

## New and interesting records of South African fungi. XIV. Cercosporoid fungi from weeds

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Ten foliicolous cercosporoid fungi from different exotic weeds are described and illustrated. Seven of these are new records for South Africa, namely *Cercospora brachiata* Ellis & Everhart, *C. echii* Winter, *C. physalidis* Ellis, *C. pistiae* Nag Raj, Govindu & Thirumalachar, *C. plantaginis* Sacc., *Mycovellosiella perfoliati* (Ellis & Everhart) Muntañola and *Passalora dubia* (Riess) Braun. Furthermore, *Pseudocercospora capsellae* (Ellis & Everhart) Deighton which is known from *Brassica* spp., is newly recorded from *Raphanus raphanistrum* L. *Mycovellosiella lantaniphila* Crous & M.J. Morris sp. nov. is described as new from *Lantana camara* L., and *Cercospora avicularis* Winter from *Polygonum aviculare* L. is reallocated to *Passalora* as *P. avicularis* (Winter) Crous, U. Braun & M.J. Morris comb. nov.

Tien verskillende cercospora-agtige fungi is vanaf blare van verskillende eksotiese onkruid beskryf en geïllustreer. Sewe van hierdie fungi is nuwe rekords vir Suid-Afrika: *Cercospora brachiata* Ellis & Everhart, *C. echii* Winter, *C. physalidis* Ellis, *C. pistiae* Nag Raj, Govindu & Thirumalachar, *C. plantaginis* Sacc., *Mycovellosiella perfoliati* (Ellis & Everhart) Muntañola en *Passalora dubia* (Riess) Braun. *Pseudocercospora capsellae* (Ellis & Everhart) Deighton, wat voorheen reeds op *Brassica* spp. bekend was, is ook op *Raphanus raphanistrum* L. aangemeld. *Mycovellosiella lantaniphila* Crous & M.J. Morris sp. nov. vanaf *Lantana camara* L. word as nuut beskryf, en *Cercospora avicularis* Winter vanaf *Polygonum aviculare* L. word in *Passalora* geplaas as *P. avicularis* (Winter) Crous, U. Braun & M.J. Morris comb. nov.

**Keywords:** Follicolous cercosporoid fungi, *Mycovellosiella lantaniphila*, *Passalora avicularis*, new species, South Africa, weeds.

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### Introduction

Doidge (1950) and Gorter (1981) list many fungi from weeds and wild-growing plants in South Africa, but in general the pathogenic microflora of these plants has not been extensively collected and studied. With a growing interest in the use of pathogenic organisms for weed control by both the classical and bioherbicide approaches, it is becoming increasingly important to compile a more complete record of these organisms. Among recent collections, not previously recorded in South Africa, are a number of cercosporoid fungi. These are described and illustrated in this paper. One specimen does not resemble any species already described on the particular host or host family, and is described as new. Another specimen is reallocated to a more suitable genus.

**1. *Cercospora brachiata* Ellis & Everhart, J. Mycol. 4: 5 (1888). *Cercospora amaranti* Lobik, Bolezni Rast. (Morbi Plantarum) 17: 193 (1928) (*sensu* Chupp 1954), Figures 1, 11 & 12.**

Leaf spots subcircular to irregular, amphigenous, brown, with a darker brown margin, 2–10 mm diam. Mycelium internal, brown, smooth, branched, septate, giving rise to weakly developed stromata. Caespituli amphigenous, medium brown, 20–40 µm wide, 55–230 µm high. Conidiophores fasciculate, divergent, medium brown, becoming lighter brown toward the apex, smooth, cylindrical, straight or geniculate, 2–9-septate, 50–220 × 4–7 µm. Conidiogenous cells light brown, smooth, cylindrical, terminating in a clavate or rounded apex, straight or geniculate, 20–65 × 4–5 µm; scars thickened, darkened, refractive. Conidia hyaline, acicular, smooth, tapering to a subacute or subobtusate apex and truncate base, 1–17-septate, 30–220 × 3–4 µm, older

conidia giving rise to microconidia via microcyclic conidiation (*sensu* Fernandez *et al.* 1991); conidial hila thickened, darkened, refractive.

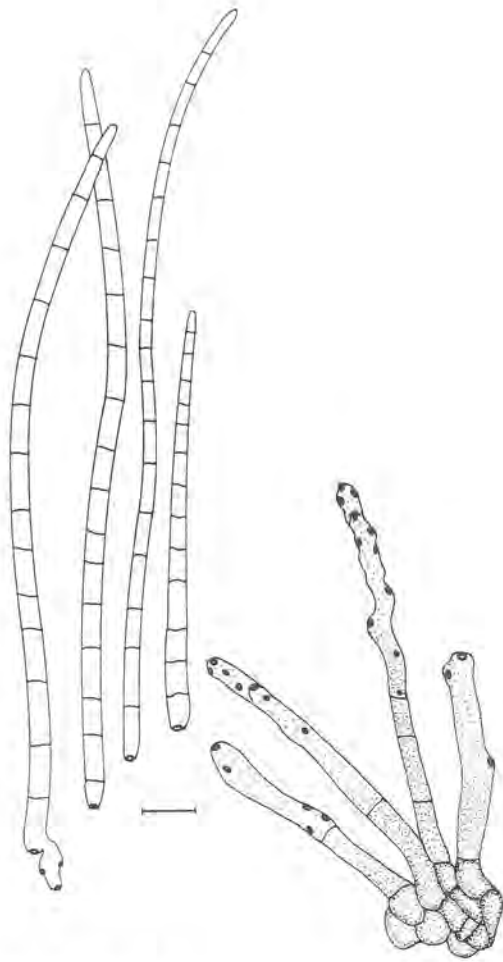
Chupp (1954) listed this fungus to occur in North America, Trinidad, Asia and Africa (Uganda). Several lesions yielded material of an additional cercosporoid fungus. Conidia of the latter are olivaceous, verruculose, obclavate with obtuse apices and obconically truncate bases with thickened, refractive hila. Conidia are formed on separate conidiophores that occur solitary as lateral projections on superficial, olivaceous, secondary hyphae. The verruculose nature of the superficial hyphae, the thickened conidial scars on the conidiogenous cells, as well as the other criteria discussed above, suggest this to be a species of *Stenella* Syd. (Figures 13 & 14). Presently there are no *Stenella* species known from *Amaranthus*. Because the lesions are severely colonized by other saprophytic fungi, however, we feel that additional collections would be required before this species can be described as new.

### Specimen examined

Natal, Cramond, *Amaranthus hybridus* L., S. R. McLennan, 1 May 1990, PREM 51699.

**2. *Cercospora echii* Winter, Hedwigia 23: 190 (1884), Figures 2, 17 & 18.**

Leaf spots amphigenous, distinct, dark brown, circular, 2–5 mm diam. Mycelium internal, brown, septate, smooth; stromata absent. Caespituli predominantly epigenous, brown, supra-stomatal, up to 25 µm wide and 100 µm high. Conidiophores fasciculate, olivaceous to medium brown, smooth, divergent,



**Figure 1** Conidia and conidiophores of *Cercospora brachiata* (scale bar: 10  $\mu$ m).

cylindrical, straight to geniculate-sinuuous, tapering to a somewhat attenuated apex, 1–8-septate, 25–100  $\times$  3–6  $\mu$ m. Conidigenous cells terminal, rarely lateral, olivaceous, becoming lighter at apex, smooth, straight to geniculate-sinuuous, tapering to an attenuated apex, 15–20  $\times$  3–5  $\mu$ m; scars thickened, refractive, darkened. Conidia hyaline, acicular, tapering to an acute or subacute apex and truncate base, 3–15-septate, 30–150  $\times$  2.5–3.5  $\mu$ m.

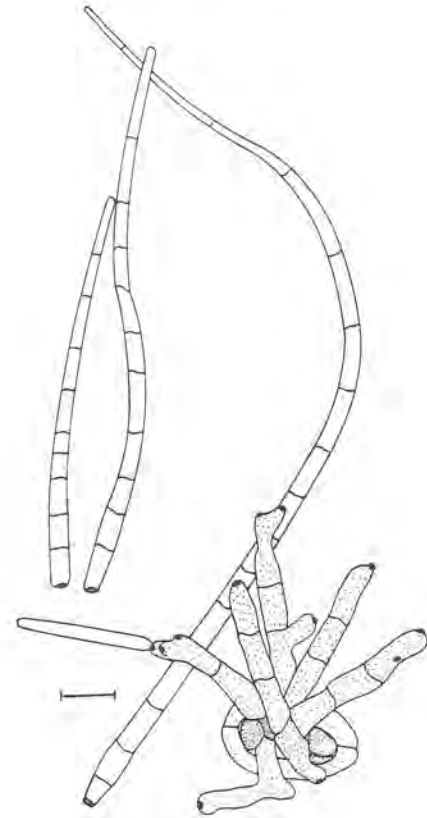
Of the two *Cercospora* species listed on *Echium* (Pollack 1987), the South African collection closely resembles *C. echii* in having large, hyaline, acicular conidia, whereas those of *C. echiorum* Maire are much smaller, and obclavate to cylindrical in shape (Chupp 1954).

#### Specimen examined

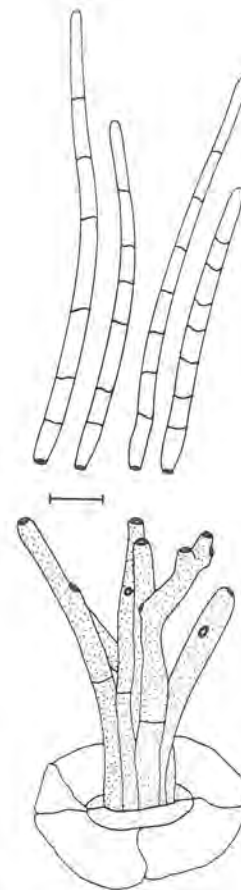
Western Cape, Stellenbosch, Vredenburg Farm, *Echium plantagineum*, M.J. Morris, 19 Apr. 1993, PREM 51702.

**3. *Cercospora physalidis* Ellis, Am. Nat. 16: 810 (1882). *Cercospora physalicola* Ellis & Barth., Erythea 4: 28 (1896) (*sensu* Chupp 1954), Figures 3, 19 & 20.**

Leaf spots amphigenous, subcircular to irregular, brown to grey-brown, 3–10 mm, with a narrow, dark-brown border. Mycelium internal, brown, septate; stromata absent. Caespituli arising from stomata, amphigenous, brown, 15–25  $\mu$ m wide, 80–150  $\mu$ m high. Conidiophores in divergent fascicles, medium brown, smooth, simple, cylindrical, straight or geniculate-sinuuous with a rounded



**Figure 2** Conidia and conidiophores of *Cercospora echii* (scale bar: 10  $\mu$ m).



**Figure 3** Conidia and conidiophores of *Cercospora physalidis* (scale bar: 10  $\mu$ m).

apex, 1–5-septate,  $60\text{--}150 \times 4\text{--}6 \mu\text{m}$ . Conidiogenous cells brown, smooth, straight cylindrical or geniculate with large, thickened, refractive scars,  $15\text{--}35 \times 4\text{--}6 \mu\text{m}$ . Conidia hyaline, acicular, tapering to a subobtuse apex and truncate or obconically truncate base, 1–11-septate,  $25\text{--}150 \times 3\text{--}5 \mu\text{m}$ ; hila thickened, darkened, refractive.

This species has a wide distribution (Chupp 1954), and Ellis (1976) also reported it from several African countries.

#### Specimen examined

Natal, Cramond, S.R. McLennan, *Physalis* sp., 1 May 1990, PREM 51703.

4. *Cercospora pistiae* Nag Raj, Govindu & Thirumalachar, Sydowia 24: 299 (1970), Figures 4, 21.

Leaf spots amphigenous, irregular to subcircular, light brown, indistinct, up to 10 mm in diam., situated in chlorotic zones of up to 40 mm in diam. Mycelium brown, smooth, internal, up to  $3.5 \mu\text{m}$  wide; stromata absent or poorly developed. Caespituli predominantly epigenous, brown, suprastomatal, up to  $40 \mu\text{m}$  wide and  $180 \mu\text{m}$  high. Conidiophores fasciculate, divergent, brown, becoming lighter brown toward the apex, smooth, straight, cylindrical, or geniculate-sinuuous in upper part, 1–10-septate,  $70\text{--}180 \times 5\text{--}7 \mu\text{m}$ , with a slight taper toward a rounded apex. Conidiogenous cells terminal, olivaceous-brown, smooth, straight cylindrical or geniculate-sinuuous with rounded apices,  $10\text{--}50 \times 5\text{--}6 \mu\text{m}$ ; scars thickened, refractive, darkened. Conidia hyaline, obclavate to acicular, rarely cylindrical, straight or slightly curved, tapering to a subobtuse or obtuse apex and subtruncate or truncate base, 3–14-septate,  $50\text{--}150 \times 4\text{--}6 \mu\text{m}$ ; hila thickened, darkened, refractive.

The morphology of local collections closely matches that given for the type specimen, which was collected from *Pistia stratiotes* L. in Kerala, India (Govindu *et al.* 1970).

#### Specimens examined

Eastern Transvaal, Sabie River, Kruger National Park, *Pistia stratiotes*, M.J. Morris, 20 May 1988, PREM 51704; Eastern Transvaal, Sabie, Kruger National Park, *P. stratiotes*, C.J. Cilliers, 17 Feb. 1988, PREM 51705.

5. *Cercospora plantaginis* Sacc., Michelia 1: 267 (1879). *Cercospora plantaginella* Tehon, Mycologia 16: 139 (1924) (*sensu* Chupp 1954), Figures 5, 22 & 23.

Leaf spots amphigenous, distinct, circular, 1–6 mm in diam., light brown, with a dark-brown, raised margin. Mycelium brown, septate, branched, smooth, internal; stromata absent or poorly developed. Caespituli amphigenous, brown, suprastomatal,  $30\text{--}45 \mu\text{m}$  wide,  $50\text{--}90 \mu\text{m}$  high. Conidiophores fasciculate, divergent, medium brown, becoming lighter toward the apex, smooth, straight or geniculate, tapering toward a rounded apex, 1–5-septate,  $30\text{--}80 \times 4\text{--}6 \mu\text{m}$ . Conidiogenous cells light brown, smooth, straight to geniculate-sinuuous, tapering toward a rounded apex,  $20\text{--}25 \times 4\text{--}6 \mu\text{m}$ ; scars thickened, refractive, darkened. Conidia hyaline, smooth, acicular, straight or curved, tapering toward a subobtuse apex and truncate base, indistinctly 4–15-septate,  $55\text{--}190 \times 2\text{--}3.5 \mu\text{m}$ ; hila thickened, darkened, refractive.

Chupp (1954) noted this fungus to have a wide distribution, occurring in North America, Europe and Asia.

#### Specimen examined

Natal, canefield near Camperdown, *Plantago lanceolata* L., M.J. Morris, 11 Feb. 1993, PREM 51706.

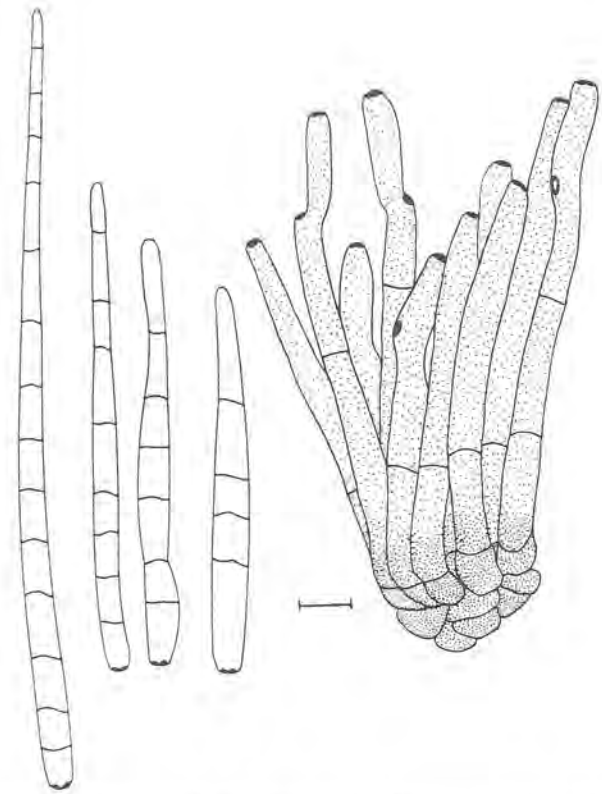


Figure 4 Conidia and conidiophores of *Cercospora pistiae* (scale bar:  $10 \mu\text{m}$ ).

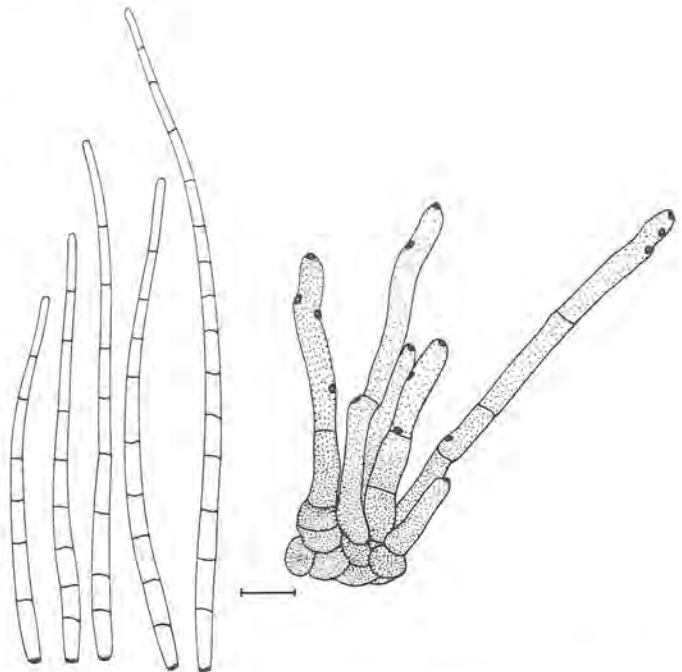
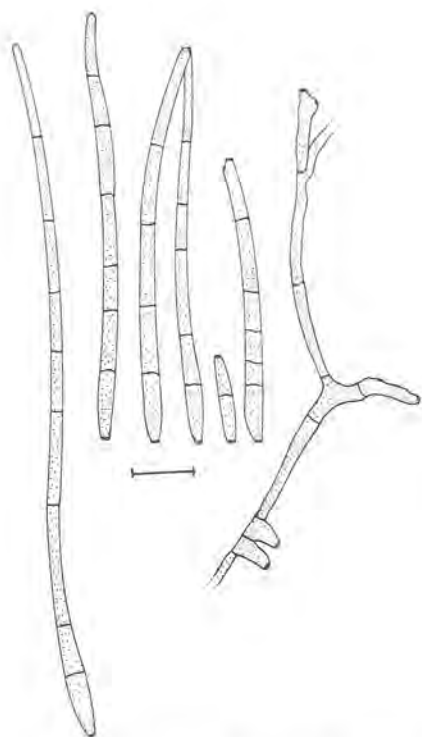


Figure 5 Conidia and conidiophores of *Cercospora plantaginis* (scale bar:  $10 \mu\text{m}$ ).

6. *Mycovellosiella lantaniphila* Crous & M.J. Morris sp. nov., Figures 6, 24 & 25.

Maculae foliorum indistinctae, irregulares, amphigenae, pallide brunneae ad chloroticae, margine indistincto 5–10 mm. Mycelium primarium internum hyalinum, septatum, ramulosum, ad 2 latum,



**Figure 6** Conidia and secondary mycelium with conidiophores of *Mycovellosiella lantaniphila* (scale bar: 10  $\mu$ m).

mycelium secundarium externum, glabrum, septatum, olivaceum, ramulosum, 1.5–2.5  $\mu$ m latum. Conidiophora ad cellulis conidiogenis redacta. Conidiogenae cellulae laterales et in hyphis superficialibus terminales, simplices, cylindratae, rectae vel geniculato-sinuatae, ad apice obtuso contractae, pallide olivaceae, glabrae, cicatricibus conidialibus incrassatis et fuscatis, 5–18  $\times$  2–5  $\mu$ m. Conidia solitaria, olivacea, obclavata, glabra, simplicia vel catenulata, ad apice subobtusum et base obconico-truncata contracta, 1–8-septata, 20–100  $\times$  2–3  $\mu$ m; hila conidialis incrassata, fuscata, in conidiis maturis minus manifesto.

Leaf spots indistinct, irregular, amphigenous, light brown to chlorotic, margin indistinct, 5–10 mm. Internal mycelium hyaline, septate, branched, up to 2  $\mu$ m wide; external mycelium smooth, septate, olivaceous, branched, 1.5–2.5  $\mu$ m wide. Conidiophores reduced to conidiogenous cells. Conidiogenous cells lateral and terminal on superficial hyphae, simple, cylindrical, straight or geniculate-sinuuous, tapering to a rounded apex, pale olivaceous, smooth, conidial scars thickened and darkened, 5–18  $\times$  2–5  $\mu$ m. Conidia solitary, olivaceous, obclavate, smooth, simple or catenulate, tapering to a subobtuse apex and obconically truncate base, 1–8-septate, 20–100  $\times$  2–3  $\mu$ m; conidial hila thickened, darkened, becoming less obvious in mature conidia.

Deighton (1974) described two varieties of *Mycovellosiella* from *Lantana*, namely *M. lantananae* (Chupp) Deighton var. *lantananae* and *M. lantananae* (Chupp) Deighton var. *cubensis* Deighton. Furthermore, he also referred to a collection from Venezuela which appeared to be an additional new species. *M. lantaniphila* can, however, easily be distinguished from the two varieties of *M. lantananae* by its much longer, thinner and multiseptate conidia.

#### Specimen examined

Transvaal, Komatipoort, Krokodil River, *Lantana camara* L., C. Hurter, 1 Jun. 1987, PREM 51707 (holotype).

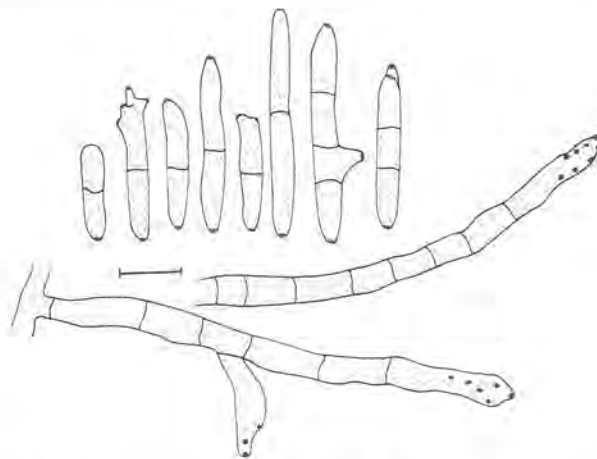
**7. *Mycovellosiella perfoliati* (Ellis & Everhart) Muntanola**, Lilloa 30: 201 (1960) (synonyms listed in Deighton 1974), Figures 7, 26 & 27.

Leaf spots predominantly hypogenous, irregular, pale yellow, 2–15 mm diam. with an indefinite margin. Internal mycelium septate, branched, hyaline, smooth, 3–5  $\mu$ m wide; external mycelium creeping, climbing leaf hairs, olivaceous brown, becoming hyaline toward apices of conidiogenous cells. Conidiophores solitary on secondary mycelium, olivaceous, smooth, straight or slightly curved, cylindrical, multiseptate, 40–100  $\times$  3–6  $\mu$ m. Conidiogenous cells separate, as terminal and lateral projections on conidiophores, olivaceous, becoming lighter toward apex, smooth, cylindrical, straight or geniculate, tapering to a rounded or clavate apex, 10–30  $\times$  3.5–6  $\mu$ m; scars terminal, conspicuous, thickened, darkened, refractive, protruding. Conidia hyaline to olivaceous, smooth, catenulate, cylindrical with an obtuse apex and obconic base, 1–3-septate, 15–45  $\times$  3–5  $\mu$ m.

Deighton (1974) reported that this species has a wide distribution, and that it has also been recorded in several African countries such as Kenya, Uganda, Malawi, Tanzania, Sudan and Gabon.

#### Specimen examined

Natal, south coast, outside Vernon Crookes Nature Reserve, *Ageratum conyzoides* L., M.J. Morris, 27 Apr. 1990, PREM 51708.



**Figure 7** Conidia and secondary mycelium with conidiophores of *Mycovellosiella perfoliati* (scale bar: 10  $\mu$ m).

**8. *Pseudocercospora capsellae* (Ellis & Everhart) Deighton**, Mycol. Pap. 133: 42 (1973) (synonyms listed in Deighton 1973), Figures 8, 28 & 29.

Leaf spots amphigenous, pale brown to pale yellow, subcircular, surrounded by a yellow to green border, 2–10 mm diam. Mycelium internal, hyaline, branched, septate, smooth, 4–5  $\mu$ m diam. Caespituli amphigenous, arising from subepidermal stromata of pseudoparenchymatal cells. Conidiophores reduced to conidiogenous cells, solitary or fasciculate, dense, situated on stromata, hyaline, emerging through stomata or directly through the cuticle. Conidiogenous cells hyaline, smooth, cylindrical, tapering to an obtuse apex, straight to slightly bent or curved, 10–25  $\times$  2–4  $\mu$ m. Conidia hyaline, cylindrical, smooth, straight or curved, apex obtuse, base truncate, 1–6-septate, 50–90  $\times$  2–2.5  $\mu$ m.

Deighton (1973) reported *P. capsellae* on *Brassica* spp. from

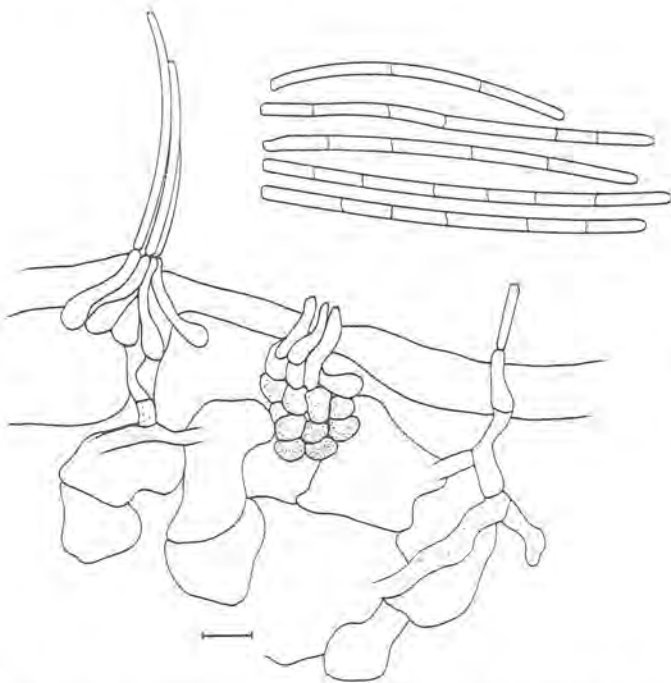


Figure 8 Fasciculate conidiophores and conidia of *Pseudocercospora capsellae* (scale bar: 10  $\mu$ m).

South Africa, and also reported it to occur elsewhere in Africa. The isolates obtained in the present study from *Raphanus raphanistrum* provide a new host record for this fungus in South Africa. Conidia from this host lack the slight basal conidial taper which Deighton reported as typical for this species on hosts such as *Capsella*, *Brassica* and *Neslia*. Other than that, however, the general morphology fits well within the species concept of *P. capsellae*.

#### Specimens examined

Western Cape, Stellenbosch, Vredenburg Farm, *Raphanus raphanistrum* L., M.J. Morris, 2 Jul. 1992, PREM 51709; Western Cape, McGregor, *R. raphanistrum*, M.J. Morris, 28 Jul. 1992, PREM 51710; Western Cape, Stellenbosch, Banhoek, *R. raphanistrum*, M.J. Morris, 15 Oct. 1981, PREM 51711.

9. *Passalora avicularis* (Winter) Crous, U. Braun & M.J. Morris comb. nov. *Cercospora avicularis* Winter, J. Mycol. 1: 125 (1885), also Hedwigia 24: 202 (1885). *Pseudocercospora avicularis* (Winter) Khan & Shamsi, Bangladesh J. Bot. 12: 108 (1983), Figures 9, 30 & 31.

Leaf spots amphigenous, subcircular to oval, pale brown, surrounded by a red-purple, diffuse border, 1–3 mm diam. Internal mycelium hyaline to pale olivaceous, septate, branched, up to 4.5  $\mu$ m in diam., forming brown, suprastomatal stromata of pseudo-parenchymatal cells. Caespituli amphigenous, brown, 15–25  $\mu$ m wide and 25–40  $\mu$ m high. Conidiophores fasciculate, dense, olivaceous to light brown, verruculose, straight or geniculate-sinuous, cylindrical, tapering to a rounded or obtuse apex, 0–2-septate, 10–20  $\times$  3–5  $\mu$ m. Conidiogenous cells terminal, olivaceous to light brown, verruculose, straight to geniculate-sinuous, tapering to a rounded or obtuse apex, 10–15  $\times$  3–4  $\mu$ m; scars conspicuous, slightly thickened, darkened. Conidia solitary, straight or slightly curved, forming lateral branches, olivaceous to medium brown, verruculose, cylindrical to obclavate, apex obtuse, base subtruncate to obconically subtruncate, indistinctly

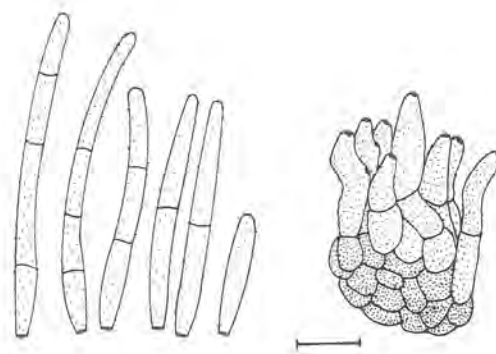


Figure 9 Conidia and conidiophores of *Passalora avicularis* (scale bar: 10  $\mu$ m).

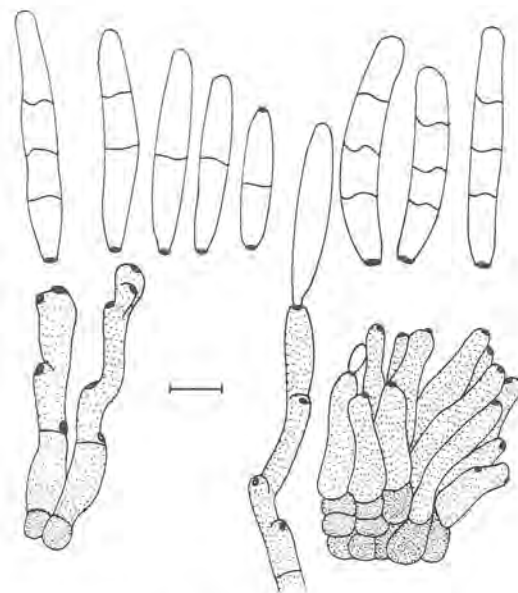
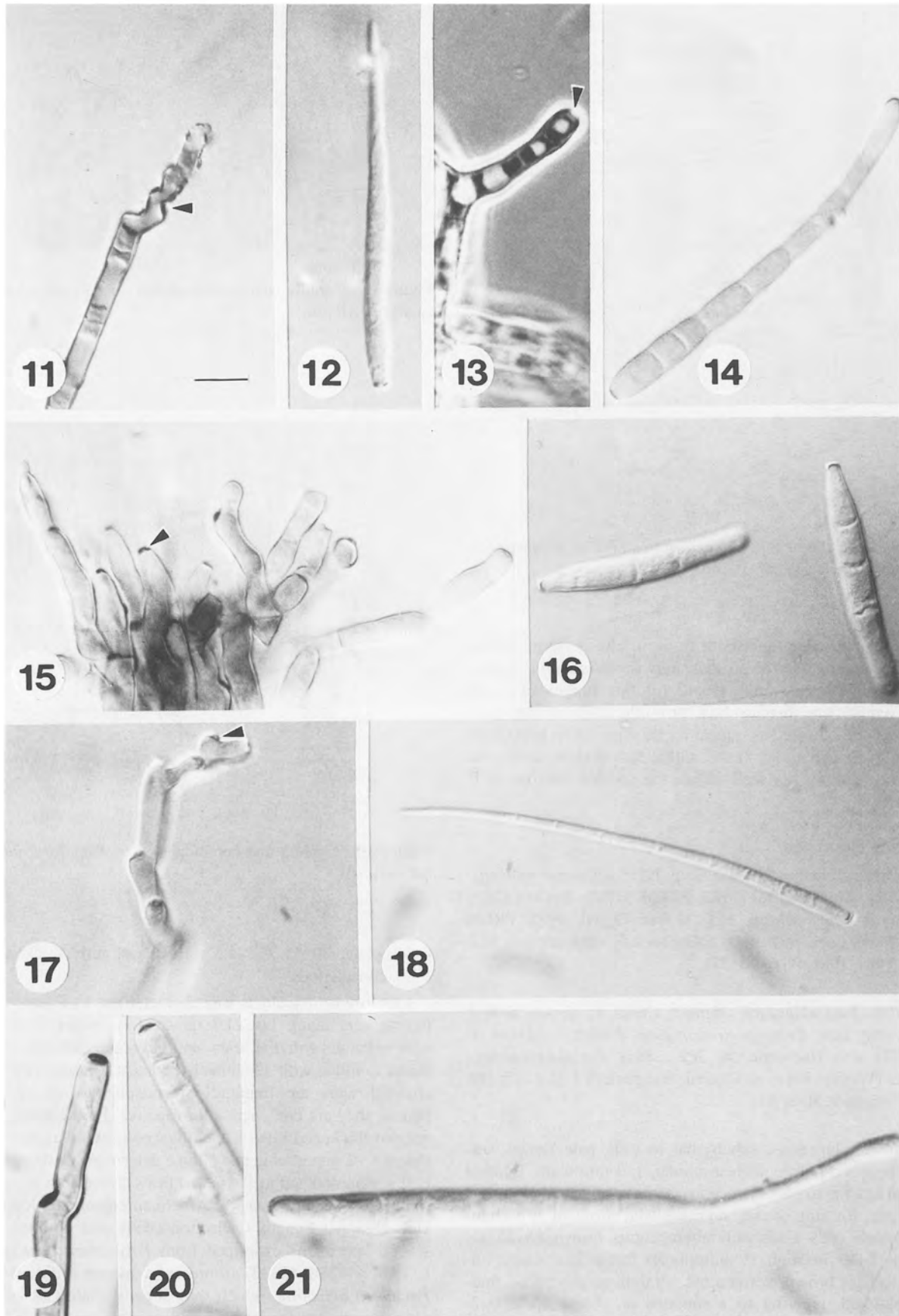


Figure 10 Conidia and conidiophores of *Passalora dubia* (scale bar: 10  $\mu$ m).

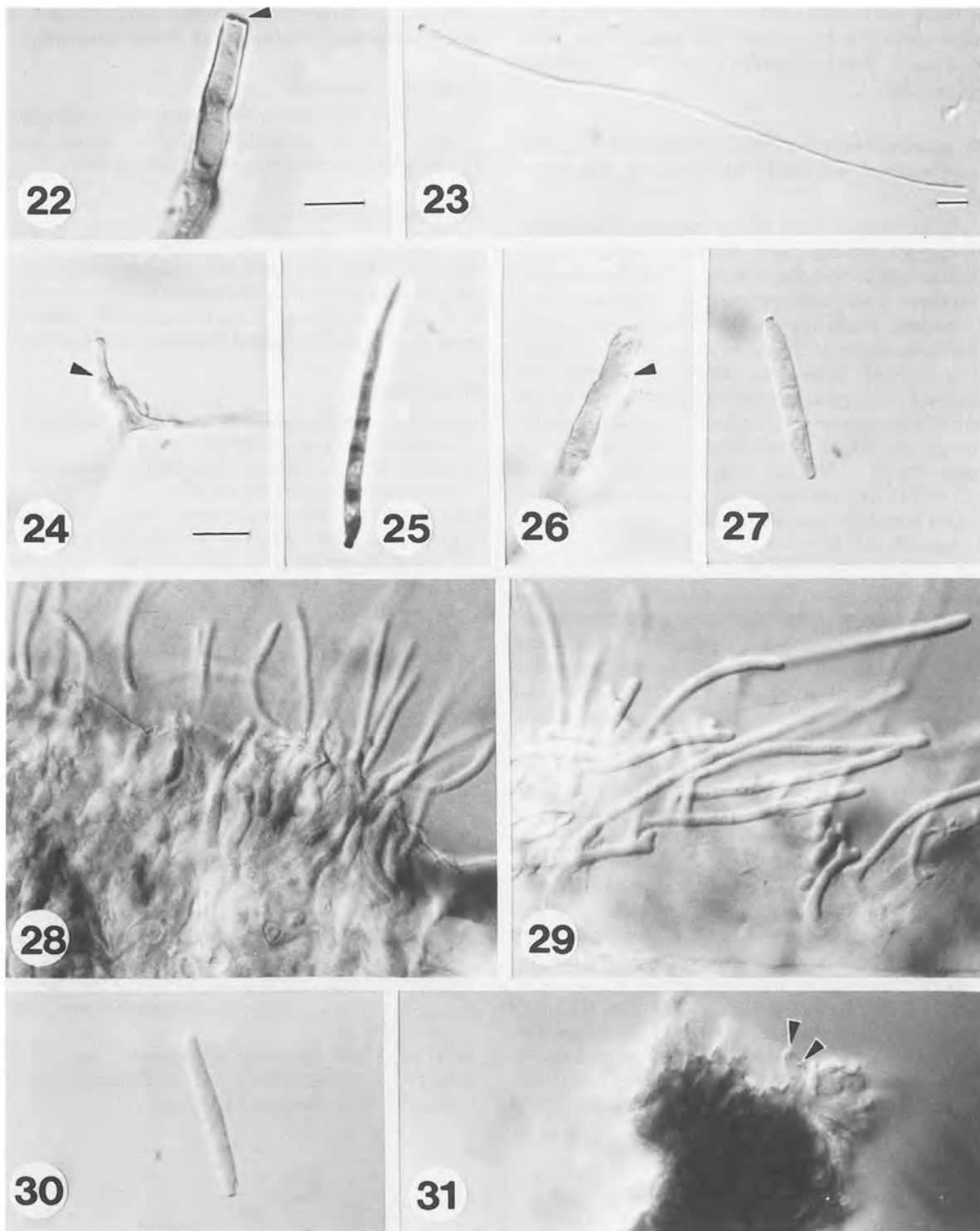
0–3-septate, 20–55  $\times$  3–4.5  $\mu$ m; hila slightly thickened, darkened, conspicuous.

*Cercospora avicularis* was characterized by Chupp (1954) as having very dense fascicles on small stromata, conidiophores with indistinct conidial scars, and olivaceous, obclavate to cylindrical conidia with obconically truncate bases. Although the conidial scars are frequently inconspicuous on the conidiophores, they are darkened and refractive. Furthermore, the presence of thickened hila on the olivaceous conidia, as well as the absence of superficial mycelium, determine this species to be best accommodated in *Passalora* Fries. The South African material closely matches several American collections lodged at the U.S. National Fungus Collection (BPI) (see below). However, several specimens examined from *Polygonum pennsylvanicum* L. (BPI 433228–433232) represent a species different to that of *Passalora aviculare*, which may suggest that *P. aviculare* does not occur on *Polygonum pennsylvanicum*.

Recently, U. Braun (in litt.) examined type material of *C. avicularis* (on *Polygonum aviculare*, C.H. Demetrio No 243, B) as well as numerous additional specimens from NY, and came to the conclusion that this species should be referred to *Passalora*. Chupp (1954) incorrectly cited type material from 'Perryville, Miss., rev. Demetrio, July 1883'. In his description in Hedwigia



**Figures 11–21** Scale bar: 10  $\mu$ m. **11.** Conidiophore with darkened conidial scar (arrow) of *Cercospora brachiata*. **12.** Acicular conidium of *C. brachiata*. **13.** Conidiophore with thickened conidial scar (arrow) of a *Stenella* sp. on *Amaranthus hybridus*. **14.** Verrucose conidium of a *Stenella* sp. on *A. hybridus*. **15.** Fasciculate conidiophores with conidial scars (arrow) of *Passalora dubia*. **16.** Obclavate conidia of *P. dubia*. **17.** Conidiophore with thickened, darkened conidial scars (arrow) of *C. echii*. **18.** Acicular conidium of *C. echii*. **19.** Conidiophore with thickened, darkened, refractive conidial scars of *C. physalidis*. **20.** Obconically truncate base of a conidium of *C. physalidis*. **21.** Acicular conidium of *C. pistiae*.



**Figures 22–31** Scale bars: 10  $\mu$ m. **22.** Conidiophore with thickened conidial scar (arrow) of *C. plantaginis*. **23.** Acicular conidium of *C. plantaginis*. **24.** Conidiophore with thickened conidial scar (arrow) of *Mycovellosiella lantaniphila*. **25.** Obclavate conidium of *M. lantaniphila*. **26.** Conidiophore with thickened conidial scars (arrow) of *M. perfoliati*. **27.** Conidium with thickened, refractive hila of *M. perfoliati*. **28.** Fasciculate, erumpent conidiophores of *Pseudocercospora capsellae*. **29.** Conidiophores and conidia of *P. capsellae*. **30.** Conidium with thickened hilum of *Passalora avicularis*. **31.** Conidiophore with thickened, refractive conidial scars (arrows) of *P. avicularis*.

(Winter & Demetrio 1885), Winter (l.c.) only stated 'In foliis vivis Polygoni avicularis var. erecti, Autumno 1883, No 243'. The type material in B contains two labels, viz. one label with the note 'Demetrio N. 243' and an additional one with 'Cercospora n. sp., Polygonum aviculare, Rappa, I11., 5-9-1879, Seymour'. There is a discrepancy with regard to the dates, but on account of the identical number (Demetrio No. 243), there is no doubt that

this specimen represents holotype material.

#### Specimens examined

South Africa, Eastern Cape, Hankey, *Polygonum aviculare* L., M.J. Morris, 8 Nov. 1990, PREM 51712; USA, South Dakota, Bigstone, *P. aviculare*, T.A. Williams, 15 Jun. 1895, BPI 433203; USA, Nebraska, Burwell, *P. aviculare*, J.M. Bates, 24 Jun. 1909, Fungi Co-

lumbiani E. Bartholomew 2911, BPI 433204, BPI 433207; USA, West Virginia, Fayette Co., *P. aviculare*, L.W. Nuttal, 5 Jun. 1895, BPI 433205; Canada, Ontario, Granton, *P. aviculare*, J. Dearness, Jul. 1893, BPI 433206.

10. *Passalora dubia* (Riess) Braun, Mycotaxon 52: in press (1994) (synonyms listed in Braun 1994), Figures 10, 15 & 16.

Leaf spots circular, amphigenous, pale to medium brown with a pale brown margin, 3–5 mm diam. Mycelium internal, olivaceous, branched, septate, 3–4 µm in diam., giving rise to supra-stromatal stromata. Caespituli amphigenous, medium brown, forming on stromata, 20–50 µm wide, 50–100 µm high. Conidiophores fasciculate, dense to loose, divergent, simple, straight cylindrical or sparingly geniculate, reduced to conidiogenous cells or elongated, multiseptate, smooth, medium brown, 40–150 × 4–6.5 µm. Conidiogenous cells terminal, integrated, smooth, pale brown, straight, cylindrical, rarely geniculate, tapering to a rounded apex, 20–50 × 4–5 µm, scars thickened, darkened, refractive. Conidia hyaline to subhyaline, smooth, cylindrical to obclavate, apex rounded, base truncate to long obconically truncate, 1–3-septate, 22–50 × 5–8 µm.

Chupp (1954) stated that the taxonomy of this species has been discussed in more detail than that of any other *Cercospora* species. In his description he also mentioned some morphological features irregular for *Cercospora*. He stated that conidia can sometimes be catenulate and that the fungus can also be hyaline. Ellis (1976) did not use the name chosen by Chupp (1954), but referred to one of the names listed as a synonym by Chupp (1954), namely *Cercospora chenopodii* Fresn. Furthermore, he described it to have conidiophores of up to 60 µm in length, but illustrated them as much longer, and strongly geniculate. An examination of South African material showed conidia to be mostly 1–3-septate (never 7-septate as stated by Chupp), and to be hyaline to subhyaline. Conidiophores were in some instances reduced to conidiogenous cells, but could also be long and geniculate as illustrated by Ellis (1976). A few conidia were also observed with thickened hila at both ends, suggesting that they were produced in chains (atypical of *Passalora*). The conidial ontogeny was observed to be similar to the 'blown out ends' characteristic of *Pseudocercosporidium* Deighton (Deighton 1973). In spite of these discrepancies, however, the South African material is best accommodated in *P. dubia*, which has 1–4-septate conidia, 5–8 µm wide (Braun 1994). Further collections, cultural studies and a comparison of the type specimens listed as

synonyms by Chupp (1954), will be required to clarify the uncertainty surrounding *P. dubia* and its various synonyms.

#### Specimens examined

Western Cape, Stellenbosch, Vredenburg Farm, *Chenopodium album* L., M.J. Morris, 14 May 1990, PREM 51700; Eastern Cape, Hankey, *C. album*, M.J. Morris, 8 Nov. 1990, PREM 51701.

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