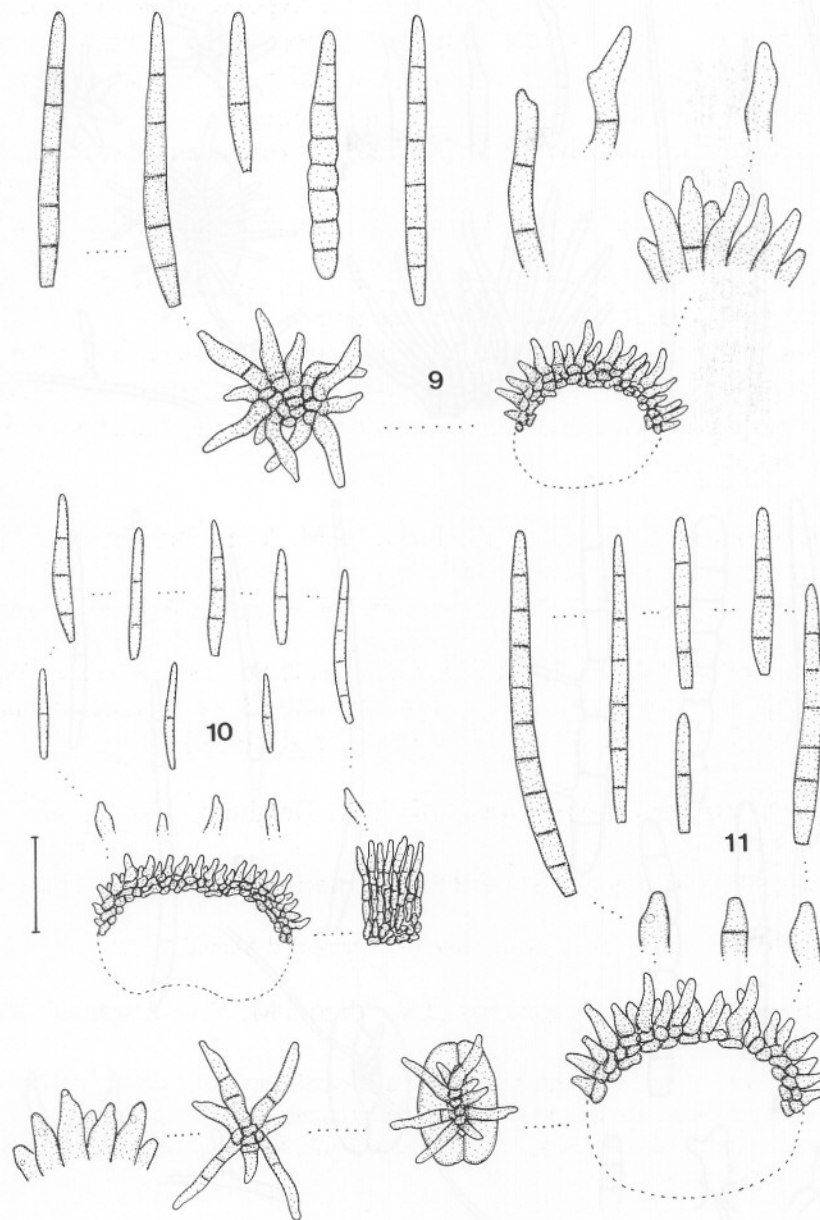
*Reference*: on *Pterocarpus indicus* (Peregrine and Ahmad, 1982), as *C. sp.*

*Material examined*: MALAYSIA, Sarawak, Semongok, Kuching, on *Pterocarpus indicus*, 13 Apr. 1984 (IMI 286316).

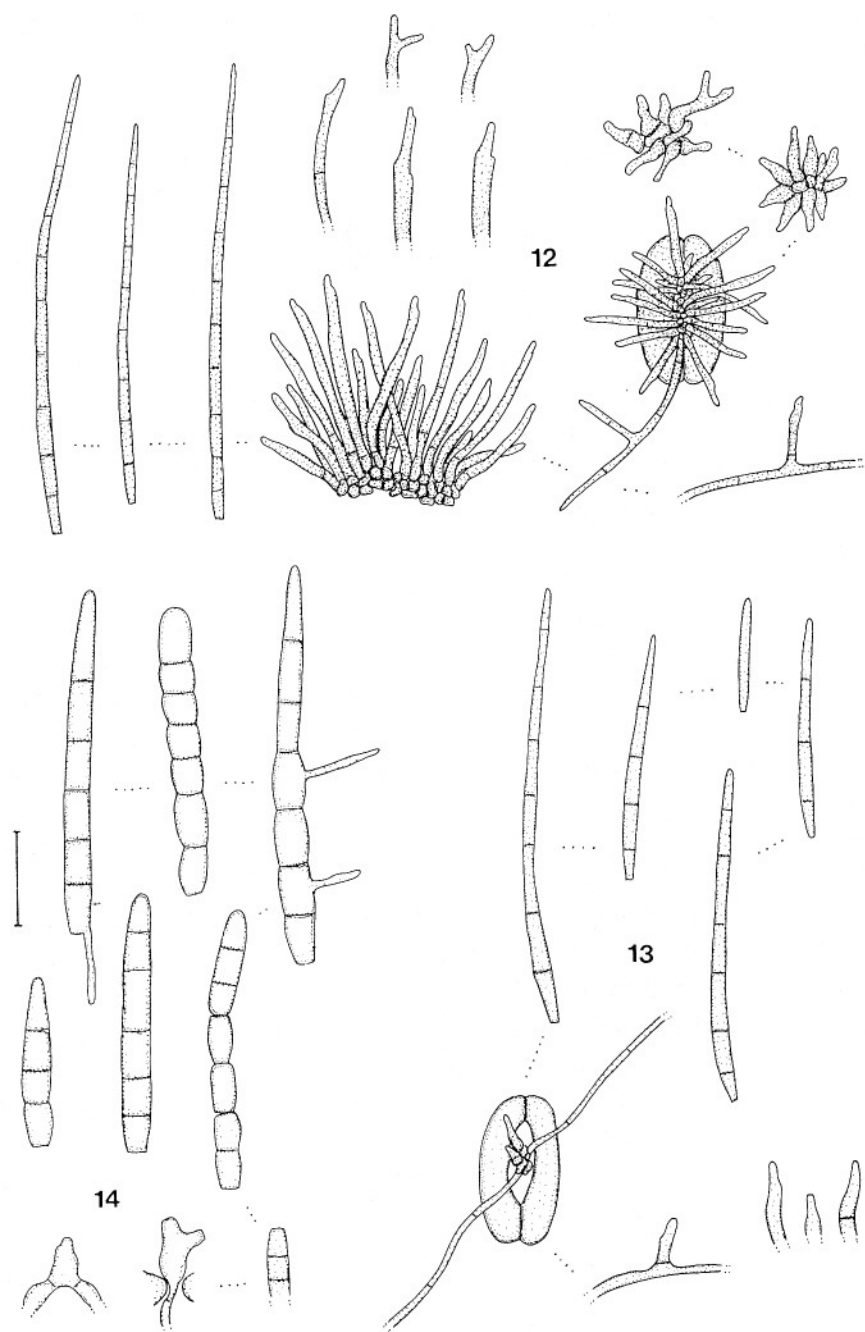
65. *Pseudocercospora salicina* (Ellis and Everh.) Deighton, Mycological Papers 140: 94 (1976).

≡ *Cercospora salicina* Ellis and Everh., Journal of Mycology 3: 19 (1887).

*Material examined*: BRUNEI, Kampong Kupang, on *Salix* sp., 11 Apr. 1998, Sivapalan (8205).



**Figs. 9-11.** Conidiophore fascicles, conidiophores, conidia. **9.** *Pseudocercospora caseariae*. **10.** *P. cylindrosporioides*. **11.** *P. samydacearum*. Bar = 20  $\mu$ m.



**Figs. 12-14.** Conidiophore fascicles, conidiophores, conidia, secondary hyphae with solitary secondary conidiophores. **12.** *Pseudocercospora thelypteridis* on *Nephrolepis* sp. **13.** *P. thunbergii*. **14.** *Pseudocercospora bambusae*. Bar = 20  $\mu$ m.

66. *Pseudocercospora stahlia* (F. Stevens) Deighton, Mycological Papers 140: 82 (1976).

≡ *Helminthosporium stahlia* F. Stevens, Transactions of the Illinois State Academy of Science 10: 208 (1917).

≡ *Cercospora stahlia* (F. Stevens) Subram., Journal of the Indian Botanical Society 35: 460 (1956).

Reference: on *Passiflora foetida* (Ellis, 1976; Peregrine and Ahmad, 1982).

Notes: A record of this species from Brunei on *Abelmoschus esculentus* (Peregrine and Ahmad, 1982) is very doubtful and has to be excluded.

67. *Pseudocercospora thelypteridis* Goh and W.H. Hsieh, Transactions of the Mycological Society of the Republic of China 4: 30 (1989). (Fig. 12)

Material examined: BRUNEI, Rimba, on *Nephrolepis* sp., 24 May 1997, H. Fuziah (7978).

Notes: The present collection on *Nephrolepis* sp. (*Oleandraceae*, incl. *Nephrolepidaceae*) agrees very well with the emended description of *P. thelypteridis* in Guo and Hsieh (1995) and is characterized as follows:

*Leaf spots* amphigenous, subcircular to irregular, 3-15 mm diam., occasionally confluent, often marginal, pale to medium dark brown, finally dingy greyish brown, margin indefinite or somewhat darker. *Caespituli amphigenous*, punctiform to confluent, blackish or greyish by abundant fructification. *Primary mycelium* internal. *Stromata* almost absent to well-developed, 10-40 µm diam., substomatal to intraepidermal, brown. *Secondary mycelium* almost absent to well-developed, emerging through stomata or arising from the base of conidiophore fascicles; hyphae creeping, septate, branched, 0.8-2 µm wide, subhyaline to pale olivaceous, smooth. *Conidiophores* in small to usually large fascicles, loose to moderately dense, arising from internal hyphae or stromata, emerging through stomata or erumpent, occasionally solitary, arising from creeping secondary hyphae, lateral, erect, straight, subcylindric to geniculate-sinuous, simple, occasionally branched, 5-50 × 2-4 µm, 0-3-septate, pale olivaceous to olivaceous brown, tips often paler, smooth, conidiogenous cells integrated, terminal, conidial scars inconspicuous. *Conidia* solitary, acicular-filiform, 40-100 × 2-3 µm, 5-14-septate, subhyaline to pale olivaceous, smooth, apex subacute, base truncate to slightly obconically truncate, hilum unthickened, not darkened, 1-2 µm wide.

68. *Pseudocercospora thunbergiae* (Boedijn) U. Braun and Sivapalan, **comb. nov.** (Fig. 13)

≡ *Cercospora thunbergiae* Boedijn, Nova Hedwigia 3: 411 (1961).

Reference: on *Thunbergia erecta* (Peregrine and Ahmad, 1982).

Material examined: INDONESIA, Java, Hortus Bogoriensis, on *Thunbergia alata*, Apr. 1950, K.B. Boedijn (L, HOLOTYPE).

*Leaf spots* amphigenous, angular-irregular, often vein-limited, 1-10 mm

diam., sometimes confluent, forming large patches, pale to medium dark brown, later greyish brown to dull grey, margin indefinite. *Caespituli* hypophyllous, inconspicuous. *Primary mycelium* internal; secondary mycelium external; secondary hyphae emerging through stomata, sparsely branched, septate, 1-3  $\mu\text{m}$  wide, subhyaline to very pale olivaceous, smooth. Stomata absent or very small, composed of a few substomatal swollen hyphal cells, 1.5-4  $\mu\text{m}$  diam., pigmented. *Conidiophores* solitary, arising from creeping hyphae, lateral, rarely terminal, occasionally emerging through stomata, solitary or in small, loose groups, erect, subcylindric-conical, unbranched, slightly geniculate-sinuous, 5-30  $\times$  1.5-3  $\mu\text{m}$ , 0-1-septate, subhyaline to pale olivaceous brown, smooth; conidiogenous cells integrated, terminal, or conidiophores reduced to conidiogenous cells, conidial scars inconspicuous. *Conidia* solitary, narrowly obclavate-subcylindric, 20-95  $\times$  1.5-4  $\mu\text{m}$ , (0-)1-8-septate, subhyaline, pale yellowish green to very pale olivaceous, smooth, apex subacute, base obconically truncate, hilum unthickened, not darkened, 1-2.5  $\mu\text{m}$  wide.

*Notes:* Based on indistinct conidial scars, this species has to be placed in *Pseudocercospora*.

69. *Pseudocercospora timorensis* (Cooke) Deighton, Mycological Papers 140: 154 (1976).

$\equiv$  *Cercospora timorensis* Cooke, Grevillea 12: 38 (1883).

*Reference:* on *Ipomoea batatas* (Ellis, 1976; Peregrine and Ahmad, 1982).

70. *Pseudocercospora trichophila* (F. Stevens) Deighton, Mycological Papers 140: 106 (1976).

$\equiv$  *Cercospora trichophila* F. Stevens, Transactions of the Illinois State Academy of Science 10: 212 (1917).

*Reference:* on *Solanum melongena* (Ellis, 1976; Peregrine and Ahmad, 1982).

*Material examined:* BRUNEI, Bengkurong, *Solanum* sp., 24 Apr. 1996, K. Sawal (7561).

### *Pseudocercospora* Deighton

71. *Pseudocercospora bakeri* (Syd. and P. Syd.) Deighton, Mycological Papers 133: 41 (1973).

$\equiv$  *Cylindrosporium bakeri* Syd. and P. Syd., Annales Mycologici 14: 372 (1916).

$\equiv$  *Pseudocercospora ipomoeae* Deighton, Mycological Papers 133: 39 (1973).

*Reference:* on *Ipomoea aquatica* (Peregrine and Ahmad, 1982).

72. *Pseudocercospora bambusae* Deighton, Mycological Papers 133: 52 (1973). (Fig. 14)

*Material examined:* BRUNEI, Lumut, on *Bambusa vulgaris*, 26 Sep. 1996, H. Fuziah (7795).

*Notes:* This species has been described from New Caledonia on *Dendrocalamus* sp. (as *Bambusa* sp.) (Deighton, 1973; Braun, 1995b; Braun *et al.*, 1999). The conidia are subcylindric(-obclavate), 30-100 × 2.5-5 µm, hyaline, with 2-13 septa. Old conidia often form basal or lateral germ tubes and tend to disarticulate. In this respect, *P. bambusae* reminds one of *Theadgonia* species.

### *Ramularia* Unger

73. *Ramularia grevilleana* (Tul. and C. Tul.) Jørst., Meldinger Stat. Pflanzenpatol. Inst. 1: 17 (1945).

≡ *Cylindrosporium grevilleanum* Tul. and C. Tul., Selecta fungorum carpologia 2: 288, Paris (1863).

= *Ramularia tulasnei* var. *fragariae-vescae* C. Massal., Osservazioni fitologiche in Madonna Verona II: 9 (1908).

*Reference:* on *Fragaria vesca* (Peregrine and Ahmad, 1982).

### *Stenella* Syd.

74. *Stenella cf. alocasiae* Sarbajna and Chattopad., Journal of Mycopathological Research 29: 33 (1991).

*Reference:* on *Alocasia* sp. (Peregrine and Ahmad, 1982), as *Stenella* sp.

*Material examined:* BRUNEI, without locality, on *Alocasia* sp., 18 Apr. 1978, Peregrine, SIB 3009 (IMI 227956).

*Notes:* The secondary mycelium in this collection from Brunei is only sparsely developed, long secondary conidiophores are absent, the conidia are much longer, 20-140 × 2-4 µm, pluriseptate, and catenate conidia have not been observed. The collection from Brunei is intermediate between *Stenella alocasiae* and *St. colocasiae*, described on *Colocasia antiquorum* from India by Sarbajna and Chattopadhyay (1991) in the same paper. Some secondary hyphae with nodulose cells, characteristic for *St. colocasiae*, have also been observed in the present material on *Alocasia* sp. from Brunei. It is not yet clear if *St. alocasiae* and *St. colocasiae* are two distinct taxa. Additional specimens and detailed examinations are necessary to solve this taxonomic problem.

75. *Stenella canavaliae* (Syd. and P. Syd.) Deighton, Transactions of the British Mycological Society 56: 412 (1971).

≡ *Cercospora canavaliae* Syd. and P. Syd., Annales Mycologici 12: 203 (1914).

*Reference:* on *Canavalia gladiata* (Peregrine and Ahmad, 1982).

76. *Stenella orchidacearum* U. Braun and Sivapalan **sp. nov.** (Fig. 15)

*Maculae* nullae, diffusae vel magnae, ad 4 × 1-1.5 cm diam., suborbiculares-irregulares, sordide griseo-brunneae, margine indistincto. *Coloniae* hypophyllae, effusae, subconspicuae vel

velutinae, sordide griseo-atro-brunneae. *Mycelium* immersum. *Stromata* nulla vel bene evoluta, substomatalia vel intraepidermalia, 10-50  $\mu\text{m}$  diam., brunnea. *Mycelium* secundarium externum; hyphae repentes, septatae, sparse ramosae, 1-3.5  $\mu\text{m}$  latae, subhyalinae vel pallide flavido-olivaceo-brunneae, pallide brunneae, verruculosae. *Conidiophora* solitaria, ex hyphis repentibus lateraliter, interdum terminaliter oriunda, raro laxe aggregata, pauca, ex cellulis stromatibus oriunda, simplicia, recta et subcylindrica vel valde geniculata-sinuosa, nodulosa, 3-80  $\times$  1.5-5  $\mu\text{m}$ , 0-5-septata, pallide olivacea, olivaceo-brunnea vel modice brunnea, leves vel subleves, cellulae conidiogenae integratae, terminales vel intercalares, 3-30  $\times$  1.5-4  $\mu\text{m}$ , sympodiales, interdum percurrentes, cicatrices conidiales conspicuae, saepe aggregatae, minutae, 0.5-1.5  $\mu\text{m}$  latae, leviter incrassatae et fuscatae. *Conidia* solitaria, cylindrica-filiformes, interdum anguste obclavata, fusiformes vel anguste ellipsoidea-ovoidea, 4-140  $\times$  1-4  $\mu\text{m}$ , 0-10-septata, subhyalina, pallide olivacea vel olivaceo-brunnea, verruculosa, apice subobtusa vel subacuta, basi truncata vel obconice truncata, leniter incrassata et fuscata, 0.5-3  $\mu\text{m}$  lata.

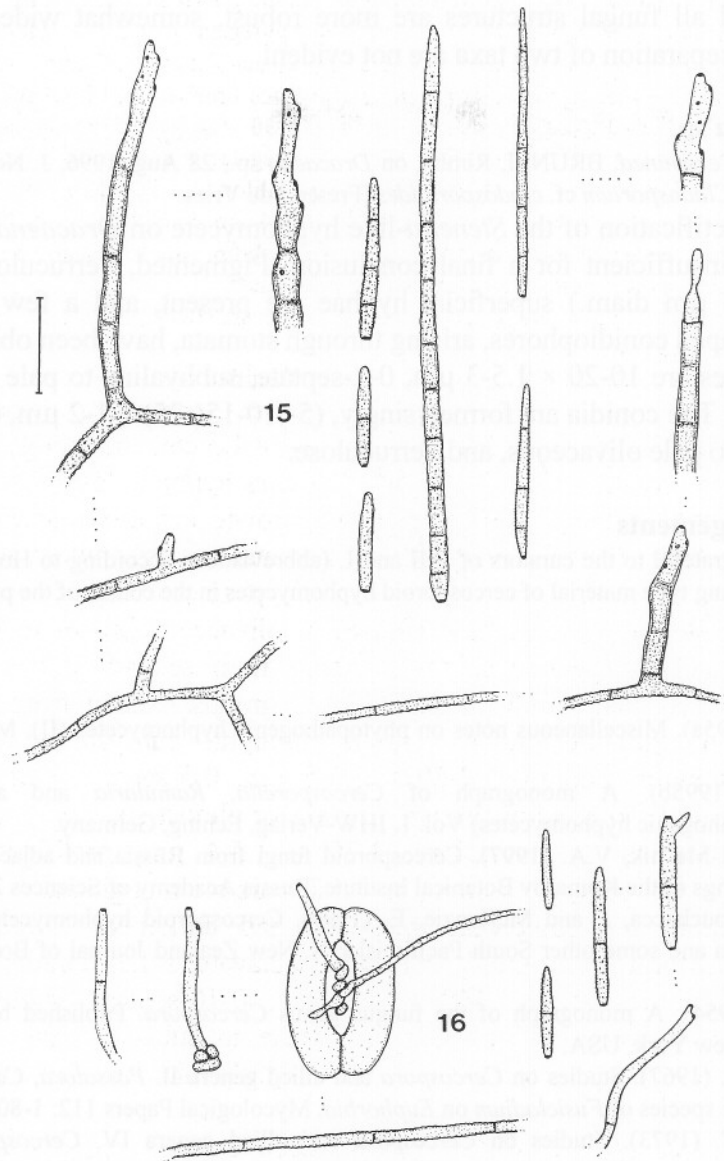
*Holotype*: MALAYSIA, Sabah, Jesselton, on *Vanda* sp. (*Orchidaceae*), 25 Feb. 1966, Tay Eng Bok, PP 630/60 (IMI 119139).

*Paratype*: BRUNEI, Tutong, on leaves of an unidentified orchid, 26 Aug. 1996, H. Fuziah 7733 (HAL, and Herbarium of Brunei Agricultural Research Centre, Kilanas, Brunei).

*Leaf spots* absent, diffuse or large, up to 4  $\times$  1.5 cm, subcircular to irregular, dingy greyish brown, margin indefinite. *Colonies* hypophyllous, effuse, thin and inconspicuous to velvety, dull greyish dark brown. *Primary mycelium* internal. *Stromata* lacking to well-developed, substomatal to intraepidermal, 10-50  $\mu\text{m}$  diam., brown. *Secondary mycelium* external; hyphae creeping, septate, branched, 1-3.5  $\mu\text{m}$  wide, subhyaline, pale yellowish, olivaceous brown to pale brown, verruculose. *Conidiophores* solitary, arising from secondary hyphae, lateral, occasionally terminal, rarely in small, loose groups, arising from stromata or erumpent through the cuticle, simple, straight, subcylindric to strongly geniculate-sinuuous, nodulose, 3-80  $\times$  1.5-5  $\mu\text{m}$ , 0-5-septate, pale olivaceous, olivaceous-brown to medium brown, smooth or almost so, conidiogenous cells integrated, terminal to intercalary, 3-30  $\times$  1.5-4  $\mu\text{m}$ , proliferation usually sympodial, occasionally percurrent, conidial scars often aggregated, minute, 0.5-1.5  $\mu\text{m}$  diam., but somewhat thickened and darkened. *Conidia* solitary, cylindrical-filiform, occasionally narrowly obclavate, small conidia fusiform or narrowly ellipsoid-ovoid, 4-140  $\times$  1-4  $\mu\text{m}$ , 0-10-septate, subhyaline, pale olivaceous to olivaceous brown, apex obtuse to subacute, base truncate or somewhat obconically truncate, basal hilum slightly thickened and darkened, 0.5-3  $\mu\text{m}$  wide.

*Notes*: A *Stenella* sp. on *Vanda* sp. has been reported from Brunei (Peregrine and Ahmad, 1982), but this material could not be traced; however, a collection on the same host from Sabah has been examined. *Stenella orchidacearum* is morphologically similar to *St. aegles* S.S. Prasad, described on *Aegle marmelos*, *Rutaceae*, from India (Ellis, 1976), but in the latter species stromata are not formed, and the conidia are longer.





**Figs. 15, 16.** Conidiophore fascicles, conidiophores, conidia, secondary hyphae with solitary secondary conidiophores. **15.** *Stenella orchidacearum*. **16.** *Stenella* sp. on *Dracaena* sp. Bar = 20  $\mu$ m.

The collection from Brunei on an unidentified orchis is characterized by having fine, thin fungal colonies and rather slender, relatively narrow conidiophores and conidia. In the holotype collection, dense, velvety colonies are formed, and all fungal structures are more robust, somewhat wider, but clear limits for a separation of two taxa are not evident.

77. *Stenella* sp. (Fig. 16)

*Material examined:* BRUNEI, Rimba, on *Dracaena* sp., 28 Aug. 1996, J. Noridah (7745), together with *Cladosporium* cf. *cladosporioides* (Fresen.) de Vries.

The fructification of the *Stenella*-like hyphomycete on *Dracaena* sp. is very scarce and insufficient for a final conclusion. Pigmented, verruculose, septate, narrow (1-3  $\mu\text{m}$  diam.) superficial hyphae are present, and a few solitary or loosely grouped conidiophores, arising through stomata, have been observed. The conidiophores are 10-20  $\times$  1.5-3  $\mu\text{m}$ , 0-1-septate, subhyaline to pale olivaceous, and smooth. The conidia are formed singly, (5-)10-15(-25)  $\times$  1-2  $\mu\text{m}$ , 0-1-septate, subhyaline to pale olivaceous, and verruculose.

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