

A revised list of South African Erysiphaceae (powdery mildews) and their host plants

G.J.M.A. Gorter

Mycology Unit, Biosystematics Division, Plant Protection Research Institute, Private Bag X134, Pretoria, 0001
Republic of South Africa

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A new list of South African Erysiphaceae, which includes nomenclatural changes and newly recorded species and host plants, is presented with a few introductory remarks.

'n Nuwe lys van Suid-Afrikaanse Erysiphaceae word aangebied wat behalwe nomenklatuurveranderings en nuut aangetekende spesies en gasheerplante, ook enkele inleidende opmerkings bevat.

Keywords: Erysiphaceae, host plants, South Africa.

Introduction

The monumental new monograph of the Erysiphales by Braun (1987), a publication which only recently became available to the author, has necessitated some nomenclatural changes in the scientific names recorded by me in my compilation of South African powdery mildew fungi published in 1988 (Gorter 1988). The description of new local taxa (Eicker 1988; Gorter 1989b; Gorter & Marasas 1988) as well as the recording of more host plants, of which some have already been published (Gorter 1989a), are additional reasons for presenting a new list. It also affords me the opportunity to comment on some of the changes made by Braun in his monograph which will be a standard work for many years to come.

One of the important changes made is that the name *Erysiphe cichoracearum* DC. will now be confined to powdery mildews that occur on Asteraceae. *Erysiphe cichoracearum* types found on other host plants and which are often polyphagous and thus can even occur on Asteraceae, are now designated as *Erysiphe orontii* Cast. (emend. U. Braun). It is interesting, however, that the holotype of this species was described from *Antirrhinum orontium* L. which occurs in the western Cape Province (Dyer 1975), but has never been reported infected with any mildew there.

Another interesting development which especially concerns us in South Africa, is that all the *Phyllactinia* species described by Doidge, with the exception of *P. combreti*, are listed by Braun as synonyms of *Phyllactinia guttata* (Wallr.) Lév. I can agree with the synonymy of *P. erythrinae*, *P. rhoina* and *P. sphenostylidis*, as their descriptions fit in well with *P. guttata*. However, *P. evansii* differs sufficiently from typical *P. guttata* in the shape of the conidia: rounded oblong cylindrical, often constricted near one end, the comparative smallness of the perithecial wall cells and the branching of perithecial appendages — sometimes two appendages arise from one bulb-like base — to retain it as a separate species. *Phyllactinia acaciae* Sydow also does not warrant inclusion in *P. guttata*. Its centrally constricted conidia are very characteristic and similar to the constricted ones of *Phyllactinia angulata* (Salm.) Blumer and, as Braun himself emphasized that conidial shape is taxonomically important, *P. acaciae* Sydow, like *P. evansii* Doidge, should

be maintained as a separate species. The more recently described *P. cassiae* Gorter & Eicker (1986) and *P. gorteri* Eicker (1988) have aberrant spore shapes as well and are therefore considered separate taxa.

With regard to *Uncinula praeterita* Marasas & Schumann, after due consideration of all taxonomically relevant features, I am of the opinion that Braun has been premature in giving it the status of a variety of *Uncinula udaiparensis* Bhatnagar & Kothari. Although both *Uncinulas* are no doubt closely related, there are clear differences in the size of the asci and the number of ascospores per ascus as well as the presence of septate appendages in the one and the absence thereof in the other. Since, in addition, the descriptions of both fungi are based on single collections and no anamorph has been described for *U. udaiparensis*, I consider it desirable to retain *U. praeterita* as a separate species.

I also cannot concur with Braun in considering *Sphaerotheca fusca* (Fr.) Blumer a compound species for a large variety of plant families, while confining *Sphaerotheca fuliginea* (Schlecht.) Poll. to Scrophulariaceae only. If one compares Braun's description of *S. fuliginea* with that of *S. fusca*, there are no essential differences between the two species necessitating the inclusion of the former in the compound species. However, the name *Sphaerotheca fuliginea* (Schlecht.) Poll. (1905) has priority over *Sphaerotheca fusca* (Fr.) Blumer (1933) and should therefore be the correct name for the compound species. As the bulk of the host plants of *S. fusca* belong to the Asteraceae, I suggest that this name be retained for *Sphaerotheca* fungi on this plant family alone. Blumer, the author of *S. fusca*, mentions only Asteraceae as host plants for this species but reports host plants from various families for *S. fuliginea* which he also considers a composite species (Blumer 1967). Designation of *S. fuliginea* as a compound species also agrees with its overall position in the southern hemisphere where many plant diseases have been ascribed to this fungus, especially the powdery mildew of cucurbits in Australia (Clare 1958), New Zealand (Dingley 1959) and South Africa (Gorter 1966), which causes a disease of major epidemiological importance.

In the revised list below, *S. fuliginea* is therefore retained as a composite species while *S. fusca* is confined to astera-

ceous hosts. Voucher specimen numbers (PREM: National Collection of Fungi, Pretoria) are cited for host plants not mentioned in my monograph (Gorter 1988).

List of fungus names and hosts

- Blumeria graminis* (DC.) Speer: *Avena sativa* L., *Ehrharta longifolia* Schrad., *Hordeum vulgare* L., *Triticum aestivum* L. (PREM 11001, 21773, 39136)
- Brasiliomyces entadae* Marasas & Rabie: *Entada spicata* (E. Mey.) Druce, *Schotia latifolia* Jacq. (PREM 26681)
- Erysiphe aquilegiae* DC. var. *aquilegiae*: *Aquilegia vulgaris* L.
- Erysiphe aquilegiae* DC. var. *ranunculi* (Grev.) Zheng & Chen: *Delphinium ajacis* L., *Delphinium cultorum* Voss, *Knowltonia glabricarpellata* Huth. (PREM 32261), *Ranunculus asiaticus* L.
- Erysiphe biocellata* Ehrenb.: *Mentha aquatica* L. (PREM 49159), *Monarda didyma* L., *Rosmarinus officinalis* L., *Salvia farinacea* Benth., *Salvia officinalis* L. var. *aurea*
- Erysiphe cichoracearum* DC. var. *cichoracearum*: *Achillea millefolium* L., *Aster laevis* L., *Aster novo-belgii* L., *Aster squamatus* (Spreng.) Hieron., *Chrysanthemum hortorum* Bailey, *Chrysanthemum parthenium* Pers., *Dimorphotheca pluvialis* (L.) Moench, *Dimorphotheca sinuata* DC., *Gerbera jamesonii* H. Bolus ex Adlam, *Helianthus annuus* L. (PREM 51430), *Lactuca sativa* L., *Osteospermum ecklonis* (DC.) T. Norl., *Senecio glaberrimus* DC. (PREM 49145), *Senecio isatideus* DC. (PREM 49437), *Sonchus oleraceus* L.
- Erysiphe cichoracearum* DC. var. *transvaalensis* Gorter & Eicker: *Dahlia* sp. cult., *Zinnia elegans* Jacq.
- Erysiphe cruciferarum* Opiz ex Junell: *Brassica juncea* (L.) Czerniak, *B. juncea* (L.) Czerniak var. *crispifolia* L.H. Bailey, *B. oleracea* L. var. *acephala*, *B. oleracea* L. var. *capitata*, *Carica papaya* L., *Cleome spinosa* L., *Eschscholzia californica* Cham., *Lepidium africanum* (Burm.f.) DC., *Lepidium bonariense* L. (PREM 49436), *Papaver rhoeas* L., *Sisymbrium thellungii* V.A. Schulz
- Erysiphe cynoglossi* (Wallr.) U. Braun: *Trichodesma africanum* (L.) Lehm. (PREM 26849)
- Erysiphe depressa* (Wallr.) Schlecht.: *Berkheya* sp.
- Erysiphe doidgei* U. Braun: *Triumfetta sonderi* Fic. & Hiern.
- Erysiphe galeopsidis* DC.: *Ajuga reptans* L., *Arctotheca calendula* (L.) Levyns, *Leonotis leonitis* R. Br., *Leonotis leonuris* (L.) R. Br., *Leucas martinicensis* (Jacq.) R. Br. (PREM 1297), *Senecio latifolius* DC.
- Erysiphe heraclei* DC.: St-Am.: *Hedera helix* L., *Trachymene coerulea* Graham
- Erysiphe howeana* U. Braun: *Oenothera indecora* Camb., *Oenothera stricta* Ledeb. ex Link
- Erysiphe jatrophae* Doidge: *Acalypha angustata* Sond., *Acalypha* sp. (cf. *punctata* Meisn.), *Jatropha zeyheri* Sond.
- Erysiphe orontii* Cast. var. *orontii*: *Acanthus mollis* L., *Cassia floribunda* Cav. (PREM 49148), *Cassia occidentalis* L. (PREM 49153), *Datura stramonium* L., *Euphorbia epicyparissias* E. Mey. ex Boiss. var. *epicyparissias* (PREM 51431), *Hebe andersonii* (Windl. & Pat.) Cockayne & Allen, *Hermannia* sp. (PREM 896), *Nicotiana tabacum* L., *Phyllanthus* sp. (cf. *maderaspatensis* L.) (PREM 18147), *Schizanthus pinnatus* R. & Pav., *Solanum tuberosum* L., *Thunbergia grandiflora* Rox. (PREM 48867), *Viola tricolor* L., *Verbena hybrida* Voss (PREM 49449), *Verbena tenuisecta* Briq. (PREM 49154)
- Erysiphe orontii* Cast. var. *brevispora* Gorter comb. nov.: *Linaria bipartita* Willd.
- Erysiphe pisi* DC. var. *pisi*: *Medicago truncatula* Gaertn., *Pisum sativum* L., *Sesbania punicea* (Cav.) Benth., *Trifolium pratense* L., *Trifolium subterraneum* L., *Vigna vexillata* (L.) A. Rich (PREM 33231), *Voandzeia subterranea* (L.) DC. (PREM 34173)
- Erysiphe polygoni* DC.: *Antigonum leptopus* Hook. & Arn. (PREM 42232, 49447), *Rumex crispus* L., *Muehlenbeckia platyclados* Meissn. (PREM 49439)
- Erysiphe sordida* Junell: *Plantago major* L.
- Leveillula taurica* (Lév.) Arn.: *Aquilegia vulgaris* L., *Capsicum frutescens* L., *Ceratotheca triloba* (Bernh.) Hook. f. (PREM 49435), *Cleome spinosa* L., *Cyamopsis tetragonoloba* (L.) Taub. (PREM 48987, 49442), *Gaillardia pulchella* Foug. (PREM 32499), *Hibiscus cannabinus* L. (PREM 41777), *Lachenalia violacea* Jacq. (PREM 43176), *Osteospermum spinescens* Thunb., *Sesbania bispinosa* (Jacq.) W.F. Wight var. *bispinosa* (PREM 49441), *Sesbania sesban* L., *Solanum pseudocapsicum* L., *Teucrium trifidum* Retz., *Tropaeolum majus* L.
- Microsphaera begoniae* Sivanesan: *Begonia semperflorens* Link & Otto
- Microsphaera berberidis* (DC.) Lév. var. *berberidis*: *Berberis thunbergii* DC., *Berberis thunbergii* DC. var. *atropurpurea*
- Microsphaera* cf. *extensa* Cooke & Peck var. *extensa*: *Quercus robur* L., *Quercus canariensis* Willd.
- Microsphaera platani* Howe: *Platanus wrightii* S. Wats
- Microsphaera russelii* Clint.: *Oxalis corniculata* L.
- Microsphaera trifolii* (Grév.) U. Braun var. *trifolii*: *Lathyrus odoratus* L., *Vicia benghalensis* L.
- Oidium bauhiniae* Gorter & Eicker: *Bauhinia galpinii* N.E. Br.
- Oidium buddlejae* Gorter & Eicker: *Buddleja salviifolia* (L.) Lam.
- Oidium dombeyae* Gorter & Eicker: *Dombeya rotundifolia* (Hochst.) Planch.
- Oidium hortensiae* Jörst: *Hydrangea hortensis* Sieb., *Hydrangea macrophylla* (Thunb.) DC.
- Oidium indigoferae* Yen: *Indigofera hirsuta* L.
- Oidium lannae* Gorter & Eicker: *Lannea discolor* (Sond.) Engl.
- Oidium mangiferae* Berthet: *Mangifera indica* L.
- Ovulariopsis ellipsospora* Gorter: *Cajanus cajan* (L.) Millsp. (PREM 48945)
- Phyllactinia acaciae* Sydow: *Acacia karroo* Hayne, *Acacia robusta* Burch.
- Phyllactinia cassiae* Gorter & Eicker: *Cassia abbreviata* Oliv. subsp. *beareana* (Holmes) Brenan
- Phyllactinia combreti* Doidge: *Combretum molle* R. Br. ex G. Don, *Combretum zeyheri* Sond.
- Phyllactinia evansii* Doidge: *Burkia africana* Hook.
- Phyllactinia gorteri* Eicker: *Sclerocarya birrea* (A. Rich) Hochst. subsp. *caffra* (Sond.) Kokwaro (PREM 47140, 48946, 48947, 49375, 49444)

- Phyllactinia guttata* (Wallr.) Lév. var. *guttata*: *Erythrina lysistemon* Hutch. (PREM 47467), *Greya sutherlandii* Hook. & Harv., *Morus alba* L., *Morus nigra* L., *Rhus pyroides* Burch., *Rhus chirindensis* Bak. f., *Sphenostylis angustifolia* Sond.
- Phyllactinia guttata* (Wallr.) Lév. var. *moricola* (P. Henn.) Gorter: *Morus acidosa* Griff.
- Pleochaeta shiraiana* (P. Henn.) Kimbrough & Korf: *Celtis africana* Burm. f.
- Podosphaera leucotricha* (Ell. & Everh.) Salmon: *Malus sylvestris* Mill., *Photinia glabra* (Thunb.) Maxim.
- Podosphaera tridactyla* (Wallr.) de Bary: *Prunus armeniaca* L.
- Sphaerotheca aphanis* (Wallr.) U. Braun var. *aphanis*: *Fragaria* sp. cult.
- Sphaerotheca fugax* Penz. & Sacc.: *Erodium moschatum* (L.) L'Herit. ex Ait., *Pelargonium pulverulentum* Colv. ex Sweet, *Pelargonium sidifolium* (Thunb.) Knuth
- Sphaerotheca fuliginea* (Schlecht.) Poll.: *Citrullus vulgaris* Schrad. (PREM 46515), *Cucumis melo* L. (PREM 46444), *Cucumis sativus* L., *Cucurbita pepo* L., *Cyamopsis tetragonoloba* (L.) Taub., *Impatiens balsamina* L., *Lagenaria leucantha* (Duch.) Rusby (PREM 26017), *Momordica clematidea* Sond. (PREM 617), *Petunia hybrida* hort. Vilm.-Andr., *Phaseolus aureus* Roxb. (PREM 35547), *Phlox* sp. cult., *Physalis ixocarpa* Brot. ex Horem., *Sechium edule* (Jacq.) Swartz, *Vigna unguiculata* (L.) Walp.
- Sphaerotheca fusca* (Fries) Blumer: *Acanthospermum australe* (Loefl.) Kunze, *Acanthospermum glabratum* (DC.) Willd., *Acanthospermum hispidum* DC., *Bidens formosa* (Bonato) Schip. Bip., *Calendula officinalis* L., *Conyza bonariensis* (L.) Cronq., *Conyza sumatrensis* (Retz.) E.H. Walker (PREM 47266), *Coreopsis lanceolata* L., *Euryops chrysanthemoides* (DC.) B. Nordistam, *Senecio cruentus* (Mass.) DC., *Senecio elegans* L., *Senecio* sp. [cf. *alpinus* (L.) Serf.] (PREM 5413), *Sonchus dregeanus* DC.
- Sphaerotheca pannosa* (Wallr. ex Fr.) Lév.: *Eucalyptus macarthuri* Deane et Mald. (PREM 48876), *Prunus africana* (Hook. f.) Kalkm., *Rosa banksiae* Ait., *Rosa* sp. cult., *Tecomaria capensis* (Thunb.) Spach.
- Sphaerotheca verbenae* Savulescu & Negru: *Verbena hortensis* Vilm., *Verbena incisa* Hook.
- Streptopodium diospyri* Gorter: *Diospyros lycioides* Desf. subsp. *guerkei* (Kunze) De Winter, *Diospyros lycioides* subsp. *lycioides* (PREM 48944)
- Uncinula aspera* Doidge var. *aspera*: *Ficus ingens* (Miq.) Miq., *Ficus thonningii* Blume
- Uncinula aspera* Doidge var. *sparsichaeta* Gorter & Marasas: *Ficus sycomorus* L. (PREM 42661)
- Uncinula combreticola* Doidge: *Combretum zeyheri* Sond.
- Uncinula incrassata* Salmon: *Pterocarpus rotundifolius* (Sond.) Druce
- Uncinula kusanoi* Syd.: *Celtis sinensis* Pers. (PREM 49097)
- Uncinula necator* (Schw.) Burr. var. *necator*: *Vitis vinifera* L.
- Uncinula praeterita* Marasas & Schum.: *Ehretia rigida* (Thunb.) Druce
- Uncinuliella australiana* (McAlp.) Zheng & Chen: *Lagerstroemia indica* L.

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