

Current status of cercosporoid fungi of India

SHAGUN SINHA^{1,2}, SUDHIR NAVATHE³, RAVINDRA N. KHARWAR²,
NALIN N. WIJAYAWARDENE⁴, DONG-QIN DAI⁴, RAMESH CHAND^{1*}

¹Department of Mycology & Plant Pathology, Institute of Agricultural Sciences, Banaras Hindu University,
Varanasi 221005, Uttar Pradesh, India

²Center of Advanced Studies in Botany, Institute of Science, Banaras Hindu University,
Varanasi 221005, Uttar Pradesh, India

³Agharkar Research Institute, G. G. Agarkar Road, Pune 411004, Maharashtra, India

⁴Center for Yunnan Plateau Biological Resources Protection and Utilization,
College of Biological Resource and Food Engineering, Qujing Normal University,
Qujing, Yunnan 655011, People's Republic of China

*CORRESPONDENCE TO: rc_vns@yahoo.co.in; sudhir.agro123@gmail.com

ABSTRACT—Cercosporoid fungi are important fungal pathogens significant for quarantine as well as bio-security regulations. This group of fungi also produces many secondary metabolites of pharmaceutical importance. Cercosporoid fungi have not been reviewed by sequence-based classification and identification in India. This review covers a total of 1871 cercosporoid fungi reported from India up to 2021. Currently, out of 1871, only 1252 cercosporoid fungi (67%) from India are accepted in global fungal databases. Most of the cercosporoid reported from India are based on the genus concept proposed by Deighton (1976), and most type specimens of these species are not available in the form of cultures for re-investigation and reevaluation of the holotypes.

KEY WORDS—*Mycosphaerellaceae*, culture collections, DNA barcodes, morpho-molecular taxonomy, sequence-based classification.

Introduction

Cercosporoid fungi are an assemblage of dematiaceous *Hyphomycetes* belonging to the family *Mycosphaerellaceae* (*Capnodiales*, *Dothideomycetes*, *Ascomycota*) (Hyde & al. 2013; Kumar & Singh 2015b; Videira & al. 2017; Wijayawardene & al. 2018, 2020). Wijayawardene & al. (2020) accepted 111 genera in *Mycosphaerellaceae* while Videira & al. (2017) accepted 120 genera. However, only 17 genera are recognized as “true” cercosporoids by Kamal (2010): *Asperisporium* Maubl., *Cercospora* Fresen., *Cercosporidium* Earle, *Distocercospora* Pons & Sutton, *Eriocercospora* Deighton, *Passalora* Fr., *Prathigada* Subram., *Pseudocercospora* Speg., *Pseudocercosporella* Deighton, *Phaeoramularia* Munt.-Cvetk., *Scolecostigmina* Braun, *Sirosporium* Bubák & Serebrian, *Stenella* Syd., *Stenellopsis* Huguenin, *Stigmina* Sacc., *Verrucisporota* Shaw & Alcorn, and *Zasmidium* Fr. (≡ *Periconiella* Sacc. fide Quaedvlieg & al. 2013). Among these accepted cercosporoid genera, *Asperisporium* includes 24 species; *Cercospora* 3000 described species (c. 1125 accepted species) and 357 orthographic variants (MycBank); *Cercosporella* Sacc. c. 100 species; *Cercosporidium* c. 10 species; *Distocercospora* 4 species; *Eriocercospora* 3 species; *Passalora* c. 250 species; *Phaeoramularia* c. 10 species; *Pseudocercospora* 1500 described species (MycBank) and c. 1000 accepted species; *Pseudocercosporella* 127 species; *Scolecostigmina* 23 species; *Stenella* c. 45 species, and *Zasmidium* c. 150 species. The genera *Cercoseptoria* Petr., *Helicomina* Olive, and *Stenella* Syd. are synonymized with

Pseudocercospora, *Phaeoisariopsis* Ferraris, *Prathigada*, *Sirosporium*, *Stenellopsis*, and c. 20 species of *Stigmina* are accommodated in doubtful genera of *Mycosphaerellaceae* as they currently lack DNA data (Hongsanan & al. 2020).

Cercosporoid fungi are plant pathogens that cause necrotic and non-necrotic leaf spots, fruit spots, blight, and fruit rot diseases in most of the climatic zones of the globe (Agrios 1997; Bakhshi & al. 2015b; Videira & al. 2017), though they are more common in humid subtropical regions (Kamal 2010; Bakhshi & al. 2015a). These fungi are well-known pathogens of different plants, including horticultural and crop plants. Furthermore, they have also been reported from weeds and forest plants (Kumar & al. 2011; Videira & al. 2017). They are employed for the biological control of *Eichhornia crassipes* (Water hyacinth) in the USA (Dagno & al. 2012).

Identification of cercosporoid fungi in India has traditionally been based on the morphology of intrinsic characters of specimens collected from infected hosts rather than based on molecular phylogenetic data. Intrinsic morphological features include conidial pigmentation and ornamentation, conidiophore characteristics, conidiogenous cell, conidiomata, and external mycelia (Braun & al. 2013). A decade after Chupp's (1953) monograph of *Cercospora*, in which 1419 species were accepted, Vasudeva (1961) published the "Indian Cercosporae" and recognized 260 species of *Cercospora* from India, recorded up to 1957. Most recently, Kamal (2010) compiled the "Cercosporoid Fungi of India," including all cercosporoid fungi of Indian origin until 2009. This list comprises 1815 species of cercosporoid fungi.

Understanding and knowledge of fungal taxonomy are changing rapidly. DNA-based studies offer strong evidence on phylogeny and taxonomy. The practice of identifying fungal species based on morphology is still practised today by mycologists. However, morphological characters can often be misleading due to hybridization, cryptic speciation, and convergent evolution (Raja & al. 2017). Additionally, until recently, it was a common practice in mycology to name asexual and sexual morphs of the same fungus with different names – dual nomenclature (fide Saccardo 1905), creating confusion over names (Wingfield & al. 2011). This practice is no longer acceptable following the Shenzhen Code (Turland & al. 2018). DNA sequence information has become more reliable, robust, and widely used for the identification of fungal species and analysis of relationships among fungal taxa (Raja & al. 2017), often in combination with (standardized) field inventories (Truong & al. 2017; Cazabonne & al. 2022). Recent studies of cercosporoid taxa (and *Mycosphaerellaceae*) are mainly based on molecular phylogenetic studies (Crous & al. 2013; Groenewald & al. 2013; Nguanhom & al. 2015), and recently Videira & al. (2017) used internal transcribed spacer region (ITS), 28S rRNA gene (large subunit-LSU), and part of the second-largest subunit of RNA-polymerase II (rpb2) loci as barcoding regions for taxa in *Mycosphaerellaceae*.

Current status of cultures of cercosporoid fungi in India

There are 32 main microbial culture collections in India, which are maintained for industrially, clinically, and environmentally important fungi. Among these, we surveyed the five culture collections that maintain pathogenic fungi. These are NFCCI (National Fungal Culture Collection of India, Agharkar Research Institute, Pune, Maharashtra; <http://nfcci.aripune.org/catalogue.php>), MTCC (Microbial Type Culture Collection, Institute of Microbial Technology, Chandigarh, Punjab; <https://mtccindia.res.in/catalog>), ITCC (Indian Type Culture Collection, Indian Agricultural Research Institute, New Delhi; https://www.iari.res.in/files/Divisions/PPathology/ITCC_catalogue_1936-2016-16092016.pdf), NAIMCC

(National Agriculturally Important Microbial Culture Collection, National Bureau of Agriculturally Important Microorganisms, Kushmaur, Mau Nath Bhanjan, Uttar Pradesh; <https://nbaim.icar.gov.in/downloads/catalogue-of-microbial-culture/>) and NCMR (National Centre for Microbial Resource, National Centre for Cell Science, Pune, Maharashtra; <http://210.212.161.138/ncmr/catalogue>). The culture collections of cercosporoid group that are currently available are summarized in TABLE 1.

Despite a huge number of novel species of cercosporoid fungi reported from India, very few are cultured and deposited in culture repositories. Therefore, it is necessary to generate and deposit both cultures and sequence data for all species reported from India, which will help not only to describe new species but also to study their biology, including life cycle, genetics, physiology, and aspects of disease establishment.

TABLE 1. Details of cercosporoid fungi in major microbial repositories of India

CULTURE REPOSITORY	CULTURE ACCESSION NO.	SPECIES DEPOSITED
National Fungal Culture Collection of India, Pune, India (NFCCI)	NFCCI 2367	<i>Cercospora kikuchii</i> Matsumoto & Tomoy
	NFCCI 2369	<i>Cercospora zinniae</i> Ellis & Martin
	NFCCI 2368, 2370, 2387, 2388	<i>Cercospora canescens</i> Ellis & Martin
	NFCCI 3067	<i>Cercospora tinosporae</i> Kamal & al.
	NFCCI 3831	<i>Cercospora citrullina</i> Cooke
	NFCCI 3832	<i>Cercospora sesami</i> Zimm.
	NFCCI 3833	<i>Cercospora calotropidis</i> Lingelsh.
	NFCCI 3834	<i>Cercospora achyranthina</i> Thirum. & Chupp
	NFCCI 3835	<i>Pseudocercospora punicae</i> (Henn.) Deighton
Microbial Type Culture Collection, Chandigarh, India (MTCC)	NFCCI 4678, NFCCI4785	<i>Cercospora brassicicola</i> Henn.
	MTCC 10144	<i>Pseudocercospora abelmoschi</i> Ellis & Everhart
	MTCC 10145	<i>Pseudocercospora tabernaemontanae</i> Syd. & Syd.
Indian Type Culture Collection, New Delhi, India (ITCC)	MTCC 10835, MTCC 10836, MTCC 10837	<i>Cercospora canescens</i> Ellis & Martin
	ITCC 4787	<i>Cercospora zinniae</i> Ellis & Martin
	ITCC 6230	<i>Cercospora ricinella</i> Sacc. & Berlese
ICAR- National Bureau of Agriculturally Important Microorganisms, Mau Nath Bhanjan, India (NAIMCC)	NAIMCC-F-00456	<i>Cercospora sesami</i> Zimm.
	NAIMCC-F-01424	<i>Paracercospora egenula</i> (Syd.) Deighton
	NAIMCC-F-01561, NAIMCC-F-02455	<i>Pseudocercospora cavarae</i> (Sacc. & Sacc.) Deighton
	NAIMCC-F-02481, NAIMCC-F-02482	<i>Cercospora canescens</i> Ellis & Martin

National Centre for Microbial Resources Pune, India (NCMR)	MCC 9064	<i>Cercospora gerberae</i> Chupp & Viégas
	MCC 9065, MCC 9066	<i>Cercospora brassicicola</i> Henn.
	MCC 9069	<i>Cercospora sesami</i> Zimm.
	MCC 9087	<i>Cercospora apii</i> Miura
	MCC 9088	<i>Cercospora beticola</i> Sacc.
	MCC 9091	<i>Cercospora cocciniae</i> Munjal & al.
	MCC 9092	<i>Cercospora ricinella</i> Sacc. & Berl.
	MCC 9093	<i>Cercospora canescens</i> Ellis & Martin
	MCC 9094	<i>Cercospora malayensis</i> Stevens & Solheim
	MCC 9095	<i>Pseudocercospora cruenta</i> (Sacc.) Deighton
	MCC 9355	<i>Cercospora alocasiae</i> Sawada ex Goh & Hsieh
	MCC 9357	<i>Cercospora capsici</i> Heald & Wolf
	MCC 9358, MCC 9490	<i>Cercospora physalidis</i> Ellis
	MCC 9491	<i>Pseudocercospora abelmoschi</i> (Ellis & Everh.) Deighton
MCC 9503	<i>Cercospora cruciferarum</i> Ellis & Everh.	

The aim of this study

The estimated fungal diversity is between 2.2 and 3.8 million species, according to Hawksworth & Lücking (2017). Out of these, only 144,000 are formally reported thus far (Willis & al. 2018). Currently, approximately 30% of 144,000 species have sequences in GenBank. A large amount of fungal diversity around the globe exists in India (Manoharachary & al. 2005), and India was among the top ten countries from which most new species of fungi were described in 2019 (Cheek & al. 2020). As per the report of the Botanical Survey of India (2019), about 15,396 species of fungi were known in India up to 2018. In most cases, culture holomorphs/holotypes reported as species are not available in fungal repositories. In addition, the international exchange of fungal cultures from India is very limited, which may be due to a complex set of regulations, and most importantly, the lack of ex-type cultures. Even though the majority of the cercosporoid species are important plant pathogens, a large portion of them has not been subjected to DNA sequencing. In addition, cultures are lacking for most of them. As a result, the majority of checklists and records of cercosporoid species have become outdated. In other words, it has become necessary to update old monographs to gain an idea about the current status of all cercosporoid fungi from India. To create a current and accurate checklist of Indian cercosporoid fungi, we needed to revalidate all species within the current listings, using type collections

maintained within herbaria, cultures, DNA barcodes, and molecular phylogenetic analysis. In the present study, we re-visited all Indian cercosporoid fungi recorded up to 2021 and validated their current status.

Materials & methods

The information about the cercosporoid fungi was collected from Vasudeva (1963), Kamal (2010) and subsequent studies on cercosporoid fungi from India until 2021. Each species was searched in the official nomenclatural repositories (Redhead & Norvell 2012): MycoBank (<http://www.mycobank.org/>), Index Fungorum (<http://www.indexfungorum.org>), and Fungal Names (www.frdbi.info). The current status, identification number, and culture accession numbers of each species were recorded. Sequence-based information for primary and secondary barcodes was retrieved from NCBI GenBank (<https://www.ncbi.nlm.nih.gov/>). Culture accession numbers were collected from the online catalogue of culture repositories of India. The species are listed alphabetically and can be read left to right by the row.

Results

Taxonomic inferences

The present compilation recorded 1252 currently accepted species of the cercosporoid genera reported from India (FIG. 1, TABLE 2).

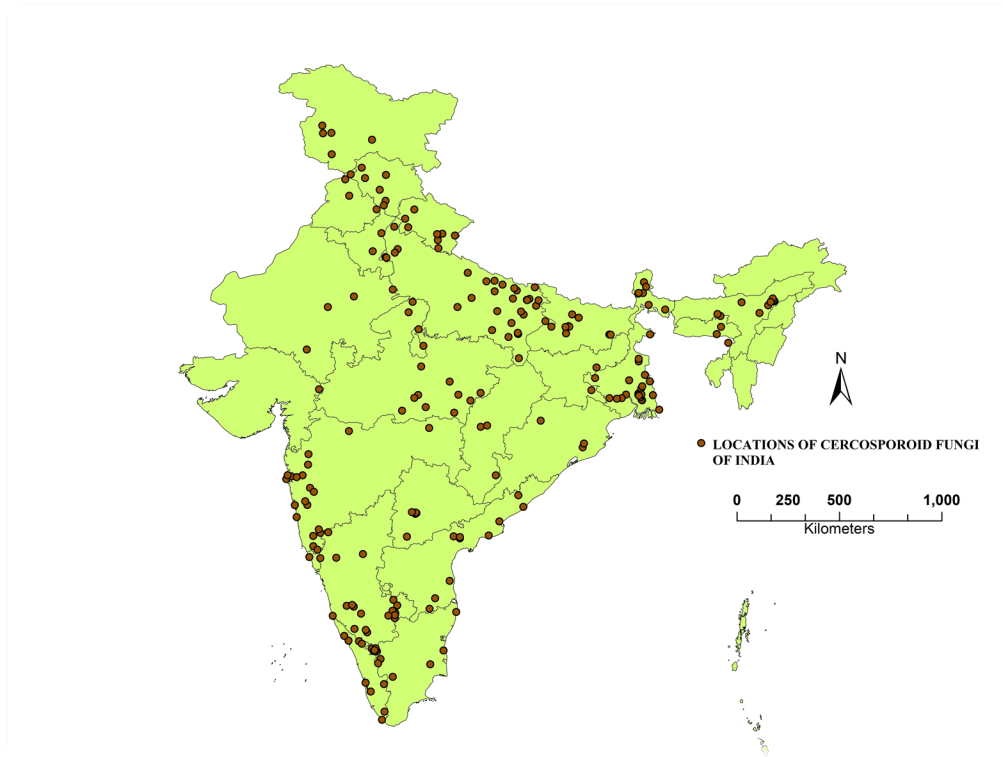


FIG. 1. GIS-based location map of cercosporoid fungi reported from India so far

TABLE 2. Records of cercosporoid fungi reported from India and their status until 2021

GENUS	SPECIES RECORDS
<i>Asperisporium</i> Maubl.	05
<i>Cercospora</i> Fresen.	477
<i>Distocercospora</i> Pons & Sutton	02
<i>Passalora</i> Fr.	139
<i>Prathigada</i> Subram.	07
<i>Pseudocercospora</i> Speg.	477
<i>Scolecostigmina</i> Braun	12
<i>Sirosporium</i> Bubák & Serebrian.	16
<i>Stenellopsis</i> Huguenin	04
<i>Stigmina</i> Sacc.	20
<i>Verrucisporota</i> Shaw & Alcorn	03
<i>Zasmidium</i> Fr.	90
As per current study, one or more records by Kamal (2010) and a few more from recent publications from India are now transferred to following genera:	
<i>Camptomeris</i> Syd.	01
<i>Catenulocercospora</i> Nakash & al.	01
<i>Claro Hilum</i> Videira & Crous	01
<i>Clypeosphaerella</i> Guatimosim & al.	01
<i>Colletogloeum</i> Petr.	01
<i>Distocercosporaster</i> Videira & al.	01
<i>Distomycovellosiella</i> Braun & al.	01
<i>Eriocercosporella</i> Kumar & al.	01
<i>Fulvia</i> Cif.	01
<i>Mycosphaerella</i> Johanson	01
<i>Mycovellosiella</i> Rangel	03
<i>Neocercosporidium</i> Videira & Crous	01
<i>Nothopassalora</i> Braun & al.	01
<i>Paracercospora</i> Deighton	01
<i>Phaeoramularia</i> Munt. – Cvetk.	01
<i>Pruniphilomyces</i> Crous & Bulgakov	01
<i>Ragnhildiana</i> Solheim	02
<i>Rosisphaerella</i> Videira & Crous	01
<i>Stenella</i> Syd.	01

Asperisporium Maubl., Bull. Soc. Mycol. Fr. 29: 357 (1913).

FIG. 2

Type species: *A. caricae* (Speg.) Maubl., Bull. Soc. Mycol. Fr 29: 357 (1913).

General characteristics (Kamal 2010): Sporodochia punctiform, pulvinate, brown, olivaceous brown to black. Mycelium immersed. Stroma is usually well-developed, erumpent. Setae and hyphopodia are absent. Conidiophores macronematous, manonematous, tightly packed together forming sporodochia, usually rather short, unbranched or occasionally branched, straight or flexuous, hyaline to olivaceous brown, smooth. Conidiogenous cells polyblastic, integrated, terminal, sympodial, cylindrical or clavate, cicatrized with prominent scars. Conidia are solitary, dry, acropleurogenous, ellipsoidal, fusiform, obovoid, pyriform, and clavate or obclavate, hyaline to brown, or olivaceous brown, smooth or verrucose, with 0–3 transverse and sometimes 1 or more longitudinal or oblique septa (FIG. 2).

Current status: Five species of *Asperisporium* reported from India are currently accepted (TABLE3).

TABLE 3. Records of *Asperisporium* from India

Asperisporium caricae (Speg.) Maubl.

Asperisporium dalbergiae Patil & Thirum.

Asperisporium moringae (Thirum. & Govindu) Deighton

≡ *Cercospora moringae* Thirum. & Govindu

≡ *Passalora moringae* (Thirum. & Govindu) Kapoor & Munjal

Asperisporium pongamiae (Syd. & Syd.) Deighton

Asperisporium pongamiae-pinnatae Kharwar & al.

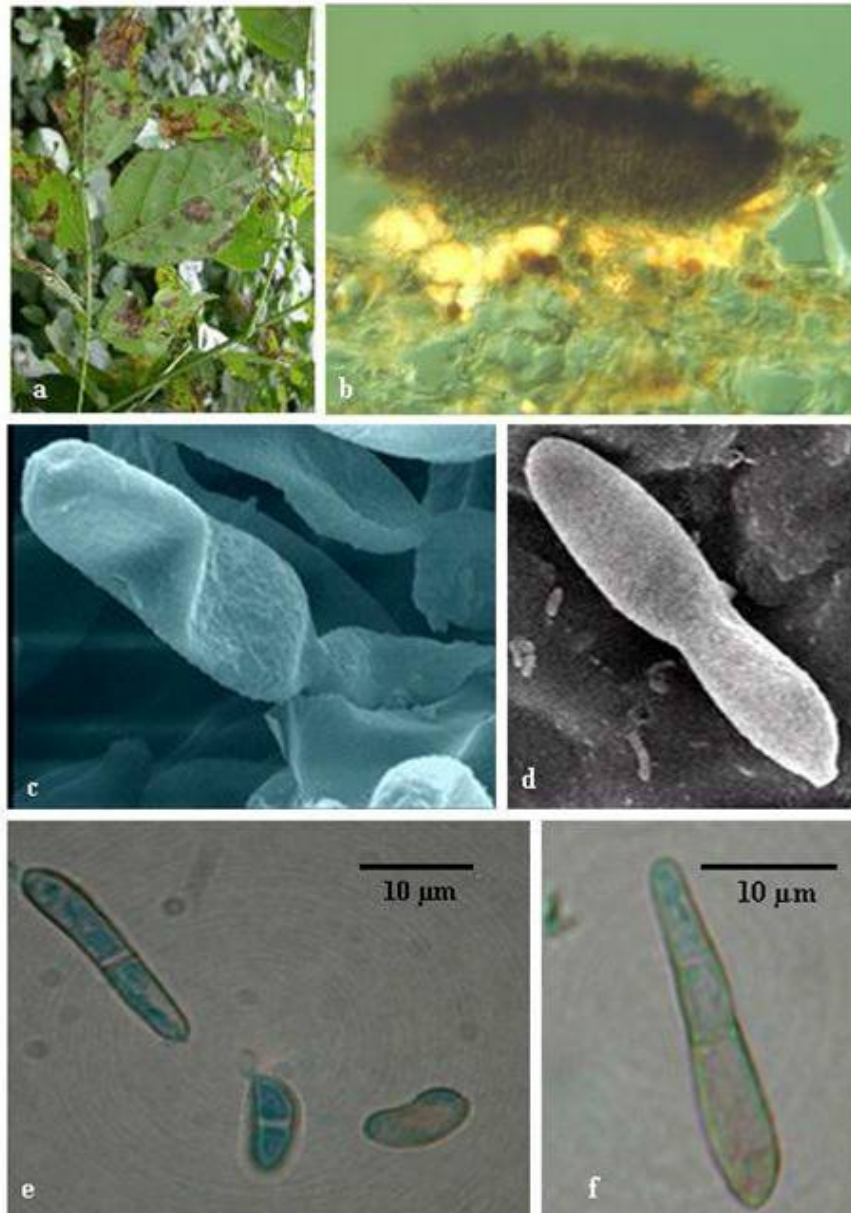


FIG. 2. *Asperisporium pongamiae-pinnatae* on *Pongamia pinnata* a-f. a. Leaf spots b. Stromata and conidiophores (sporodochium) c-d. SEM image of conidia e-f. 0-3 septate conidia. Reproduced from Kharwar & al. 2012 with permission of Vegetos: An International Journal of Plant Research

Cercospora Fresen. ex Fuckel, Hedwigia 2 (15): 91 (1863).

Type species: *C. apii* Fresen. Beitr. Mykol. 3: 91 (1863).

Synonym:

≡ *Virgasporium* Cooke, Grevillea 3 (28): 182 (1875).

≡ *Cercosporina* Speg. Anal. Mus. nac. B. Aires, Ser.3, 13: 424 (1911).

FIG. 3

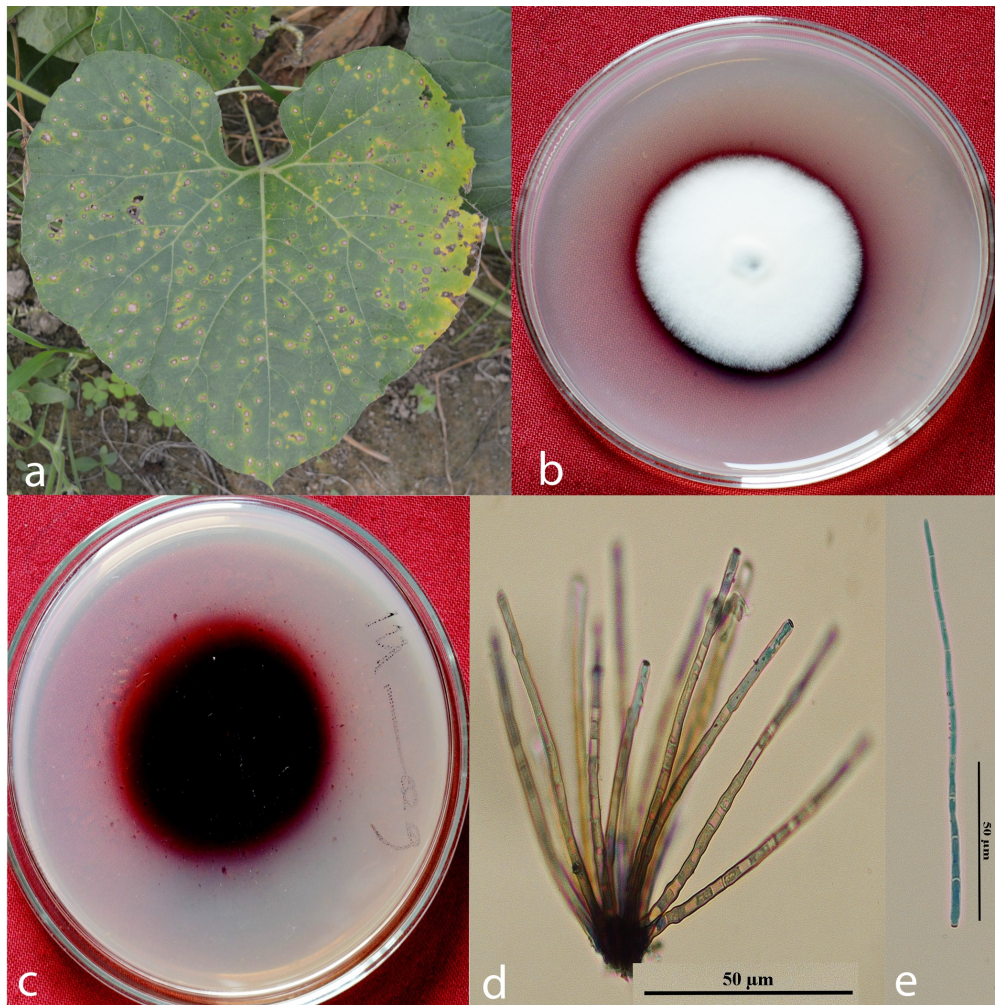


FIG. 3. *Cercospora citrullina* on *Lagenaria siceraria* a-e. a. Symptoms on leaf b. Pigmented colony on PDA c. Inverted pigmented colony on PDA d. Conidiophore e. Conidia, Bars d and e = 50 μm

Fresenius (1863) introduced the genus *Cercospora* for passalora-like fungi with pluriseptate conidia (Groenewald & al. 2013). As a pathogen, *Cercospora* infects some important crops belonging to different families such as *Asteraceae*, *Cucurbitaceae*, *Fabaceae*, and *Solanaceae* (Nguanhom & al. 2015). Average

crop loss due to the *Cercospora* infection was estimated to be 23% to 75%. In legume, when the foliage has been destroyed, up to 100% of losses were reported by Quebral & Cagampong (1970). The reduction in yield due to *Cercospora* depends on how early plants are infected (Chand & al. 2015). Yield losses due to the disease have been reported as 21% to 31% in soybean and 35% to 40% in legumes (Chand & al. 2015). The taxonomic complexities of the genus *Cercospora* remain unresolved to date (Crous & al. 2013). In India, the first report of the *Cercospora* leaf spot (CLS) was documented by Thirumalachar & Chupp (1948). The characteristic symptoms are reported as angular to sub-circular leaf spots with brown to greyish centres and reddish-brown to ferruginous margin, often along the margin of the leaf, 3–25 mm in extent, fruiting amphigenous, but abundant on abaxial surface, sometimes present on the upper leaf surface, stem cotyledon and drying pod as effuse black to grey patches (FIG. 3). Premature defoliation is accompanied by intense disease severity. The symptoms also appear on petioles, stems, flowers, and fruits. The symptoms produced by different species of *Cercospora* may differ slightly from each other according to the occurrence in different habitats and in different hosts.

Correct identification based on barcoding, host association, and morphological features is long overdue. Few species of *Cercospora* of Indian origin are identified using the universal barcode ITS. Very few sequence data are available in GenBank. Despite the importance of *Cercospora* agriculturally, it also serves as a rich source of a secondary metabolite, Cercosporin. Besides establishing disease in the plant, Cercosporin also has an essential medicinal role in inhibiting the growth of human tumour cells, inactivating protein kinase C, and serving as a potent anti-viral compound (Kumar & al. 2011). Therefore, the collection, identification, and deposition of the cultures of this group of fungi are necessary for agricultural, industrial, and pharmaceutical usage.

Current status: At present, 477 species of *Cercospora* reported from India are currently accepted (TABLE 4).

TABLE4. Records of *Cercospora* from India

<i>Cercospora abelmoschi</i> Narayan & al. [as ' <i>abelmoschidis</i> '], nom. illeg.	<i>Cercospora abelmoschi-cannabini</i> (Sawada) Prasad & al.
<i>Cercospora acalyphae</i> Peck ≡ <i>Cercospora acalypharum</i> Tharp	<i>Cercospora acalyphigena</i> Narayan & al.
<i>Cercospora acanthacearum</i> Govindu & Thirum.	<i>Cercospora acanthacearum</i> var. <i>macrospora</i> Karan & Manohar.
<i>Cercospora achyranthina</i> Thirum. & Chupp	<i>Cercospora achyranthis</i> Syd. & Syd.
<i>Cercospora acrocarpicola</i> Agnihotr.	<i>Cercospora acuminata</i> Das
<i>Cercospora adenostemmatidis</i> Togashi & Katsuki [as ' <i>adenostemmae</i> '], nom. illeg.	<i>Cercospora adhatodae</i> Chowdhury
<i>Cercospora adinae</i> Ramakr. & Ramakr.	<i>Cercospora adianticola</i> Srivast. & al.
<i>Cercospora aecidiicola</i> Rao & Salam	<i>Cercospora adiniana</i> Srivast. & al.
<i>Cercospora aervae-lanatae</i> Raghu Ram & Mallaiiah	<i>Cercospora aegles-marmelos</i> Mathur & al.
<i>Cercospora agnostoica</i> Speg.	<i>Cercospora agerati-conyzoidis</i> Bagyan. & al.
<i>Cercospora albiziae</i> Kar & Mandal	<i>Cercospora aizoacearum</i> Bhartiya & al.

- Cercospora alstoniae* Mall & Kumar
Cercospora alternantherina Narayan & al.
Cercospora alysicarpi Munjal & al.
Cercospora amberboae Narain & Mehrotra
Cercospora ammanniae Tharp
Cercospora anacardii-occidentale Rangasw. & al.
Cercospora anaphalidis Munjal & al.
Cercospora anisochilicola Agarwal
Cercospora annulata Cooke
Cercospora aponogetonicola Pavgi & Singh
Cercospora arisaematis Tai
Cercospora artocarp-heterophyllae Subhedar & Rao
Cercospora asparagi Sacc.
Cercospora asplenifoliae Narain & Mehrotra
Cercospora asteracearum Srivast. & al.
Cercospora atylosiicola Bagyan. & al.
Cercospora avicennae Chupp
Cercospora barleriicola Payak & Thirum.
 = *Cercospora barleriae-cristatae* Govindu & Thirum.
Cercospora basellae-albae Srivast. & al.
Cercospora barringtoniae (Syd. & Syd.) Chupp
 = *Pseudocercospora barringtoniae* (Syd. & Syd.) Khan & Shamsi
Cercospora begonia Hori
Cercospora bertrandii Chupp
Cercospora bidentis Tharp
Cercospora biharica Thirum. & Govindu
Cercospora blainvilleae Govindu & Thirum.
Cercospora blumeae-oxydontae Pavgi & Singh
Cercospora blumeigena Narayan & al.
Cercospora bombacis Goh & Hsieh
Cercospora borrierae-strictae Bagyan. & al.
Cercospora brachiata Ellis & Everh.
Cercospora burserae Govindu & Thirum.
Cercospora caesalpiniae Agarwal & Sharma
Cercospora alocasiae Goh & Hsieh
Cercospora alternantherae Ellis & Langl.
Cercospora althaeina Sacc.
 = *Cercospora althaeina* var. *praecincta* Davis
Cercospora amaryllicicola Rajak
Cercospora amorphophalli Henn.
 = *Cercospora aracearum* Firdousi & al.
Cercospora anagallidis Patil
Cercospora andrographidis Thirum. & Govindu
Cercospora annamalaiensis Rangasw. & Chandras.
Cercospora apii Fresen.
Cercospora araliae Srivast. & al.
Cercospora arthaxonis Patil & Sawant
Cercospora asiatica Dubey & al.
Cercospora aspera Pavgi & Singh
Cercospora asplenii Jaap
Cercospora atylosigena Bhartiya & al.
Cercospora averrhoae Petch
Cercospora balaghatensis Singh
Cercospora baroipurensis Purkay. & Mallik
Cercospora barleriicola Payak & Thirum.
 = *Cercospora barleriae-cristatae* Govindu & Thirum.
Cercospora bauhiniae-variegatae Rajak
Cercospora benghalensis Chidd.
Cercospora beticola Sacc.
 = *Cercospora spinaciae* Oudem.
Cercospora bidentis-biternatae Pavgi & Singh
Cercospora bixicola Narayan & al. [as 'bixaecola'], nom. illeg
Cercospora blumeicola Das
Cercospora bombacicola Munjal & al.
Cercospora bombycina Chidd.
Cercospora boswelliae Harsch & al.
Cercospora brassicicola Henn.
Cercospora buteae Munjal & al.
Cercospora caladii Cooke
Cercospora calendulicola Narayan & al.

- Cercospora calendulae* Sacc.
Cercospora californiensis Chupp
Cercospora cannae Bai & al.
Cercospora canscorina Chidd.
Cercospora capparis Sacc.
Cercospora cardamines Losa
Cercospora caricae-papayae Rajak & Gautam
Cercospora caricis Oudem.
Cercospora carotae (Pass.) Kazn. & Siemaszko
Cercospora caryopteridis Mathur & al.
Cercospora cassicola Narayan & al.
Cercospora catharanthi Karan & Manohar.
Cercospora celastricola Govindu & Thirum.
Cercospora celosiicola Bhartiya & al.
Cercospora cestri-parqui Lall & Gill
Cercospora cheiranthi var. *brassicae* Govindu & Thirum.
Cercospora chevalieri Sacc.
Cercospora chowdhurii Roy
Cercospora chrysanthemi Heald & Wolf
Cercospora cipadessae Govindu & Thirum.
Cercospora citrullina var. *trichosanthis-anguinae* Rangasw. & Chandras.
Cercospora cocciniae Munjal & al.
Cercospora coffeicola Berk. & Cooke
Cercospora coicis Sharma & Mishra
Cercospora colocasigena Narayan & al.
Cercospora commelinae Kalchbr. & Cooke
Cercospora conyzoidis Thirum. & Govindu
Cercospora cosmi Chidd.
Cercospora crossandrae Jagan. & al.
Cercospora cruciferarum Ellis & Everh.
Cercospora curcumae Govindu & Thirum.
Cercospora curcumina Srivast. & al.
Cercospora cyclosori Goh & Hsieh
Cercospora cynoglossi Hook
Cercospora cyperii Sawada
Cercospora cannabis Hara & Fukui
Cercospora canescens Ellis & Martin
Cercospora capitati Tharp
Cercospora capsicigena Bhartiya & al.
Cercospora cardiosperumi Petch
Cercospora caricigena Bhartiya & al.
Cercospora carissae Harsch & al.
Cercospora carthami Sundar. & Ramakr.
Cercospora cassiae-montanae Govindu & Thirum.
Cercospora cassiocarpa (Sacc.) Chupp
Cercospora ceibae Chupp & Viégas
Cercospora celosiae Syd.
Cercospora centellae Manohar. & al.
Cercospora cheilanthi Chowdhry & al.
Cercospora chenopodii Fresen.
Cercospora chidambarensis Rangasw. & Chandras.
Cercospora chrozophorina Singh & al.
Cercospora cichorii Davis
Cercospora cirsii Ellis & Everh.
Cercospora citrullina Cooke
 ≡ *Cercospora momordicae* McRae
Cercospora cleomes Ellis & Halst.
Cercospora cocculi-hirsuti Srivast. & al.
Cercospora coffeae-olivaceae Narayan & al.
Cercospora coicicola Kamal
Cercospora coleicola Chupp & Mull.
Cercospora combreti-ovalifolii Patw. & Sathe
Cercospora commelinae-salicifoliae Kar & Mandal
Cercospora corchori Sawada
Cercospora crinicola Srivast. & al.
Cercospora crotalariae Sacc.
Cercospora cryptocorynes Chidd.
Cercospora curcumae-longae Pavgi & Upadhyay
Cercospora cyathoclones Patil
Cercospora cynodontis Pavgi & Singh
Cercospora daemiicola Kar & Mandal

- = *Cercospora cypericola* Chupp & Greene
 = *Cercospora cyperi-rotundi* Thirum. & Govindu
Cercospora dahliicola Salam & Rao
Cercospora dalbergiigena Srivast. & al.
Cercospora dapoliana Garud
Cercospora decolour Pass.
Cercospora desmodiicola Atk.
Cercospora digitalis Chi & Pai
Cercospora digitariae Kranz

Cercospora diospyricola Munjal & al.
Cercospora dodonaeae Srivast. & al.

Cercospora duddiae Welles
Cercospora eclipticola Chidd.
Cercospora elephantipicola Yen & Gilles
Cercospora emodi Pandotra & Sastry
Cercospora erythrinicola Tharp
Cercospora euphorbiae Kellerm. & Swingle
 = *Cercospora helioscopiae* Syd.
Cercospora ficina Tharp
Cercospora flacourtiicola Gupta
Cercospora fukushiana (Matsuura) Yamam

Cercospora gaillardiae Chidd.
Cercospora geniculata Das
Cercospora glandulosa Ellis & Kellerm.
Cercospora golaghatii Saikia & Sarbhoy
Cercospora gomphrenae-globosae Narayan & al.
Cercospora gorakhpurensis Bhartiya & al.
Cercospora gossypicola Narayan & al.
Cercospora granadillae Chupp
Cercospora guatemalensis Mull. & Chupp
Cercospora guizotiicola Govindu & Thirum.
Cercospora habenariicola Meeboon & al.
Cercospora hamiltoniae Munjal & al.
Cercospora helianthicola Chupp & Viégas
Cercospora heliconiae Chowdhry & al.
Cercospora heterophragmatis Patil

Cercospora dalbergiae-latifoliae Chidd.
Cercospora dandeliensis Rangasw. & al.
Cercospora davisii Ellis & Everh.
Cercospora demetroniana Winter
Cercospora dharwarensis Rangasw. & al.
Cercospora digitalis Sarwar
Cercospora dioscoreae-pyrifoliae Yen
 = *Cercospora pachyderma* var. *indica* Munjal & al.
Cercospora diplaziicola Das
Cercospora dracunculii Sarwar

Cercospora echinichloae Davis
Cercospora elasticae Zimm.
Cercospora eleusines Munjal & al.
Cercospora erythrinae-lithospermae Agnihothr.
Cercospora eulophiae Patil
Cercospora fagopyri Nakata & Takim.

Cercospora firmianae Narayan & al.
Cercospora fleuryae Thirum. & Govindu
Cercospora furfurella Speg.
 = *Cercospora boerhaviicola* Thirum. & Govindu
Cercospora garugae Agarwal & Hasija
Cercospora gerberae Chupp & Viégas
Cercospora gloriosae Syd.
Cercospora gomphrenae Ray
Cercospora gorakhanathii Rai & Kamal
Cercospora gossypii Lall & al.
Cercospora gossypina Cooke
Cercospora grandissima Rangel
Cercospora guizotiae Siemaszko
Cercospora gynandropsicola Srivast. & al.
Cercospora haematoxylin Chupp
Cercospora hebbalensis Govindu & al.
Cercospora helichrysi Chupp
Cercospora heliotropiicola Kar & Mandal
Cercospora heylandiae Patil

- Cercospora hitcheniae* Chidd.
Cercospora holmskioldiae Lall & Gill
Cercospora humilis Pavgi & Singh
Cercospora hyalospora Mull. & Chupp
Cercospora hydroleae Thirum. & Govindu
Cercospora hyptidicola Srivast. & al.
Cercospora indigoferae Raghun. & Ramakr.
Cercospora instabilis Rangel
Cercospora iphigeniae Patw. & Sathe
Cercospora ipomoeae-illustris Chidd.
Cercospora jagdalpurenensis Rajak & Gautam

Cercospora jamuensis Pandotra

Cercospora jatrophiicola (Speg.) Chupp
Cercospora justiciicola Tai
Cercospora kanpurensis Chauhan & Ahmed
Cercospora kickxiae Firdousi & al.
Cercospora kikuchii (Matsumoto & Tomoy.) Gardner
Cercospora knoxiae Govindu & Thirum.
Cercospora labiatacearum Kumar & Kamal
Cercospora lagenariae Salam & Rao
Cercospora lanneae Kar & Mandal
Cercospora laporticola Sarbajna & Chattopadh.
Cercospora lawsoniae-albae Thirum. & Govindu
Cercospora leae-aecidiicola Karan & Manohar.
Cercospora leonuri Stevens & Solheim
Cercospora leptadeniana Braun & al.
Cercospora leucaenae-leucocephalae Raghu Ram & Mallaiah

Cercospora lingii Tai
Cercospora lobelia Kellerm. & Swingle

Cercospora longissima var. *indica* Munjal & al.
Cercospora lupini Narayan & al.
Cercospora lycopersici Salam & Rao
Cercospora lygodiiicola Lall & al.

Cercospora holarrhenigena Kamal
Cercospora holopteleae-integrifoliae Narayan & al.
Cercospora hyalina Mull. & Chupp
Cercospora hydrangeae Ellis & Everh.
Cercospora hygrophilae Ponnappa
Cercospora imperatoriae var. *indica* Patil & Thirum.
Cercospora ingigena Srivast. & al.
Cercospora insulana (Sacc.) Vassiljevsky
Cercospora ipomoeae Winter
Cercospora ipomoeae-pedis-caprae Yen & Lim
Cercospora janseana (Racib.) Constant.
 = *Cercospora oryzae* Miyake
 = *Cercospora oryzae* var. *rufipogonis* Singh & Pavgi
 = *Passalora janseana* (Racib.) Braun
Cercospora jasmuni Narayan & al.

Cercospora jatrophiigena Braun
Cercospora khatensis Chidd.
Cercospora kashiensis Bharadwaj
Cercospora kigeliae Lall & Gill
Cercospora kirganeliicola Srivast. & al.
Cercospora krugiana Mull. & Chupp
Cercospora lactucae-sativae Sawada
Cercospora lagerstroemiae-speciosae Srivast. & al.
Cercospora lantanae-indicae Munjal & al.
Cercospora launaeae-aspleniifoliae Kar & Mandal
Cercospora lecanthi Patil
Cercospora lentis Sharma & al.
Cercospora lepidagathidis Govindu & Thirum.
Cercospora leucaenae Shukla & Sharma
Cercospora lippiae Ellis & Everh.
 = *Pseudocercospora lippiae* (Ellis & Everh.) Das & Chattopadh.
Cercospora linicola Pavgi & Rathaiah
Cercospora longipes Butler

Cercospora ludwigiana Bagyan. & al.
Cercospora lupinicola Lieneman
Cercospora lycopersicola Bhartiya & al.
Cercospora maculicola Thirum. & Govindu

- Cercospora madhauensis* Kamal & al.
Cercospora malachrae Heald & Wolf
 ≡ *Cercospora raipurensis* Chowdhury
Cercospora malvacearum Chidd.
Cercospora mandira Chowdhury
Cercospora manihobae Viegas
Cercospora marsileae Ragunathan & al.
Cercospora medicaginis Ellis & Everh.
Cercospora megaspermae Bhardwaj & Sharma
Cercospora meliae Ellis & Everh.
Cercospora menthicola Tehon & Daniels
Cercospora microsorii Kumar & Kamal
Cercospora mimosa Agarwal & Sharma
Cercospora moghaniicola Bhartiya & al.
Cercospora monsterae Narayan & al.
Cercospora moricola Cooke
Cercospora muckiae Narayan & al.
Cercospora myrtacearum Narayan & al.
Cercospora nasturtii Pass.
Cercospora nepetae Tehon
Cercospora nilghirensis Govindu & Thirum.
Cercospora nigri var. *microspora* Bhardwaj & Paul
Cercospora nucifera Srivast. & al.
Cercospora onagrae Purkay. & Mallik
Cercospora oplismeni Lall & al.
Cercospora oudhensis Mall
Cercospora pachyrhizicola Haldar
Cercospora papaveris Mull. & Chupp
Cercospora papaya Viégas & Chupp
Cercospora penniseti Chupp
Cercospora penzigii Sacc.
Cercospora pericampyli Munjal & al.
Cercospora peristrophigena Chaudhary & al.
Cercospora phlomidicola Mall
Cercospora physalidis Ellis
 ≡ *Cercospora capsici* Heald & Wolf
 ≡ *Cercospora nicotianae* Ellis & Everh.
Cercospora madrasensis Rangasw. & Chandras.
Cercospora malayensis Stevens & Solheim
Cercospora malvastri Mend.
Cercospora mangiferae-indicae Munjal & al.
Cercospora marrubii Tharp
Cercospora martynicola Narayan & al.
Cercospora medicaginis-lupulinae Munjal & al.
Cercospora mehran Khan & Kamal
Cercospora melothriae-purpusillae Narayan & al.
Cercospora merremiae Mend.
Cercospora mikaniicola Stevens
Cercospora mimulicola Pavgi
Cercospora molluginis Halst.
Cercospora moracearum Rai & Kamal
Cercospora morindina Pavgi & Singh
Cercospora mucronata Purkay. & Pal
Cercospora muelleriana Braun & Crous
Cercospora nebulosi Sacc.
Cercospora neo-sphaerantheri Bhartiya & al.
Cercospora nigellae Hollós
Cercospora nothosaervae Patil
Cercospora oculata var. *indica* Govindu & Thirum.
Cercospora oldenlandiicola Govindu & Thirum.
Cercospora operculinae Mend.
Cercospora oxyphylli Pavgi & Singh
Cercospora papavericola Chupp
Cercospora papaverina Narayan & al.
Cercospora pavettae-tomentosae Thirum. & Govindu
Cercospora pentatis Rajak
Cercospora peregrina Chupp
Cercospora peristrophes Thirum. & Govindu
Cercospora petila Thirum. & Chupp
Cercospora phyllae Narayan & al.
Cercospora piaropi Tharp

- = *Cercospora solanicola* Atk.
Cercospora piperata Asthana & Mahmud
Cercospora pisi-sativae Stev. [as '*pisa-sativae*'], nom. illeg.
Cercospora pithecolobii Narayan & al.
Cercospora pleopeltidis Chidd.
Cercospora poonensis Viswan.
Cercospora populicola Tharp
Cercospora pouzolziicola Bhartiya & al.
Cercospora prosopidicola Kumar & al.
Cercospora psoraleae-bituminosae Savul. & Sandu
 = *Cercospora psoraleae* Ray
Cercospora pulcherrima Tharp
Cercospora punicearum Kamal
Cercospora puttemansii Henn.
Cercospora pycnicola Chona & al.
Cercospora rejouae Thirum. & Govindu
Cercospora riveae Rao & Salam
Cercospora roxburghii Purkay. & Mallik
Cercospora rumicis Pavgi & Singh
Cercospora ruscicola Rao & Patil
Cercospora salviicola Tharp
Cercospora scopariae Lacy & Thirum.
Cercospora securinegicola Kamal
Cercospora senecionis-grahamii Thirum. & Govindu
Cercospora setariae Atk.
 = *Cercospora paspali* Ray
Cercospora sigesbeckiae Katsuki
Cercospora sojina Hara
Cercospora solani Thüm.
 = *Cercospora nigrescens* Winter
Cercospora solani-tuberosi Thirum.

Cercospora sonchicola Narayan & al.
Cercospora sophorae Ramakr. & Ramakr.

Cercospora sorghi var. *cymbopogonis* Govindu & Thirum.
Cercospora sphaeranthi Patil
Cercospora stachytarphetae Ellis & Everh.
Cercospora stevensonii Chupp

Cercospora piperis-bette Sawada & Katsuki
Cercospora pistiae Nag Raj & al.
Cercospora platycerii Chupp
Cercospora pluchaeae-tomentosae Tripathi & Mathur
Cercospora polygonacea Ellis & Everh.
Cercospora pouzolziae-auriculatae Bagyan. & al.
Cercospora premnae Mall
Cercospora pruinosisivora Rao & Yadav
Cercospora pteridigena Khan & Kamal

Cercospora pupaliae Patw. & Pande
Cercospora putranjivae Khan & al.
Cercospora pycnanthemicola Munjal & al.
Cercospora rajendrella Mall & Kumar
Cercospora ricinella Sacc. & Berl.
Cercospora rhynchosiae-minimae Thirum. & Govindu
Cercospora ruellina Chaudhary & al.
Cercospora rungiae Patil
Cercospora sagittariae Ellis & Kellerm.
Cercospora schreberae Mahmud
Cercospora scorzonerae (Höhn.) Braun
Cercospora senecionicola Davis
Cercospora sesami Zimm.
Cercospora sidicola Ellis & Everh.
 = *Cercospora densissima* Speg.
Cercospora simarubaciensis Agarwal & Sharma
Cercospora solanacea Sacc. & Berl.
Cercospora solanigena Bhartiya & al.

Cercospora sonchi Chupp
 = *Cercospora sonchi* var. *taraxaci* Govindu & Thirum.
Cercospora sonchifolia Chidd.
Cercospora sorghi Ellis & Everh.

Cercospora spermacoces Thirum. & Govindu
Cercospora spigeliae Verma
Cercospora stephaniae Sawada & Katsuki
Cercospora strigae Nag Raj & al.

- Cercospora strobilanthis* Chidd.
Cercospora tagetis-erectae Thirum. & Govindu
Cercospora tarrii Deighton
Cercospora tectonigena Kamal & Pal
Cercospora teramnicola Raghun. & Ramakr.
Cercospora tetrastigmatis Pandotra & Ganguly
Cercospora tezpurensis Meghvansi & al.
Cercospora thirumalacharii Chidd.
Cercospora tragiae-folii Kar & Mandal
Cercospora trapae-bispinosae Govindu & Thirum.
Cercospora trematis-orientalica Srivast. & al.
Cercospora tricholepidis Patil
Cercospora tridacis-procumbentis Govindu & Thirum.
Cercospora tropaeoli Atk.
Cercospora typhoidis Sharma & Jain
Cercospora ugandensis Hansf.
Cercospora urenae Narayan & al.
Cercospora varanasiana Pavgi & Singh
Cercospora verruculosa Stevens & Solheim
 ≡ *Passalora caladii* (Stevens) Braun & Sivap.
Cercospora violae Sacc.
Cercospora wagateae Thirum. & Govindu
Cercospora wendlandiae Ramakr. & Sundaram
Cercospora xanthi-strumarii Bhartiya & al.
Cercospora zebrina Pass.
Cercospora zingiberis Togashi & Katsuki [as '*zingiberi*'], nom. illeg.
Cercospora zinniicola Pande

Cercospora zizaniae Thirum. & Govindu
- Cercospora tageticola* Ellis & Everh.
Cercospora tamarindi Khan & al.
Cercospora tectonae Stevens [as '*tectioniae*'], nom. illeg.
Cercospora tephrosiicola Narayan & al.
Cercospora ternatae Petch
Cercospora teucryi Ellis & Kellerm
Cercospora thirumalachariana Pavgi & Upadhyay
Cercospora thunbergiana Yen
Cercospora trapae Thirum. & Govindu
Cercospora traversiana Sacc.
Cercospora trewiae Kar & Mandal
Cercospora tridacicola Pavgi & Singh
Cercospora triumfeticola Munjal & al.
Cercospora tylophorina Rao
Cercospora typhonii Munjal & al.
Cercospora uramensis Chupp & Mull.
Cercospora vangueriae Chowdhury
Cercospora vernoniae Ellis & Kellerm.
Cercospora vicoae Syd.
Cercospora volkameriae Speg.
Cercospora wedeliicola Kar & Mandal
Cercospora xanthiicola Heald & Wolf
Cercospora zaeae-maydis Tehon & Daniels
Cercospora zingibericola Kar & Mandal
Cercospora zinniae Ellis & Martin
Cercospora zonata Winter
 ≡ *Cercospora fabae* Fautrey
 ≡ *Cercospora viciae* Ellis & Holw.

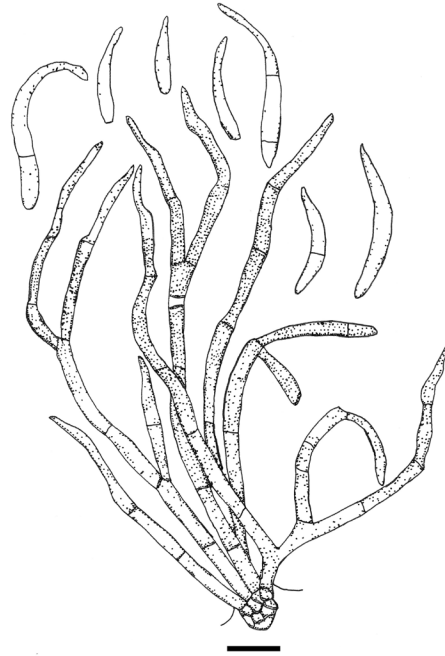


FIG. 4. *Distocercospora pachyderma* (HCIO 48619) on *Dioscorea bulbifera*, Bar = 20 μ m. Redrawn from Kamal (2010)

Distocercospora Pons & Sutton, Mycol. Pap. 160: 60 (1988).

FIG. 4

Type species: *D. pachyderma* (Syd. & Syd.) Pons & Sutton, Mycol. Pap. 160: 60 (1988).

General characteristics (Kamal 2010): Follicolous, associated with necrotic lesions. Colonies are hypogenous, effuse, or discrete, velutinous. Mycelium is immersed, branched, septate, and brown. Stroma, when present, is rudimentary, occasionally well-developed, brown, and pseudoparenchymatous. Conidiophores macronematous, mononematous, fasciculate, and caespitose, long, much-branched, smooth or verruculose, olivaceous, formed from hyphae or cells in the stromata. Conidiogenous cells integrated, apical, occasionally intercalary, straight, curved, and geniculate, each with several loci, indeterminate, smooth or verruculose, pale brown, with widely spaced thickened scars at the apices and on lateral scarcely protuberant shoulders, with enteroblastic and holoblastic sympodial proliferations. Conidia solitary at each locus, initiated holoblastically, sub-hyaline to very pale brown, cylindrical, obclavate or obclavate-cylindric, straight or curved, smooth or verruculose, multidistoseptate, base truncate to obconico-truncate with a prominent scar, tapered gradually to the obtuse apices (FIG. 4).

Current status: Two species, *D. pachyderma* (Syd. & Syd.) Pons & Sutton and *D. indica* Verma & Rai reported from India are currently accepted.

Passalora Fr., Summa veg. Scand. 2: 500 (1849).

FIG. 5

Type species: *P. bacilligera* (Mont. & Fr.) Mont. & Fr., Syll. gen. sp. crypt.: 305 (1856).

Synonym:

≡ *Berteromyces* Cif., Sydowia, 8 (1–6): 267 (1954).

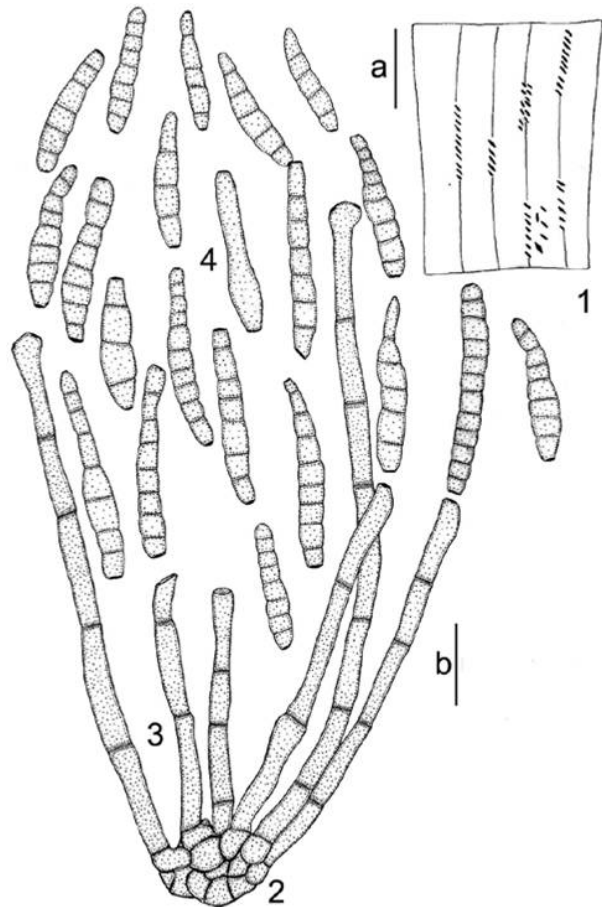


FIG. 5. *Passalora musicola* (HCIO 48667, holotype) on *Musa paradisiaca*, 1–4, 1. Infection spots 2. Stroma 3. Conidiophores 4. Conidia, Bars a = 20 mm, b = 20 μ m. Reproduced from Kumar & Singh 2015a with permission of Sydowia

Passalora is characterized by having pigmented conidiophores, thickened and darkened conidiogenous loci, either consistently internal or internal and external mycelium in vivo, and solitary to catenate, pigmented conidia with thickened and darkened hila (Kumar & Singh 2016) (FIG. 5). A large number of species are increasingly added to *Passalora* from all over the world and India in particular (Kumar & Singh 2016). These new additions seem to suggest that many species are still undiscovered.

Current status: At present, 139 species of *Passalora* reported from India are currently accepted (TABLE 5).

TABLE 5. Records of *Passalora* from India

<i>Passalora adenostemmatidis</i> (Verma & Kamal) Braun & Crous	<i>Passalora ahmadii</i> (Petr.) Braun & Crous = <i>Cercospora ahmadii</i> Petr.
<i>Passalora ajrekarii</i> (Syd. & Syd.) Braun = <i>Cercospora ajrekarii</i> Syd. & Syd.	<i>Passalora annonacearum</i> Rai & Kamal
<i>Passalora colocasiae</i> (Syd. & Syd.) Rossman & Allen = <i>Cercospora colocasiae</i> (Höhn.) Chupp = <i>Passalora colocasiae</i> (Höhn.) Braun	<i>Passalora antigoni</i> (Farr) Braun & Crous = <i>Cercospora aantigoni</i> Farr
<i>Passalora arachidicola</i> (Hori) Braun = <i>Cercospora arachidicola</i> Hori	<i>Passalora aseptata</i> Singh & al.
<i>Passalora asteracearum</i> Kamal	<i>Passalora atylosiae</i> (Raghu Ram & Mallaiah) Braun & Crous
<i>Passalora avicularis</i> (Winter) Crous & al. = <i>Cercospora avicularis</i> Winter = <i>Pseudocercospora avicularis</i> (Winter) Khan & Shamsi	<i>Passalora balansae</i> (Speg.) Braun = <i>Cercospora balansae</i> Speg.
<i>Passalora bambusae</i> (Cooke) Kamal	<i>Passalora barringtoniae-acuteangulae</i> (Kamal & al.) Srivast.
<i>Passalora barringtonigena</i> Kamal	<i>Passalora bataticola</i> (Cif. & Bruner) Braun & Crous = <i>Cercospora bataticola</i> Cif. & Bruner
<i>Passalora bellynckii</i> (Westend.) Braun	<i>Passalora biformis</i> (Peck) Braun & Crous = <i>Cercospora biformis</i> Peck
<i>Passalora braunii</i> (Singh & al.) Braun & Crous	<i>Passalora bupleuri</i> (Pass.) Braun = <i>Cercospora coriandri</i> Rjach.
<i>Passalora buteae</i> (Kamal & al.) Braun & Crous	<i>Passalora buteae-parviflorae</i> Srivast. & al.
<i>Passalora caesalpiniae</i> (Bhalla & al.) Braun & al.	<i>Passalora caesalpinicola</i> Kumar & Singh
<i>Passalora cajani</i> var. <i>indica</i> (Singh) Deighton	<i>Passalora calotropidis</i> var. <i>megalospora</i> Braun & Crous
<i>Passalora chonemorphae</i> (Rajak & Pandey) Kamal	<i>Passalora clavata</i> (Gerard) Braun = <i>Cercospora clavata</i> (Gerard) Cooke
<i>Passalora clematidis</i> (Verma & Kamal) Braun & Crous	<i>Passalora consimilis</i> (Syd.) Braun & Crous = <i>Cercospora consimilis</i> Syd.
<i>Passalora concors</i> (Casp.) Braun & Crous = <i>Cercospora concors</i> (Casp.) Sacc.	<i>Passalora cordiae</i> (Kumar & Kamal) Braun & Crous
<i>Passalora costi</i> (Singh & al.) Braun & Crous	<i>Passalora curcuma</i> Purkay. & Mallik
<i>Passalora cyathulae</i> (Stevens & Solheim) Braun & Crous = <i>Cercospora cyathulae</i> Syd.	<i>Passalora cyperi</i> (Gupta & al.) Braun & Crous
<i>Passalora dalbergiicola</i> (Ramakr. & Ramakr.) Braun & Crous = <i>Cercospora dalbergiicola</i> Ramakr. & Ramakr.	<i>Passalora desmodii</i> (Ellis & Kellerm.) Braun = <i>Cercospora desmodii</i> Ellis & Kellerm.
<i>Passalora dichanthii-annulati</i> (Chaudhary & al.) Braun	<i>Passalora diffusa</i> (Ellis & Everh.) Braun & Crous = <i>Cercospora diffusa</i> Ellis & Everh. = <i>Pseudocercospora diffusa</i> (Ellis & Everh.) Liu & Guo
<i>Passalora diodiae</i> (Cooke) Crous & al. = <i>Cercospora diodiae</i> Cooke	<i>Passalora dolichoides</i> (Srivast. & al.) Braun & Crous
<i>Passalora dubia</i> (Riess) Braun	<i>Passalora ecuadoriana</i> (Constant.) Braun & Crous
<i>Passalora effusa</i> (Berk. & Curtis) Braun = <i>Cercospora effusa</i> (Berk. & Curtis) Ellis = <i>Pseudocercospora polygonorum</i> (Cooke) Guo & Liu	<i>Passalora emblicae</i> Dadwal & al.
<i>Passalora erythrinae</i> (Ellis & Everh.) Braun & Crous = <i>Cercospora erythrinae</i> Ellis & Everh.	<i>Passalora eupatorii</i> (Das) Kamal

- Passalora ficina* (Singh & Chaudhary) Braun & Crous
- Passalora gliricidiae* (Syd. & Syd.) Braun & Crous
 ≡ *Cercospora gliricidiae* Syd. & Syd.
 ≡ *Sirosporium gliricidiae* (Syd. & Syd.) Deighton
- Passalora gmelinae-arboreae* (Sarbhoy & al.) Braun & Crous
- Passalora grewiae* (Srivast. & Mehta) Braun & Crous
 ≡ *Cercospora grewiae* Srivast. & Mehta
 ≡ *Pseudocercospora grewiae* (Srivast. & Mehta) Liu & Guo
- Passalora helianthi* (Ellis & Everh.) Braun & Crous
 ≡ *Cercospora helianthi* Ellis & Everh.
- Passalora heliotropii* (Ellis & Everh.) Braun & Crous
 ≡ *Cercospora heliotropii* Ellis & Everh.
- Passalora hydrocotyles* (Ellis & Everh.) Braun & al.
 ≡ *Cercospora hydrocotyles* Ellis & Everh.
- Passalora imperatae* (Syd. & Syd.) Braun & Crous
- Passalora koepkei* (Krüger) Braun & Crous
 ≡ *Cercospora koepkei* Krüger
- Passalora lantanae* var. *lantanae* (Chupp) Braun & Crous
- Passalora leeeae* (Chidd.) Braun & Crous
 ≡ *Cercospora leeeae* Chidd.
- Passalora leptadeniae* (Chidd.) Braun & Crous
 ≡ *Cercospora leptadeniae* Chidd.
- Passalora leucaenae* (Raghu Ram & Mallaiah) Kamal
- Passalora lobeliae-cardinalis* (Schwein.) Braun & Crous
 ≡ *Cercospora lobeliicola* Solheim
- Passalora macarangae* Singh & al.
- Passalora malvacearum* (Rai & Kamal) Braun & Crous
- Passalora medicaginis-lupulinae* (Munjál & al.) Kamal
- Passalora menispermi* (Ellis & Holw.) Braun & Crous
 ≡ *Cercospora menispermi* Ellis & Holw.
- Passalora mikaniigena* Braun & Crous
 ≡ *Asperisporium mikaniae* (Ellis & Everh.) Barreto
 ≡ *Cercospora mikaniae* Ellis & Everh.
 ≡ *Passalora lemnischa* (Cif.) Braun & Crous
- Passalora mimosa* Braun & Crous
- Passalora mitragynae* (Kumar & Kamal) Kamal
- Passalora noveboracensis* (Ellis & Everh.) Braun & Crous
 ≡ *Cercospora noveboracensis* Ellis & Everh.
- Passalora oculata* (Ellis & Kellerm.) Braun & Crous
 ≡ *Cercospora oculata* Ellis & Kellerm.
- Passalora galactiae* (Ellis & Everh.) Braun & Crous
 ≡ *Cercospora galactiae* Ellis & Everh.
- Passalora glochidii* Srivast.
- Passalora goensis* (Singh & al.) Kamal
- Passalora guanicensis* (Stevens) Braun & Castañeda
 ≡ *Cercospora whetzellii* Chupp
- Passalora helicteris* (Soni & al.) Srivast.
- Passalora henningsii* (Allesch.) Castañeda & Braun
- Passalora hyptidigena* (Kamal & al.) Braun & Crous
- Passalora indogangetica* Srivast. & al.
- Passalora lantanae* (Chupp) Braun & Crous
 ≡ *Cercospora lantanae*
- Passalora lathyri-aphacae* (Lall & al.) Braun & Crous
 ≡ *Cercospora lathyri-aphacae* Lall & al.
- Passalora legrellei* (Rao & Yadav) Kamal
- Passalora lettsomiae* (Thirum. & Chupp) Crous & Braun
 ≡ *Cercospora lettsomiae* Thirum. & Chupp
- Passalora leucaenae* Srivast.
- Passalora lycopersici* (Salam & Rao) Kamal
- Passalora malkoffii* (Bubák) Braun
 ≡ *Cercospora malkoffii* Bubák
- Passalora marsdeniae* (Singh & al.) Braun & Crous
- Passalora melanochaeta* (Ellis & Everh.) Braun
 ≡ *Cercospora melanochaeta* Ellis & Everh.
- Passalora meridiana* (Chupp) Braun & Crous
 ≡ *Cercospora meridiana* Chupp
- Passalora miliusae* Braun & Crous
- Passalora mimosae* (Stevens & Dalbey) Braun
 ≡ *Cercospora pudicae* Yen
- Passalora musicola* Kumar & Singh
- Passalora occidentalis* (Cooke) Braun
 ≡ *Cercospora occidentalis* Cooke
 ≡ *Cercospora sphaeroidea* Speg.
- Passalora oculata* var. *indica* Kamal

- Passalora oleacearum* (Chidd.) Braun
 ≡ *Cercospora oleacearum* Chidd.
Passalora peltophori Singh & al.
- Passalora pilosae* (Ramakr.) Braun & Crous
 ≡ *Cercospora pilosae* Ramakr.
- Passalora plectranthicola* (Chidd.) Braun & Crous
 ≡ *Cercospora plectranthicola* Chidd.
- Passalora pongamiicola* Braun & Crous
 ≡ *Cercospora pongamiae* Kar & Mandal
- Passalora pulchella* (Ramakr.) Braun & Crous
 ≡ *Cercospora pulchella* Ramakr.
- Passalora pyrostegiae* (Viégas) Braun & Crous
 ≡ *Cercospora pyrostegiae* Viégas
- Passalora rauvolfiae* (Deighton) Braun & Crous
- Passalora rubrotincta* (Ellis & Everh.) Braun
 ≡ *Cercospora amygdali* Riza
 ≡ *Cercospora rubrotincta* Ellis & Everh.
- Passalora scariolae* Syd.
- Passalora solani-torvi* (Gonz. Frag. & Cif.) Braun & Crous
- Passalora subhyalina* (Singh & Singh) Kamal
- Passalora tamala* Srivast. & al.
- Passalora tephrosiae-purpureae* Braun
- Passalora tephrosiicola* (Singh & al.) Braun & Crous
- Passalora teucarii* (Schwein.) Braun & Crous
- Passalora trematis* (Stevens & Solheim) Braun & Crous
 ≡ *Cercospora trematis* (Stevens & Solheim) Chupp
- Passalora trigonellae* (Singh & al.) Braun & Crous
- Passalora uttarkashiensis* (Kamal & al.) Braun & Crous
- Passalora veneliae* (Mehrotra & Verma) Braun & Crous
- Passalora vitis* (Patil & Sawant) Srivast.
- Passalora ziziphi* (Prasad & Verma) Braun & Crous
- Passalora ougeinia* (Mehrotra & Verma) Braun & Crous
- Passalora pergulariae* (Dublish & Singh) Braun & Crous
- Passalora pithoragarhensis* Braun & Crous
- Passalora podophylli* (Tehon & Daniels) Braun & Crous
 ≡ *Cercospora podophylli* Tehon & Daniels
- Passalora pteridis* (Siemaszko) Braun & Crous
 ≡ *Cercospora pteridis* Siemaszko
- Passalora punctum* (Lacroix) Petzoldt
 ≡ *Cercospora foeniculi* Magnus
- Passalora rajakii* (Kamal & Majumdar) Kamal
- Passalora rhamnaecearum* (Shrivast. & al.) Singh & Kumar
- Passalora salicis* (Deighton & al.) Braun & Crous
- Passalora sojina* (Hara) Shin & Braun
- Passalora squalidula* (Peck) Braun
 ≡ *Cercospora squalidula* Peck
- Passalora syzygii* (Mandal) Sutton & Crous
 ≡ *Cercospora syzygii* Mandal
 ≡ *Pseudocercospora syzygii* (Mandal) Raghu Ram & Mallaiah
- Passalora tarrii* (Deighton) Braun & Crous
 ≡ *Cercospora deightonii* Chupp
- Passalora tephrosiae* Khan & Kamal
- Passalora terrestris* (Srivast. & Misra) Srivast.
- Passalora tithoniae* (Baker & Dale) Braun & Crous
- Passalora trichophila* Singh
- Passalora tylophorae* (Hansf.) Braun & Crous
 ≡ *Cercospora tylophorae* Ramakr. & Ramakr.
- Passalora vaginae* (Krüger) Braun & Crous
 ≡ *Cercospora vaginae* Krüger
- Passalora verbeniphila* (Speg.) Crous & Braun
 ≡ *Cercospora verbeniphila* Speg.
- Passalora xenogrewiae* (Singh & Singh) Kamal
- Passalora ziziphicola* Braun & Crous

Prathigada Subram., J. Madras Univ. 26: 366 (1956).

FIG. 6

Type species: *P. crataevae* (Syd.) J. Madras Univ. 26: 367 (1956).

Synonym:

≡ *Macraea* Subram., Proc. Natn. Acad. Sci. India, Sect. B, Biol. Sci. 36 (4): 164 (1953).

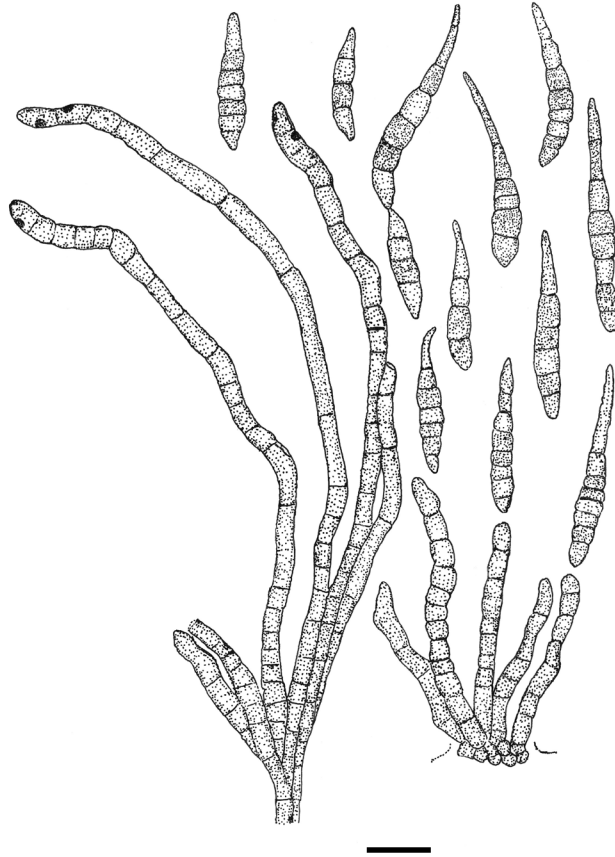


FIG.6. *Prathigada terminaliae-bellericae* (HCIO 48785) on *Terminalia bellerica*,
Bar = 20 μ m. Redrawn from Kamal (2010)

General characteristics (Kamal 2010): Colonies effuse, velvety, brown, olivaceous brown or blackish brown. Mycelium immersed. Stroma is subcuticular, erumpent, pseudoparenchymatous. Conidiophores are macronematous, mononematous, and caespitose, usually unbranched, straight or flexuous, slightly short, pale to mid-brown, or olivaceous brown, thin-walled, smooth. Conidiogenous cells polyblastic, integrated,

terminal, and cylindrical, obclavate or clavate, cicatrized, scars few, thin, flat. Conidia solitary, dry, acropleurogenous, dull, often obclavate, sometimes rostrate, pale to mid-brown or olivaceous brown with cells sometimes unequally coloured, smooth or rugulose, multiseptate, septa often rather thick and dark (FIG. 6).

Current status: Seven species of *Prathigada* reported from India are currently accepted (TABLE 6).

TABLE 6. Records of *Prathigada* from India

<i>Prathigada bauhiniae</i> Rao & al.	<i>Prathigada indica</i> Muthappa
<i>Prathigada shoreae</i> (Singh) Kamal	<i>Prathigada tamarindi</i> Muthappa
<i>Prathigada terminaliae</i> (Syd.) Sutton	<i>Prathigada terminaliae-bellericae</i> Kamal
≡ <i>Cercospora terminaliae</i> Syd.	
≡ <i>Pseudocercospora terminaliae</i> (Syd.) Deighton	
≡ <i>Pseudocercospora terminaliae</i> (Syd.) Ellis	
<i>Prathigada ziziphi</i> Rao & Ramakrishnan	

Pseudocercospora Speg., An. Mus. Nac. Hist. Nat. B. Aires 3, 13: 438 (1911).

FIG. 7.

Type species: *P. vitis* (Lév.) Speg. An. Mus. nac. Hist. Nat. B. Aires 3, 13: 438 (1911).

Synonym:

- ≡ *Cercosporiopsis* Miura, Flora of Manchuria & East Mongolia. Part III. Cryptogams, fungi 3: 527–528 (1928).
- ≡ *Ancylospora* Sawada, Rep. Dept. Ag. Govt. Res. Inst. Formosa 87: 77 (1944).
- ≡ *Helicomina* Olive, Mycologia 40(1): 16 (1948).
- ≡ *Cercocladospora* Agarwal & Singh, Proc. Natn. Acad. Sci. India, Sect. B, Biol. Sci. 439 (1974).
- ≡ *Semipseudocercospora* Yen, Mycotaxon 17: 361 (1983).
- ≡ *Neopseudocercospora* Crous, Persoonia 31: 219 (2013).

The genus *Pseudocercospora*, one of the largest genera of cercosporoid fungi, was established by Spegazzini (1911) and redefined by Ellis (1971) and Deighton (1976). They may occur as plant pathogens, endophytes, and saprobes. Some may be used as biocontrol agents for weeds. They infect many host plants, including food crops, fruits, cereals, and some ornamentals. Major symptoms include a wide range of necrotic and non-necrotic leaf spots, fruit spots, blight, and fruit rot (Crous & al. 2013). They are characterized by the presence of pigmented conidia and conidiophores without thickened hila and conidiogenous loci (scars) (Kumar & Singh 2015b) (FIG. 7). They are known to cause some serious diseases infecting important crops like Sigatoka disease on a banana, angular leaf spot of the bean, leaf spot disease on citrus and brown needle bight of pine (Crous & al. 2013).

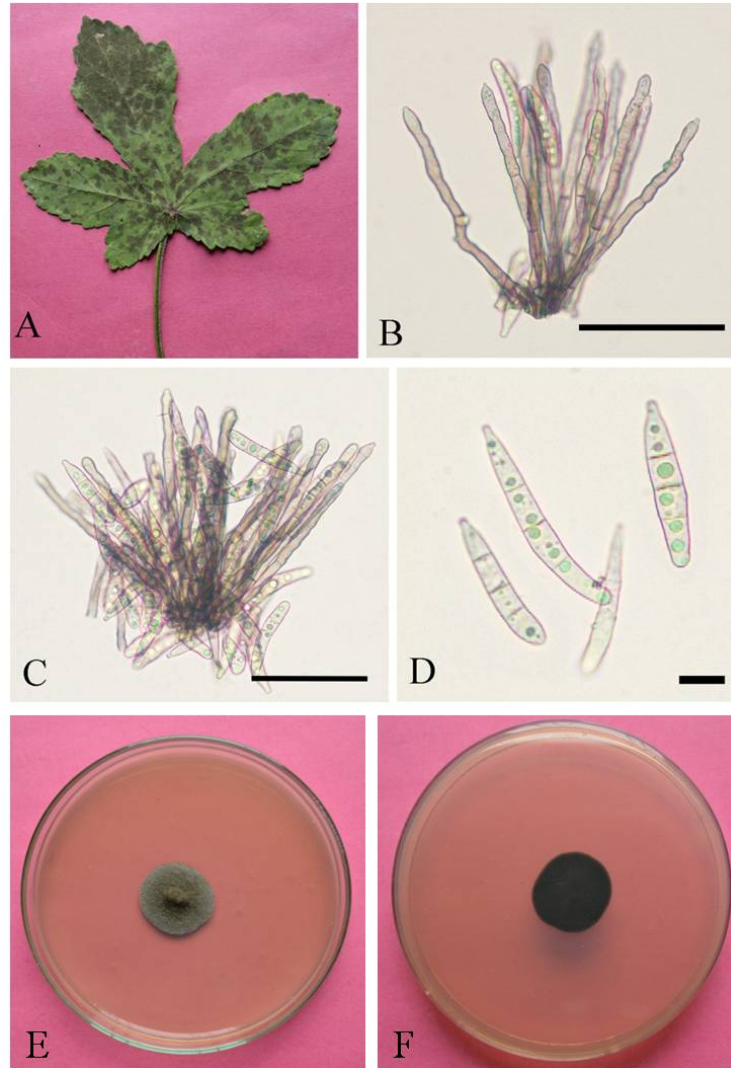


Fig. 7. *Pseudocercospora abelmoschi* on *Abelmoschus esculentus* A-F, A. Symptoms on leaf B-C. Conidiophores D. Conidia E. Colony on PDA F. Inverted colony on PDA, Bars B, C, and D = 50 μ m

Current status: At present, 477 species of *Pseudocercospora* reported from India are accepted (TABLE 7).

TABLE 7. Records of *Pseudocercospora* from India

<i>Pseudocercospora abelmoschi</i> (Ellis & Everh.) Deighton ≡ <i>Cercospora abelmoschi</i> Ellis & Everh. ≡ <i>Cercospora hibisci</i> Tracy & Earle ≡ <i>Cercospora hibisci-manihotis</i> Henn.	<i>Pseudocercospora acaciae</i> Kamal & Singh
<i>Pseudocercospora acalyphae</i> (Lacy & Thirum.) Raghu Ram & al. ≡ <i>Cercospora acalyphicola</i> Yen ≡ <i>Cercospora acalyphincola</i> Petr. ≡ <i>Cercospora gangetica</i> Pavgi & Singh ≡ <i>Pseudocercospora acalyphincola</i> (Petr.) Deighton	<i>Pseudocercospora acetosellae</i> (Ellis) Braun ≡ <i>Cercospora acetosellae</i> Ellis
<i>Pseudocercospora acrocarpicola</i> (Agnihotr.) Kamal	<i>Pseudocercospora acuminata</i> (Das) Kamal
<i>Pseudocercospora adianti</i> (Syd.) Deighton ≡ <i>Cercospora adianti</i> Syd.	<i>Pseudocercospora adinae</i> Singh & al.
<i>Pseudocercospora adinicola</i> (Kar & Mandal) Deighton ≡ <i>Cercospora adinicola</i> Kar & Mandal	<i>Pseudocercospora agarwalii</i> (Chupp) Braun & Bagyan. ≡ <i>Cercospora agarwalii</i> Chupp
<i>Pseudocercospora agharkarii</i> (Chidd.) Crous & Palm ≡ <i>Cercospora agharkari</i> Chidd.	<i>Pseudocercospora ailanthicola</i> (Patw.) Deighton ≡ <i>Cercospora ailanthicola</i> Patw.
<i>Pseudocercospora ailanthigena</i> Rao & al.	<i>Pseudocercospora alangii</i> Guo & Liu ≡ <i>Cercospora alangii</i> Mandal
<i>Pseudocercospora allophyli</i> (Hansf.) Deighton ≡ <i>Cercospora allophyli</i> Hansf.	<i>Pseudocercospora allophylorum</i> (Kar & Mandal) Bagyan. & al. ≡ <i>Cercospora allophylorum</i> Kar & Mandal ≡ <i>Pseudocercospora allophylicola</i> Deighton
<i>Pseudocercospora alternantherae</i> Yen & al.	<i>Pseudocercospora alternanthericola</i> (Pavgi & Singh) Deighton ≡ <i>Cercospora alternanthericola</i> Pavgi & Singh
<i>Pseudocercospora amomi</i> (Kar & Mandal) Deighton ≡ <i>Cercospora amomi</i> Kar & Mandal	<i>Pseudocercospora amoorae</i> Das
<i>Pseudocercospora anamirtae</i> (Bhalla & al.) Kamal	<i>Pseudocercospora angulomaculae</i> (Kar & Mandal) Braun & Crous ≡ <i>Cercospora angulomaculae</i> Kar & Mandal ≡ <i>Pseudocercospora angulomaculae</i> (Kar & Mandal) Hsieh & Goh
<i>Pseudocercospora angustata</i> (Chupp & Solheim) Deighton ≡ <i>Cercospora angustata</i> Chupp & Solheim	<i>Pseudocercospora anisomelicola</i> Goh & Hsieh
<i>Pseudocercospora anisomelicola</i> var. <i>ramosa</i> Singh & al.	<i>Pseudocercospora annonacea</i> (Kamal & al.) Braun
<i>Pseudocercospora annonae</i> Braun & Crous ≡ <i>Cercospora anonae</i> Mull. & Chupp	<i>Pseudocercospora annonae-squamosae</i> Braun & Castañeda ≡ <i>Cercospora caracasensis</i> Chupp & Mull. ≡ <i>Pseudocercospora annonicola</i> Goh & Hsieh
<i>Pseudocercospora anogeissi</i> Braun & Kamal	<i>Pseudocercospora anogeissina</i> Sharma & Majumdar
<i>Pseudocercospora antidesmatis</i> (Kar & Mandal) Deighton ≡ <i>Cercospora antidesmatis</i> Kar & Mandal	<i>Pseudocercospora aphanamixidis</i> Khan & al.
<i>Pseudocercospora apocynacearum</i> Gupta & Kamal	<i>Pseudocercospora ardisiicola</i> Gupta & Kamal
<i>Pseudocercospora argyreiae</i> (Govindu & Thirum.) Das & Sarbajna ≡ <i>Cercospora argyreiae</i> Govindu & Thirum.	<i>Pseudocercospora argyreiae-roxburghii</i> Kamal
<i>Pseudocercospora aristolochiana</i> Kamal	<i>Pseudocercospora artocarpi</i> (Syd. & Syd.) Deighton ≡ <i>Cercospora artocarpi</i> Syd. & Syd.
<i>Pseudocercospora arjunae</i> Sutton	<i>Pseudocercospora asiatica</i> Rao & al.
<i>Pseudocercospora asteracearum</i> Verma & Kamal	<i>Pseudocercospora atromarginalis</i> (Atk.) Deighton ≡ <i>Cercospora fuligena</i> Roldan ≡ <i>Cercospora nigri</i> Tharp ≡ <i>Cercospora solani-nigri</i> Chidd.

Pseudocercospora atylosiae (Thirum. & Govindu) Braun & Crous
 ≡ *Cercospora atylosiae* Thirum. & Govindu
Pseudocercospora bagdogrensis (Kar & Mandal) Deighton
 ≡ *Cercosporabagdogrensis* Kar & Mandal
Pseudocercospora balsaminae (Syd.) Deighton

Pseudocercospora bangalorensis (Thirum. & Chupp) Deighton
 ≡ *Cercospora bangalorensis* Thirum. & Chupp
Pseudocercospora baruipurensis Sarbajna

Pseudocercospora bauhiniiae (Syd. & Syd.) Deighton
 ≡ *Cercospora bauhiniiae* Syd. & Syd.
Pseudocercospora bauhiniigena Khan & al.

Pseudocercospora bignoniacearum Gupta & Kamal

Pseudocercospora biophytiicola Singh & al.

Pseudocercospora blepharidis (Chidd.) Braun & Crous
 ≡ *Cercospora blepharis* Chidd.

Pseudocercospora blumeae-balsamiferae Goh & Hsieh

Pseudocercospora boehmeriigena Braun
 ≡ *Cercospora boehmeriae* Peck

Pseudocercospora bonducellae (Henn.) Braun & al.

Pseudocercospora borrieriae (Ellis & Everh.) Deighton
 ≡ *Cercospora borrieriae* Ellis & Everh.

Pseudocercospora brevis Sutton

Pseudocercospora brideliicola Yen & al.

Pseudocercospora buchaniana (Majumdar & al.) Kamal

Pseudocercospora buteae Kamal & al.

Pseudocercospora cadabae (Thirum. & Govindu) Braun
 ≡ *Cercospora cadabae* Thirum. & Govindu

Pseudocercospora callicarpae (Cooke) Guo & Zhao
 ≡ *Cercospora callicarpae* Cooke

Pseudocercospora cannabina (Wakef.) Deighton
 ≡ *Cercospora cannabina* Wakef.

Pseudocercospora caprifoliacearum (Gupta & al.) Kamal

Pseudocercospora careyae (Ramakr. & Ramakr.) Verma & al.
 ≡ *Cercospora careyae* Ramakr. & Ramakr.

Pseudocercospora carrii (Barthol.) Braun

≡ *Cercospora elaeagnicola* Chidd
 ≡ *Pseudocercospora elaeagnicola* (Chidd.) Deighton

≡ *Pseudocercospora fuligena* (Roldan) Deighton

Pseudocercospora azanzae (Yadav) Deighton

≡ *Cercospora azanzae* Yadav

Pseudocercospora baliospermi (Chowdhury) Deighton

Pseudocercospora bambusae Saikia & Sarbhoy

Pseudocercospora barringtoniae-acutangulae Braun & Mouch

Pseudocercospora bastiana Kamal & al.

Pseudocercospora bauhiniiana Kamal

Pseudocercospora berberidis-vulgaris Gautam & al.

Pseudocercospora biophyti (Syd. & Syd.) Deighton

≡ *Cercospora biophyti* Syd. & Syd.

Pseudocercospora bischofigena Kumar & Singh

Pseudocercospora blumeae (Thüm.) Deighton

≡ *Cercospora blumeae* Thüm.

Pseudocercospora boedijniana Braun

Pseudocercospora bombacina (Ramakr. & Ramakr.) Deighton

≡ *Cercospora bombacina* Ramakr. & Ramakr.

Pseudocercospora boraginis (Agarwal & Sharma) Braun & Crous

≡ *Cercospora boraginis* Agarwal & Sharma

Pseudocercospora bougainvilleae Guo

Pseudocercospora breyniae-rhamnoidis (Thirum. & Govindu)
 Deighton

≡ *Cercospora breyniae-rhamnoidis* Thirum. & Govindu

Pseudocercospora brideliigena Kamal [as '*brideligena*'], nom. illeg.

Pseudocercospora buddlejae (Yamam.) Goh & Liu
 [as '*buddleiae*'], nom. illeg.

≡ *Cercospora buddleiae* Yamam.

Pseudocercospora butleri (Syd. & Syd.) Braun

≡ *Cercospora jasminicola* Mull. & Chupp

≡ *Pseudocercospora jasminicola* Deighton

Pseudocercospora cajanicola (Pavgi & Singh) Deighton

Pseudocercospora calopogonii (Stevens & Solheim) Deighton

≡ *Cercospora calopogonii* Stevens & Solheim

Pseudocercospora cappadocici Verma & al.

Pseudocercospora carbonacea (Miles) Pons & Sutton

≡ *Cercospora carbonacea* Miles

Pseudocercospora carissae Singh & Mukerjee

Pseudocercospora caseariae (Stevens) Braun & Sivap.

≡ *Cercospora caseariae* Stevens

- Pseudocercospora caseariae-tomentosae* Kamal
- Pseudocercospora cassiae-siameae* (Chidd.) Deighton
≡ *Cercospora cassiae-siameae* Chidd.
- Pseudocercospora catappae* (Henn.) Liu & Guo
≡ *Cercospora catappae* Henn.
- Pseudocercospora cedrelae* (Chowdhury) De
≡ *Cercospora cedrelae* Chowdhury
- Pseudocercospora centellae* Dubey & Pandey
- Pseudocercospora chloroxyli* (Ramakr. & Reddy) Braun & al.
≡ *Cercospora chloroxyli* Ramakr. & Reddy
- Pseudocercospora chowdhurii* (Roy) Chaudhary & Pal
- Pseudocercospora chrysanthemicola* (Yen) Deighton
≡ *Cercospora chrysanthemicola* Yen
- Pseudocercospora cladophora* Sawada ex Goh & Hsieh
- Pseudocercospora clausenae* (Thirum. & Chupp) Liu & Guo
≡ *Cercospora clausenae* Thirum. & Chupp
- Pseudocercospora clerodendri* (Miyake) Deighton
≡ *Cercospora clerodendri* Miyake
- Pseudocercospora clitoriae* (Atk.) Deighton
≡ *Cercospora clitoriae* Atk.
- Pseudocercospora cocculigena* Kamal
- Pseudocercospora combretacearum*
var. *combretacearum* Verma & Kamal
- Pseudocercospora combreti* Singh & Kamal
- Pseudocercospora consociata* (Winter) Guo & Liu
≡ *Cercospora consociata* Winter
- Pseudocercospora corchorica* (Petr. & Cif.) Deighton
≡ *Cercospora corchorica* Petr. & Cif.
- Pseudocercospora cordiae* Kamal & Singh
- Pseudocercospora coriariae* (Chupp) Liu & Guo
≡ *Cercospora coriariae* Chupp
- Pseudocercospora costina* (Syd. & Syd.) Deighton
≡ *Cercospora costina* Syd. & Syd.
- Pseudocercospora cratevicola* Nakash. & Braun
≡ *Prathigada crataevae* (Syd.) Subram.
- Pseudocercospora cruenta* (Sacc.) Deighton
≡ *Cercospora cruenta* Sacc.
≡ *Cercospora dolichi* Ellis & Everh.
≡ *Cercospora phaseolorum* Cooke
≡ *Cercospora vignae* Ellis & Everh.
≡ *Cercospora vignae-sinensis* Tai & Wei
≡ *Pseudocercospora dolichi* (Ellis & Everh.) Yen
- Pseudocercospora cryptostegiae* (Yamam.) Deighton
≡ *Cercospora cryptostegiae* Yamam.
- Pseudocercospora caseariigena* Rao & al.
- Pseudocercospora cassiae-sophorae* Singh & Bhalla
- Pseudocercospora cavarae* (Sacc. & Sacc.) Deighton
≡ *Cercospora cavarae* Sacc. & Sacc.
- Pseudocercospora celosiarum* (Kar & Mandal) Deighton
≡ *Cercospora celosiarum* Kar & Mandal
- Pseudocercospora chebulae* Sutton
- Pseudocercospora chloroxylicola* Hosag. & Verma
- Pseudocercospora christellae* Haldar & Ray
- Pseudocercospora cinereae* (Pavgi & Singh) Deighton
≡ *Cercospora cinereae* Pavgi & Singh
- Pseudocercospora cladosporioides* (Sacc.) Braun
≡ *Cercospora cladosporioides* Sacc.
- Pseudocercospora cleidionis* Haldar & Ray
[as '*cleidionae*'], nom. illeg.
- Pseudocercospora clerodendrigena* Braun
- Pseudocercospora cocculi* (Syd.) Deighton
≡ *Cercospora cocculi* Syd.
- Pseudocercospora colebrookiae* Rao & al.
- Pseudocercospora combretacearum* var. *minima* Sutton
- Pseudocercospora commonsii* (Sacc.) Braun & Freire
≡ *Cercospora commonsii* Sacc.
- Pseudocercospora contraria* (Syd. & Syd.) Deighton
≡ *Cercospora contraria* Syd. & Syd.
- Pseudocercospora corchorifoliae* (Thirum. & Govindu) Deighton
≡ *Cercospora corchorifoliae* Thirum. & Govindu
- Pseudocercospora cordiicola* (Yen) Yen
≡ *Cercospora cordiae* Yen
≡ *Cercospora cordiicola* Yen
- Pseudocercospora cosmicola* (Kar & Mandal) Deighton
≡ *Cercospora cosmicola* Kar & Mandal
- Pseudocercospora cotizensis* (Mull. & Chupp) Deighton
≡ *Cercospora cotizensis* Mull. & Chupp
- Pseudocercospora crotalariana* (Pavgi & Singh) Deighton
≡ *Cercospora crotalariana* Pavgi & Singh
- Pseudocercospora cryptolepidis* (Pandotra & Ganguly) Deighton
≡ *Cercospora cryptolepidis* Pandotra & Ganguly
- Pseudocercospora cycleae* (Chidd.) Deighton
≡ *Cercospora cycleae* Chidd.

- Pseudocercospora cydoniae* (Ellis & Everh.) Guo & Liu
≡ *Cercospora cydoniae* Ellis & Everh.
- Pseudocercospora daemiae* (Kar & Mandal) Deighton
≡ *Cercospora daemiae* Kar & Mandal
- Pseudocercospora daturina* (Yen) Deighton
≡ *Cercospora daturina* Yen
- Pseudocercospora desmodiicola* (Rai & Kamal) Braun & Crous
- Pseudocercospora dilleniae* (Petch) Sarbajna
≡ *Cercospora dilleniae* Petch
- Pseudocercospora donacicola* Singh & Abbas
- Pseudocercospora duabangae* Mehrotra & Verma
- Pseudocercospora elaeocarpi* Sutton & Sankaran
- Pseudocercospora elephantopodis* (Ellis & Everh.) Castañeda & Braun
≡ *Cercospora elephantopodis* Ellis & Everh.
- Pseudocercospora erythroxyli* (Govindu & Thirum.) Braun & al.
≡ *Cercospora erythroxyli* Govindu & Thirum.
- Pseudocercospora eupatorii* (Peck) Braun & Castañeda
≡ *Cercospora eupatorii* Peck
- Pseudocercospora eupatorii-formosani* Braun & Bagyan.
- Pseudocercospora euphorbiicola* (Atk.) Braun & Crous
≡ *Cercospora euphorbiicola* Atk.
- Pseudocercospora fabacearum* (Khan & al.) Kamal
- Pseudocercospora ficicola* Rao & al.
- Pseudocercospora fici-hispidae* Kamal
- Pseudocercospora flacourtiicola* Braun & Kamal
- Pseudocercospora flemingiae-macrophyllae* Braun & Crous
- Pseudocercospora gangetici* (Bharadwaj) Braun
≡ *Cercospora gangetici* Bharadwaj
≡ *Pseudocercospora bhopalensis* Deighton
- Pseudocercospora gentianacearum* Rao & al.
- Pseudocercospora ghissambilae* Braun & Crous
- Pseudocercospora glochidionis* (Sawada) Goh & Hsieh
≡ *Cercospora glochidionis* Sawada
- Pseudocercospora gmelinae* (Yen & Gilles) Yen
- Pseudocercospora cylindrata* (Chupp & Linder) Pons & Sutton
≡ *Cercospora cylindrata* Chupp & Linder
- Pseudocercospora daspurensis* (Kar & Mandal) Deighton
≡ *Cercospora daspurensis* Kar & Mandal
- Pseudocercospora davalliae* (Kar & Mandal) Braun & Crous
≡ *Cercospora davalliae* Kar & Mandal
- Pseudocercospora diclipterae* (Kar & Mandal) Deighton
≡ *Cercospora diclipterae* Kar & Mandal
- Pseudocercospora dominicana* (Cif. & Gonz. Frag.) Braun
≡ *Cercospora portulacae* Thirum. & Govindu
- Pseudocercospora dovyalidis* (Chupp & Doidge) Deighton
≡ *Cercospora dovyalidis* Chupp & Doidge
- Pseudocercospora ecbolii* (Kar & Mandal) Deighton
≡ *Cercospora ecbolii* Kar & Mandal
- Pseudocercospora elaeodendri* (Agarwal & Hasija) Deighton
≡ *Cercospora elaeodendri* Agarwal & Hasija
- Pseudocercospora embeliicola* Sharma & al.
- Pseudocercospora eucalypticola* Singh & Bhalla
- Pseudocercospora eupatoriicola* (Govindu & Thirum.) Khan & Shamsi
≡ *Cercospora eupatoriicola* Govindu & Thirum.
≡ *Cercospora eupatoriicola* Govindu & Thirum.
- Pseudocercospora euphorbiae-piluliferae* Yen & al.
- Pseudocercospora evolvuli* (Chupp) Braun & Crous
≡ *Cercospora evolvuli* Chupp
- Pseudocercospora fici* (Heald & Wolf) Liu & Guo
≡ *Cercospora fici* Heald & Wolf
≡ *Cercospora ficicola* Bond.-Mont.
- Pseudocercospora ficigena* Braun
- Pseudocercospora fici-religiosae* (Chidd.) Braun & al.
≡ *Cercospora fici-religiosae* Chidd.
- Pseudocercospora flemingiae* (Singh) Braun & Crous
≡ *Cercospora flemingiae* Singh
- Pseudocercospora formosana* (Yamam.) Deighton
≡ *Cercospora formosana* Yamam.
≡ *Cercospora lantanae-aculeatae* Yen
≡ *Cercospora lantanae-camaruae* Yen & Gilles
≡ *Pseudocercospora lantanae-aculeatae* (Yen) Yen
- Pseudocercospora garhwalensis* Srivast. & Topal
- Pseudocercospora geraniicola* Braun
≡ *Cercospora geranii* Kellerm. & Swingle
- Pseudocercospora glauca* (Syd.) Guo & Liu
≡ *Cercospora glauca* Syd.
- Pseudocercospora glycosmidis* (Mandal) Braun & Crous
≡ *Cercospora glycosmidis* Mandal
- Pseudocercospora gorakhpurensis* Rao & al.

Pseudocercospora grewiicola (Govindu & Thirum.) Bagyan. & al.

≡ *Cercospora grewicola* Govindu & Thirum.

Pseudocercospora griseola (Sacc.) Crous & Braun

≡ *Cercospora columnaris* Ellis & Everh.

≡ *Cercospora griseola* (Sacc.) Ragunathan & Ramakr.

Pseudocercospora gymnematicola Kamal

Pseudocercospora gymnosporiae Dubey & al.

Pseudocercospora haldibariensis (Kar & Mandal) Braun

≡ *Cercospora haldibariensis* Kar & Mandal

Pseudocercospora hamiltoniani Singh & al.

Pseudocercospora helleri (Earle) Deighton

Pseudocercospora hemidesmi (Kar & Mandal) Deighton

≡ *Cercospora hemidesmi* Kar & Mandal

Pseudocercospora herpestica (Petr. & Cif.) Braun

≡ *Cercospora herpestica* Petr. & Cif.

Pseudocercospora hibisci-cannabini (Sawada) Deighton

≡ *Cercospora hibisci-cannabini* Sawada

Pseudocercospora holarrhenae (Thirum. & Chupp) Deighton

≡ *Cercospora holarrhenae* Thirum. & Chupp

Pseudocercospora hymenodictyi (Petr.) Guo & Liu

Pseudocercospora indica Gupta & al.

Pseudocercospora isorae Verma & Sharma

Pseudocercospora jahnii (Syd.) Braun & Crous

≡ *Cercospora jahnii* Syd.

Pseudocercospora jatrophae (Atk.) Das & Chattopadh.

≡ *Cercospora jatrophae* Atk.

Pseudocercospora jujubae (Chowdhury) Khan & Shamsi

≡ *Cercospora jujubae* Chowdhury

Pseudocercospora kaiseri Mehrotra

Pseudocercospora kallarensis (Ramakr. & Ramakr.) Guo & Liu

≡ *Cercospora kallarensis* Ramakr. & Ramakr.

Pseudocercospora kashotoensis (Yamam.) Deighton

≡ *Cercospora kashotoensis* Yamam.

Pseudocercospora kolanensis Singh & Bhalla

Pseudocercospora kydiae Singh & Kamal

Pseudocercospora lagerstroemiae-lanceolatae Braun & Crous

Pseudocercospora lamiacearum Rao & al.

Pseudocercospora launaeae (Kothari & al.) Braun & Crous

≡ *Cercospora launaeae* Kothari & al.

Pseudocercospora lecythidacearum Sharma & al.

Pseudocercospora leucadis (Uppal & al.) Braun

Pseudocercospora grisea (Cooke & Ellis) Braun

≡ *Cercospora polygalae* Henn.

Pseudocercospora guanicensis (Young) Braun & Crous

≡ *Cercospora guanicensis* Young

Pseudocercospora gymnematis Kumar & Kamal

Pseudocercospora gyrocarpi (Karan & Mulder) Braun

Pseudocercospora haldinae Yadav & al.

Pseudocercospora haplophragmatis (Kamal & Singh) Braun

Pseudocercospora helminthostachydis (Henn.) Deighton

≡ *Cercospora helminthostachydis* Henn.

Pseudocercospora hemidiodiae (Toro) Deighton

≡ *Cercospora hemidiodiae* Toro

Pseudocercospora heteromalla (Syd.) Deighton

≡ *Cercospora heteromalla* Syd.

Pseudocercospora hibiscina (Ellis & Everh.) Guo & Liu

≡ *Cercospora hibiscina* Ellis & Everh.

Pseudocercospora holopteleae (Chidd.) Braun & Crous

≡ *Cercospora holopteleae* Chidd.

Pseudocercospora ichnocarpi (Kar & Mandal) Deighton

≡ *Cercospora ichnocarpi* Kar & Mandal

Pseudocercospora indo-himalayana Kamal

Pseudocercospora ixorae (Solheim) Deighton

≡ *Cercospora ixorae* Solheim

Pseudocercospora jamaicensis (Chupp) Deighton

≡ *Cercospora jamaicensis* Chupp

Pseudocercospora jatrophae-curcas (Yen) Deighton

≡ *Cercospora jatrophae-curcas* Yen

Pseudocercospora jussiaeae (Atk.) Deighton

≡ *Cercospora jussiaeae* Atk.

≡ *Cercospora ludwigiae* Atk.

Pseudocercospora kaki Goh & Hsieh

≡ *Cercospora kaki* Ellis & Everh.

Pseudocercospora kamalii Kumar & al.

Pseudocercospora kirganeliae (Thirum. & Govindu) Deighton

≡ *Cercospora kirganeliae* Thirum. & Govindu

Pseudocercospora kurimensis (Fukui) Braun

≡ *Cercospora nerii-indici* Yamam.

Pseudocercospora lagerstroemiae (Rajak & al.) Kamal

Pseudocercospora lagerstroemiae-parviflorae Rao & al.

Pseudocercospora latens (Ellis & Everh.) Guo & Liu

≡ *Cercospora latens* Ellis & Everh.

Pseudocercospora lauracearum Rao & al.

Pseudocercospora leae-macrophyllae (Kar & Mandal) Sarbajna

≡ *Cercospora leae-macrophyllae* Kar & Mandal

Pseudocercospora leucaenicola Raghu Ram & Mallaiah

- = *Cercospora leucadis* Thirum. & Govindu
 = *Cercospora patelii* Thirum. & Govindu
 = *Cercospora vestitae* Ramakrishna
 = *Pseudocercospora vestitae* (Ramakrishna) Deighton
Pseudocercospora linariae (Chidd.) Braun & Crous
 = *Cercospora linariae* Chidd.
Pseudocercospora litseae (Rai & al.) Braun

Pseudocercospora ludwigiana Bagyan & al.

Pseudocercospora lyoniae (Katsuki & Kobay.) Deighton
 = *Cercospora lyoniae* Katsuki & Kobay.
Pseudocercospora macarangae (Syd. & Syd.) Deighton
 = *Cercospora macarangae* Syd. & Syd.
Pseudocercospora madhauensis Kamal & al.

Pseudocercospora mali (Ellis & Everh.) Deighton
 = *Cercospora mali* Ellis & Everh.
Pseudocercospora malloti-repandi (Bhalla & al.) Braun
Pseudocercospora manilkarae Kamal & al.

Pseudocercospora marsdeniicola (Kar & Mandal) Deighton
 = *Cercospora marsdeniicola* Kar & Mandal
Pseudocercospora mecardoniiicola Kamal

Pseudocercospora melanotes (Syd.) Braun
 = *Cercospora melanotes* Syd.
Pseudocercospora meliacearum Sharma & al.

Pseudocercospora melochiigena Rao & al.

Pseudocercospora menispermacearum Kumar & Kamal
 = *Pseudocercospora stephaniae* Kamal & al.
Pseudocercospora micheliae (Boedijn) Braun
 = *Cercospora micheliae* Boedijn
Pseudocercospora microphora (Seshadri) Deighton

Pseudocercospora millingtoniae Raghu Ram & Mallaiah
Pseudocercospora miliusae-tomentosae Kamal
Pseudocercospora mimulicola (Pavgi) Pavgi & Upadhyay

Pseudocercospora mitragynae (Pavgi & al.) Braun

Pseudocercospora modesta (Syd.) Deighton
 = *Cercospora modesta* Syd.
Pseudocercospora montanae Sharma & al.
Pseudocercospora mombin (Petr. & Cif.) Deighton
Pseudocercospora mori (Hara) Deighton
 = *Cercospora mori* Hara

Pseudocercospora lini (Ellis & Everh.) Braun
 = *Cercospora lini* Ellis & Everh.
Pseudocercospora litseigena Braun
 = *Cercospora litseae* Henn.
Pseudocercospora luxurians (Kar & Mandal) Deighton
 = *Cercospora luxurians* Kar & Mandal
Pseudocercospora lythracearum (Heald & Wolf) Liu & Guo
 = *Cercospora lythracearum* Heald & Wolf
Pseudocercospora macutensis (Syd.) Deighton
 = *Cercospora macutensis* Syd.
Pseudocercospora maesae (Hansf.) Liu & Guo
 = *Cercospora maesae* Hansf.
Pseudocercospora malloti (Kharwar & al.) Braun

Pseudocercospora mannanorensis Bagyan. & al.
Pseudocercospora marsdeniae (Hansf.) Deighton
 = *Cercospora marsdeniae* Hansf.
Pseudocercospora medicaginicola Deighton

Pseudocercospora melaena (Syd.) Deighton
 = *Cercospora melaena* Syd.
Pseudocercospora mellicola Yen & al.

Pseudocercospora melochiae (Henn.) Deighton
 = *Cercospora melochiae* Henn.
Pseudocercospora melothriae Goh & Hsieh

Pseudocercospora meynae-laxiflorae Kamal & al.

Pseudocercospora micheliicola Yen & al.

Pseudocercospora midnapurensis (Kar & Mandal) Deighton
 = *Cercospora midnapurensis* Kar & Mandal
Pseudocercospora miliusae Singh & al.

Pseudocercospora minuta Chowdhury & Chandel

Pseudocercospora mississippiensis (Tracy & Earle) Castañeda & Braun
 = *Cercospora mississippiensis* Tracy & Earle
Pseudocercospora mitteriana Goh & Hsieh
 = *Cercospora mitteriana* Syd.
Pseudocercospora moghaniae (Singh) Braun & Crous

Pseudocercospora montantiana Mehrotra

Pseudocercospora moracearum Verma & Kamal

Pseudocercospora moricola Rao & al.

- Pseudocercospora morindae* (Syd.) Sarbajna
≡ *Cercospora morindae* Syd.
- Pseudocercospora murrayae* (Kar & Mandal) Deighton
≡ *Cercospora murrayae* Kar & Mandal
≡ *Pseudocercospora murrayicola* Kumar & Kamal
- Pseudocercospora musae* (Zimm.) Deighton
≡ *Cercospora musae* Zimm.
- Pseudocercospora myrtacearum* (Rai & al.) Braun
- Pseudocercospora mysorensis* (Thirum. & Chupp) Deighton
≡ *Cercospora mysorensis* Thirum. & Chupp
- Pseudocercospora neobalsaminae* Sharma & al.
- Pseudocercospora neriella* (Sacc.) Deighton
≡ *Cercospora neriella* Sacc.
- Pseudocercospora nigricans* (Cooke) Deighton
≡ *Cercospora atromaculans* Ellis & Everh.
≡ *Cercospora nigricans* Cooke
≡ *Cercospora torae* Tharp
- Pseudocercospora nothopegiae* (Ramakr. & al.) Deighton
≡ *Cercospora nothopegiae* Ramakr. & al.
- Pseudocercospora nymphaeacea* (Cooke & Ellis) Deighton
≡ *Cercospora exotica* Ellis & Everh.
≡ *Cercospora nymphaeacea* Cooke & Ellis
- Pseudocercospora ocimicola* (Petr. & Cif.) Deighton
≡ *Cercospora ocimicola* Petr. & Cif.
- Pseudocercospora odontonematis* (Chupp) Braun & Crous
≡ *Cercospora odontonemae* Chupp
- Pseudocercospora olacis* Srivast.
- Pseudocercospora onagrae* (Purkay. & Mallik) Kamal
- Pseudocercospora oroxyli* (Kar & Mandal) Deighton
≡ *Cercospora oroxyli* Kar & Mandal
- Pseudocercospora osbeckiae* (Chona & al.) Kamal & al.
≡ *Cercospora osbeckiae* Chona & al.
- Pseudocercospora oxystelmatis* (Khan & Kamal) Kamal & al.
≡ *Cercospora oxystelmatis* Khan & Kamal
- Pseudocercospora pallidissima* (Chupp) Deighton
≡ *Cercospora pallidissima* Chupp
- Pseudocercospora pamelaellisiae* (Agarwal & Sharma) Braun
≡ *Stigmia pamelaellisiae* Agarwal & Sharma
- Pseudocercospora pancratii* (Ellis & Everh.) Braun & Castañeda
≡ *Cercospora hymenocallidis* Pat.
≡ *Cercospora pancratii* Ellis & Everh.
- Pseudocercospora paradoxa* Braun & Bagyan.
- Pseudocercospora parviflorae* Rao & al.
- Pseudocercospora mucronata* (Purkay. & Pal) Kamal
- Pseudocercospora mucunae-ferrugineae* (Yamam.) Deighton
- Pseudocercospora musae-sapientium* (Kar & Mandal) Braun & Mouch. [as 'sapienti'], nom. illeg.
≡ *Cercospora musae-sapienti* Kar & Mandal
- Pseudocercospora myrticola* (Speg.) Deighton
≡ *Cercospora amadelpa* Syd.
≡ *Cercospora myrticola* Speg.
- Pseudocercospora naraveliae* (Kar & Mandal) Deighton
≡ *Cercospora naraveliae* Kar & Mandal
- Pseudocercospora neococculi* Jain & al.
- Pseudocercospora nerii* Rao & al.
- Pseudocercospora nojimae* (Togashi & Katsuki) Guo & Liu
≡ *Cercospora nojimae* Togashi & Katsuki
- Pseudocercospora nyctanthis* (Roy) Braun & al.
≡ *Cercospora nyctanthis* Roy
- Pseudocercospora ocellata* (Deighton) Deighton
≡ *Cercospora theae* Breda de Haan
- Pseudocercospora odinae* Sarbajna
- Pseudocercospora olacicola* (Muthappa) Kamal & al.
≡ *Cercospora olacicola* Muthappa
- Pseudocercospora olacis-zeylanicae* Chaudhary & Pal
- Pseudocercospora operculinae* Rao & al.
- Pseudocercospora oroxylogena* Yen & al.
- Pseudocercospora oxysporae* (Kar & Mandal) Deighton
≡ *Cercospora oxysporae* Kar & Mandal
- Pseudocercospora pallida* (Ellis & Everh.) Shin & Braun
≡ *Cercospora duplicata* Ellis & Everh.
- Pseudocercospora paludicola* (Speg.) Braun
≡ *Cercospora paludicola* Speg.
- Pseudocercospora panacis* (Thirum. & Chupp) Guo & Liu
≡ *Cercospora panacis* Thirum. & Chupp
≡ *Passalora panacis* (Thirum. & Chupp) Crous & Braun
≡ *Pseudocercospora polysciatis-pinnatae* Braun & Mouch.
- Pseudocercospora pantoleuca* (Sacc.) Deighton
≡ *Cercospora pantoleuca* Syd. & Syd.
- Pseudocercospora paramignya* (Thirum. & Chupp) Guo
≡ *Cercospora paramignya* Thirum. & Chupp
- Pseudocercospora pavettae-indicae* (Govindu & Thirum.) Yen & al.
≡ *Cercospora pavettae-indicae* Govindu & Thirum.

- Pseudocercospora peltophori* (Yen) Yen
≡ *Cercospora peltophori* Yen
- Pseudocercospora phyllanthi* (Chupp) Deighton
≡ *Cercospora phyllanthi* Chupp
≡ *Cercospora phyllanthi-niruri* Yen
≡ *Pseudocercospora phyllanthi-niruri* (Yen) Yen
≡ *Pseudocercospora phyllanthi-reticulati* Deighton
- Pseudocercospora physalidis-minimae* (Pavgi & Singh) Deighton
≡ *Cercospora physalidis-minimae* Pavgi & Singh
- Pseudocercospora pini-densiflorae* (Hori & Nambu) Deighton
≡ *Cercospora pini-densiflorae* Hori & Nambu
- Pseudocercospora platanigena* Videira & Crous
≡ *Stigmina platanii* var. *orientalis* Agnihothr.
- Pseudocercospora pluriseptata* Sharma & al.
- Pseudocercospora polyalthiae* Yen & al.
- Pseudocercospora polypodiacearum* Shukla & al.
- Pseudocercospora poranae* (Singh) Das & Chattopadh.
≡ *Cercospora poranae* Singh
- Pseudocercospora priunosivora* (Rao & Yadav) Kamal
- Pseudocercospora prunicola* (Ellis & Everh.) Braun
≡ *Cercospora prunicola* Ellis & Everh.
≡ *Cercospora pruni-persicae* Yen
- Pseudocercospora psidii* (Rangel) Castañeda & Braun
- Pseudocercospora puderi* Deighton
≡ *Cercospora puderi* Davis
- Pseudocercospora pulviniformis* (Kranz) Deighton
≡ *Cercospora pulviniformis* Kranz
- Pseudocercospora punensis* Singh & al.
- Pseudocercospora punjabensis* (Syd.) Braun & Bagyan.
≡ *Cercospora punjabensis* Syd.
- Pseudocercospora pycnidioides* (Chupp) Braun & Crous
≡ *Cercospora pycnidioides* Chupp
- Pseudocercospora quisqualidis* (Narain & Mehrotra) Jiang & Chi
≡ *Cercospora quisqualidis* Narain & Mehrotra
- Pseudocercospora ranjita* (Chowdhury) Deighton
≡ *Cercospora ranjita* Chowdhury
- Pseudocercospora rauwolfiae* Deighton
- Pseudocercospora rhamnacearum* Singh & al.
- Pseudocercospora rhynchosiae-suaveolentis* Raghu Ram & Mallaiah
- Pseudocercospora riachueli* (Speg.) Deighton
≡ *Cercospora riachueli* Speg.
- Pseudocercospora pentanematis* Braun & Crous
- Pseudocercospora phyllitidis* (Hume) Braun & Crous
≡ *Cercospora phyllitidis* Hume
- Pseudocercospora phytolaccacearum* Kamal & al.
- Pseudocercospora piperis* (Pat.) Deighton
≡ *Cercospora pipericola* Sacc. & Syd.
- Pseudocercospora plumeriae* (Chupp) Kobay. & al.
≡ *Cercospora plumeriae* Chupp
- Pseudocercospora pogostemonis* (Singh & Kamal) Braun
≡ *Cercospora pogostemonis* Chowdhury
- Pseudocercospora polygonicola* (Kar & Mandal) Deighton
≡ *Cercospora polygonicola* Kar & Mandal
- Pseudocercospora pongamiae-pinnatae* Raghu Ram & Mallaiah
- Pseudocercospora pouzolziae-indicae* Kamal
- Pseudocercospora profusa* (Syd. & Syd.) Deighton
≡ *Cercospora profusa* Syd. & Syd.
- Pseudocercospora pseudotrichodesmatis* Bagyan. & al.
- Pseudocercospora psoraleae* Rao & al.
- Pseudocercospora puerariae* (Syd. & Syd.) Deighton
≡ *Cercospora puerariae* Syd. & Syd.
- Pseudocercospora punctate* (Wakef.) Sutton
- Pseudocercospora punicae* (Henn.) Deighton
≡ *Cercospora punicae* Henn.
- Pseudocercospora putranjivae* Kamal & al.
- Pseudocercospora pyricola* (Sawada) Yen
≡ *Cercospora pyricola* Sawada
- Pseudocercospora randiae* (Thirum. & Govindu) Guo & Liu
≡ *Cercospora randiae* Thirum. & Govindu
- Pseudocercospora ranunculacearum* Gupta & al.
- Pseudocercospora rauwolfiae-serpentinae* Rao & al.
- Pseudocercospora rhoina* (Cooke & Ellis) Deighton
≡ *Cercospora copallina* Cooke
≡ *Cercospora rhoina* Cooke & Ellis
- Pseudocercospora rhynchosicola* Bagyan. & al.
- Pseudocercospora riachueli* var. *horiana* (Togashi & Katsuki) Braun & Crous
≡ *Pseudocercospora ampelocissi* Singh
≡ *Pseudocercospora cissi* Bagyan. & al.

- Pseudocercospora rubi* (Sacc.) Deighton
≡ *Cercospora rubi* Sacc.
- Pseudocercospora sacchari* (Sarbjana) Bhalla & Sarbhoy ex Braun & Crous
- Pseudocercospora salicina* (Ellis & Everh.) Deighton
≡ *Cercospora populina* Ellis & Everh.
≡ *Cercospora salicina* Ellis & Everh.
- Pseudocercospora samuhabeeja* Verma & al.
- Pseudocercospora santalacea* (Nair) Braun & Crous
≡ *Cercospora santalacea* Nair
- Pseudocercospora sawadae* (Yamam.) Goh & Hsieh
≡ *Cercospora sawadae* Yamam.
- Pseudocercospora schleicheriae-oleosae* Sharma & al.
- Pseudocercospora scopariicola* (Yen) Deighton
≡ *Cercospora scopariicola* Yen
- Pseudocercospora sesami* (Hansf.) Deighton
≡ *Cercospora sesamicola* Mohanty
- Pseudocercospora sesbaniae* (Henn.) Deighton
≡ *Cercospora agatidis* Foëx
≡ *Cercospora sesbaniae* Henn.
- Pseudocercospora sieberiana* Raghu Ram & Mallaiiah
- Pseudocercospora sordida* (Sacc.) Deighton
≡ *Cercospora sordida* Sacc.
- Pseudocercospora stahlia* (Stevens) Deighton
≡ *Cercospora stahlia* (Stevens) Subram.
- Pseudocercospora stillingiae* (Ellis & Everh.) Yen & al.
≡ *Cercospora stillingiae* Ellis & Everh.
- Pseudocercospora strebli* (Singh) Braun
≡ *Cercospora strebli* Mandal
- Pseudocercospora subramanianii* Braun & Nakash.
≡ *Prathigada punjabensis* (Subram.) Subram.
- Pseudocercospora superficialis* Verma & al.
- Pseudocercospora symploci* (Katsuki & Kobay.) Deighton
- Pseudocercospora syzygii-cumini* Braun & Bagyan.
- Pseudocercospora tagetis* (Kar & Mandal) Braun & Crous
≡ *Cercospora tagetis* Kar & Mandal
- Pseudocercospora tecomae-heterophyllae* (Yen) Guo & Liu
≡ *Cercospora tecomae-heterophyllae* Yen
- Pseudocercospora tephrosiae* Rai & Kamal
- Pseudocercospora tetramelis* Shukla & Sarmah
- Pseudocercospora thespesiae* (Singh) Verma & al.
- Pseudocercospora rungiae* Verma & Kamal
- Pseudocercospora sagarensis* Firdousi & al.
- Pseudocercospora salvadorae* (Maire) Deighton
≡ *Cercospora salvadorae* Maire
≡ *Cercospora udaipurensis* Prasad & al.
- Pseudocercospora samydacearum* Singh & al.
- Pseudocercospora sapindi-emarginati* (Ramakr. & Ramakr.) Braun & al.
≡ *Cercospora sapindi-emarginati* Ramakr. & Ramakr.
- Pseudocercospora scabrellae* Chaudhary & al.
- Pseudocercospora scitula* (Syd.) Deighton
≡ *Cercospora scitula* Syd.
- Pseudocercospora serpentinae* (Pandotra & Husain) Deighton
≡ *Cercospora serpentinae* Pandotra & Husain
- Pseudocercospora sesami-indici* Braun
- Pseudocercospora shoreae-robustae* Braun
- Pseudocercospora solenae-heterophyllae* (Verma & Kamal) Braun
- Pseudocercospora sphaerellae-eugeniae* (Rangel) Crous & al.
- Pseudocercospora sterculiana* Deighton
- Pseudocercospora stizolobii* (Syd. & Syd.) Deighton
≡ *Cercospora stizolobii* Syd. & Syd.
- Pseudocercospora strychni* (Syd.) Braun & al.
≡ *Cercospora strychni* Syd.
- Pseudocercospora subsessilis* (Syd. & Syd.) Deighton
≡ *Cercospora subsessilis* Syd. & Syd.
≡ *Pseudocercospora meliae* Rai & Kamal
- Pseudocercospora sydowiana* (Chupp) Braun & Crous
≡ *Cercospora sydowiana* Chupp
- Pseudocercospora synedrellae* (Yen & Gilles) Deighton
- Pseudocercospora tabernaemontanae* (Syd. & Syd.) Deighton
≡ *Cercospora tabernaemontanae* Syd. & Syd.
≡ *Pseudocercospora ervatamiae* (Yen & Lim) Yen
- Pseudocercospora takiensis* Das
- Pseudocercospora tectoncola* Yen & al.
- Pseudocercospora teraiensis* Singh & al.
- Pseudocercospora teysmanii* (Barua & Barua) Braun & Crous
≡ *Cercospora teysmanii* Barua & Barua
- Pseudocercospora thunbergiae* (Boedijn) Braun & Sivap.

- = *Cercospora thespesiae* Singh
Pseudocercospora tiliacearum Bhalla & al.
Pseudocercospora timorensis (Cooke) Deighton
 = *Cercospora batatae* Henn.
 = *Cercospora batatae* Zimm.
 = *Cercospora timorensis* Cooke
Pseudocercospora tinosporicola Braun & Bagyan.
Pseudocercospora toonae Mehrotra & Verma

Pseudocercospora trematicola Kamal & al. [as '*tremicola*'], nom. illeg.
Pseudocercospora trewiae-nodiflorae Rao & al.

Pseudocercospora trichophila (Stevens) Deighton
 = *Cercospora solani-hirti* Baker & Dale
 = *Cercospora trichophila* Stevens
Pseudocercospora triumfettae (Syd.) Deighton
 = *Cercospora triumfettae* Syd.
Pseudocercospora tylophoricola Braun & al.

Pseudocercospora urariae-hamosae Kamal

Pseudocercospora varia (Peck) Bai & Cheng
 = *Cercospora varia* Peck

Pseudocercospora verbenacearum Shrivast. & al.
Pseudocercospora vignicola (Yen & al.) Braun
Pseudocercospora vismiicola (Chupp) Braun & Crous
 = *Cercospora vismiicola* Chupp
Pseudocercospora vitticola (Yen & Lim) Yen
 = *Cercospora viticis* Ellis & Everh.
 = *Pseudocercospora viticigena* Yen & al.
Pseudocercospora waltheriae (Thirum. & Chupp) Deighton
 = *Cercospora waltheriae* Thirum. & Chupp
Pseudocercospora websteri (Rao & al.) Braun

Pseudocercospora wellesiana (Chupp) Liu & Guo
 = *Cercospora wellesiana* Chupp
Pseudocercospora woodfordiigena Braun & Crous

Pseudocercospora wrightiicola (Satya) Deighton
 = *Cercospora wrightiicola* Satya
Pseudocercospora xeromphina Rao & al.

Pseudocercospora zanthoxylicola Crous & Braun

Pseudocercospora ziziphin (Petch) Crous & Braun
 = *Cercospora ziziphin* Petch

 = *Cercospora thunbergiae* Boedijn
Pseudocercospora tiliacorae (Kar & Mandal) Deighton
 = *Cercospora tiliacorae* Kar & Mandal
Pseudocercospora tinosporae Rai & Kamal

Pseudocercospora tinosporigena Braun
Pseudocercospora trematicola (Yen) Deighton
 = *Cercospora trematicola* Yen
Pseudocercospora trematis-cannabini (Yen & Lim) Deighton
 = *Cercospora trematis-cannabini* Yen & Lim
Pseudocercospora trichodesmatis (Govindu & Thirum.) Braun & Crous
 = *Cercospora trichodesmatis* Govindu & Thirum.
Pseudocercospora trichoxanthidicola Kamal & al.

Pseudocercospora tuvakii (Sharma) Kamal

Pseudocercospora ubi (Racib.) Deighton
 = *Cercospora ubi* Racib.
Pseudocercospora urariarum (Kar & Mandal) Braun & Crous
 = *Cercospora urariarum* Kar & Mandal
Pseudocercospora venezuelae var. *indica* Govindu & Thirum. ex Kamal
 = *Cercospora venezuelae* var. *indica* Govindu & Thirum.
Pseudocercospora vernoniacearum Shukla & al.

Pseudocercospora vignigena Yen & al.
Pseudocercospora vitigena Yen & al.

Pseudocercospora vitis (Lév.) Speg.
 = *Cercospora viticola* (Ces.) Sacc.

Pseudocercospora wattakakae Bagyan. & al.

Pseudocercospora wedeliae (Kar & Mandal) Deighton
 = *Cercospora wedeliae* Kar & Mandal
Pseudocercospora withaniae (Syd. & Syd.) Deighton
 = *Cercospora withaniae* Syd. & Syd.
Pseudocercospora wrightiae (Thirum. & Chupp) Deighton
 = *Cercospora wrightiae* Thirum. & Chupp
Pseudocercospora xeromphidicola Kamal & al.
 [as '*xeromphicola*'], nom. illeg.
Pseudocercospora ximeniae Bagyan. & Braun

Pseudocercospora zehneriae (Kar & Mandal) Braun & Crous
 = *Cercospora zehneriae* Kar & Mandal
Pseudocercospora ziziphicola (Yen) Yen
 = *Cercospora ziziphicola* Yen

Scolecostigmina Braun, New Zeal. J. Bot. 37 (2): 323 (1999).

FIG. 8.

Type species: *S. mangiferae* (Koord.) Braun & Mouch., New Zeal. J. Bot. 37 (2): 323 (1999).

General characteristics (Kamal 2010): Follicolous, mycelium immersed; hyphae septate, branched, more or less pigmented. Sporodochia immersed to erumpent, stromata sub-globose to somewhat aplanate, composed of angular to subglobose cells, brown, thin to thick-walled. Conidiophores numerous, densely organized, arising from stroma cells, subcylindric or somewhat attenuated towards the apex, conic, often ampulliform, continuous or septate, pigmented, wall somewhat thickened, typically verruculose, conidiogenous cells integrated, terminal or separate, proliferation percurrent, prominently anellate. Conidia solitary, formation holoblastic, scolecosporous, typically subcylindric-obclavate, transversally pluriseptate, often with few longitudinal or oblique septa, euseptate, seldom with few intermixed distosepta, thick-walled, pigmented, dark, smooth to verrucose, apex acute, base truncate or obconically truncate, secession schizolytic (FIG. 8).

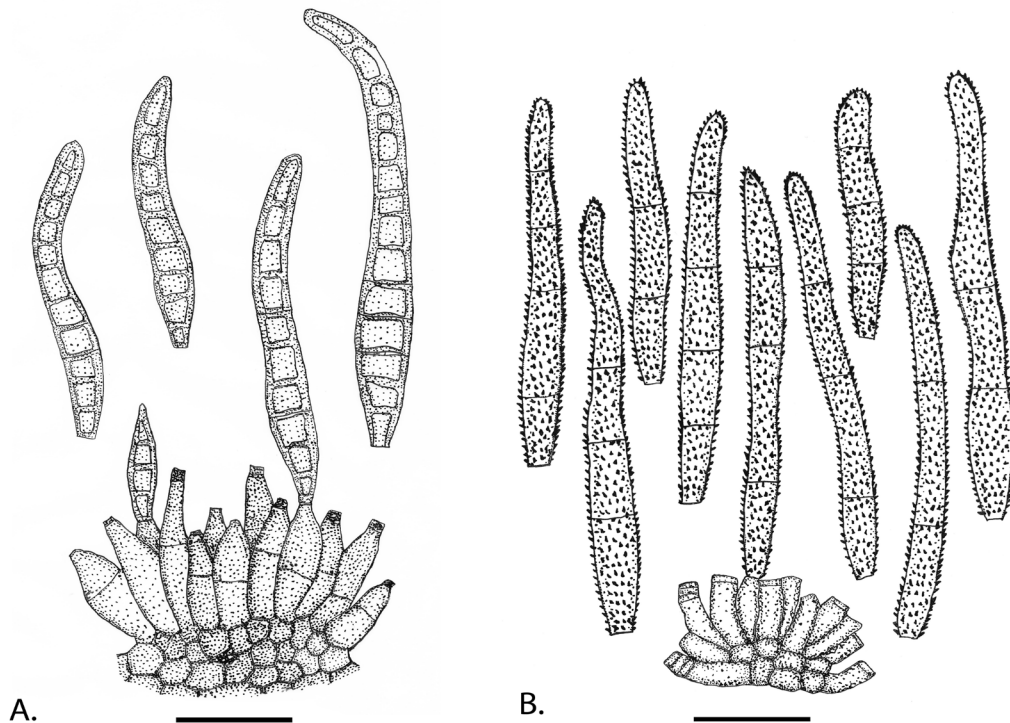


FIG. 8. A. *Scolecostigmina combreti* (IMI 210782) on *Terminalia bellerica*, B. *Scolecostigmina palmivora* (TF 206) on *Phoenix sylvestris*, Bars = 20 μ m. Redrawn from Kamal (2010)

Current status: At present, 12 species of *Scolecostigmina* reported from India are accepted (TABLE 8).

TABLE 8. Records of *Scolecostigmina* from India*Scolecostigmina combreti* (Kranz) Braun≡ *Stigmina combreti* Kranz*Scolecostigmina diospyrosis* Kamal*Scolecostigmina fici-mysorensis* (Muthappa) Braun≡ *Stigmina fici-mysorensis* Muthappa*Scolecostigmina mangiferae* (Koord.) Braun & Mouch.≡ *Stigmina mangiferae* (Koord.) Ellis*Scolecostigmina palmivora* (Sacc.) Kamal*Scolecostigmina sudanensis* (Ellis) Braun≡ *Stigmina sudanensis* Ellis*Scolecostigmina crotonicola* (Ellis) Braun≡ *Stigmina crotonicola* Ellis*Scolecostigmina fici-elasticae* (Kapoor) Braun≡ *Stigmina fici-elasticae* Kapoor*Scolecostigmina maculata* (Cooke) Braun≡ *Stigmina maculata* (Cooke) Hughes*Scolecostigmina palmelae-ellisae* (Agarwal & Sharma) Kamal*Scolecostigmina phaeocarpa* (Mitter) Braun≡ *Cercospora phaeocarpa* Mitter≡ *Stigmina phaeocarpa* (Mitter) Ellis*Scolecostigmina tirumalensis* (Braun & Bagyan.) Braun≡ *Stigmina tirumalensis* Braun & Bagyan.***Sirosporium*** Bubák & Serebrian., Hedwigia 52: 273 (1912).

FIG. 9

Type species: *S. antenniforme* (Berk. & Curtis) Bubák & Serebrian., Hedwigia 52: 273 (1912).

General characteristics (Kamal 2010): Colonies are sometimes punctiform but usually effuse, often velvety, olivaceous, reddish-brown, or dark blackish brown. Mycelium is partly immersed and partly superficial. Stroma is present in a few species. Setae and hyphopodia are absent. Conidiophores are macronematous or semi-macronematous, mononematous, branched or unbranched, straight or flexuous, pale to mid-brown, or olivaceous brown, smooth or verrucose. Conidiogenous cells polyblastic, integrated, terminal on stipe and branches, sometimes becoming intercalary, sympodial, cylindrical or clavate, cicatrized. Conidia are solitary, dry, acropleurogenous, simple, straight, flexuous or coiled, cylindrical with rounded ends, ellipsoidal or obclavate, sub-hyaline to an olivaceous or golden brown, smooth, rugose or verrucose, with transverse and often also longitudinal or oblique septa, hilum sometimes protuberant (FIG. 9).

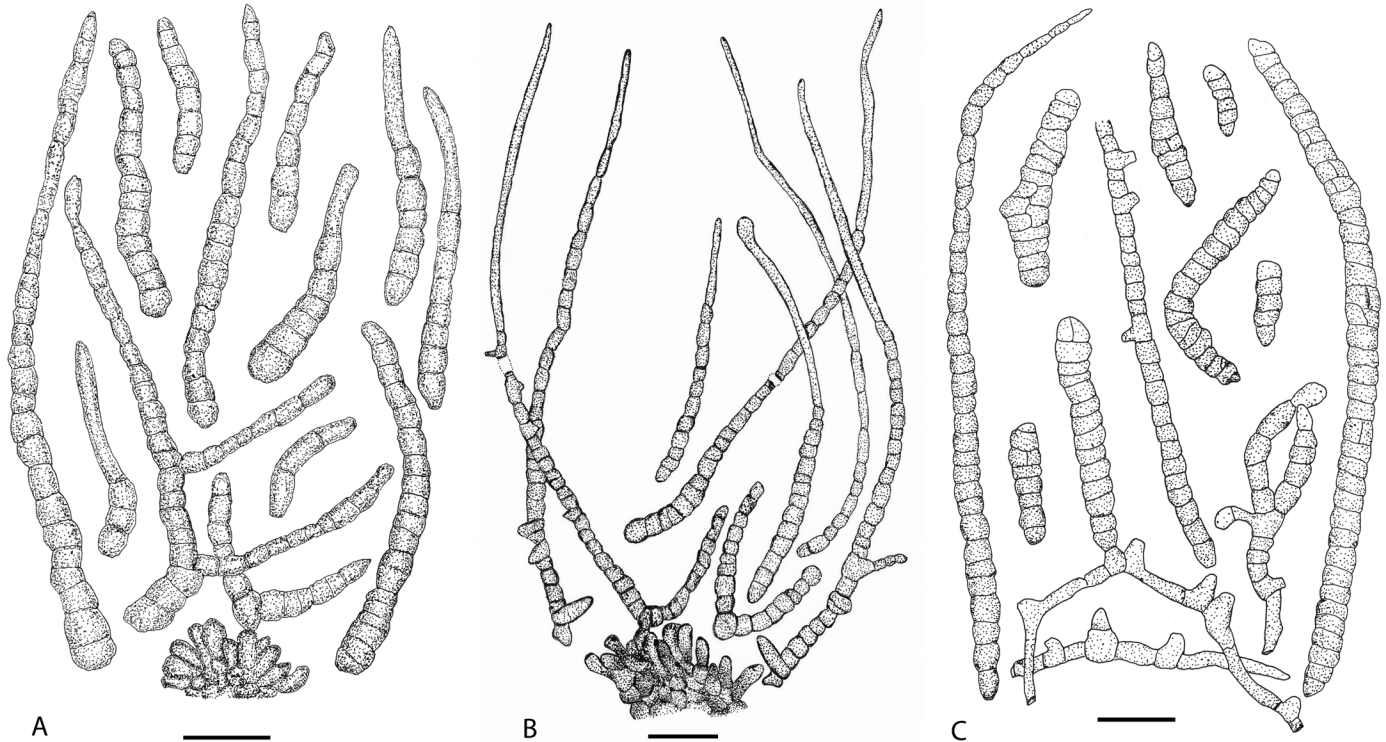


FIG. 9. A. *Sirosporium carissae* (HCIO 48771) on *Carissa carandus*, Bar = 20 μ m. B. *Sirosporium carissigenum* (HCIO 48770) on *Carissa spinarum*, Bar = 20 μ m. C. *Sirosporium longisporum* (HCIO 43780, Holotype) on *Ziziphus xylopyrus*, Bar = 20 μ m. Redrawn from Kamal (2010)

Current status: At present, 16 species of *Sirosporium* reported from India are accepted (TABLE 9).

TABLE 9. Records of *Sirosporium* from India

<i>Sirosporium antennaeforme</i> (Berk. & Curtis) Bubák & Serebrian.	<i>Sirosporium antidesmicola</i> Chaudhary & Majumdar
<i>Sirosporium carissae</i> Kapoor	<i>Sirosporium carissigenum</i> Kamal
<i>Sirosporium celtidis</i> (Biv.) Ellis	<i>Sirosporium dendrophthoes</i> Khan & Kamal
<i>Sirosporium indicum</i> Kamal & al.	<i>Sirosporium longisporum</i> Kamal & Majumdar
<i>Sirosporium moracearum</i> Chaudhary & Majumdar	<i>Sirosporium mori</i> (Syd. & Syd.) Ellis = <i>Cercospora kusanoi</i> Sawada
<i>Sirosporium morindinum</i> Kamal & al.	<i>Sirosporium pluriseptatum</i> (Gadp. & al.) Kamal
<i>Sirosporium rutacearum</i> Kamal & al.	<i>Sirosporium suttonii</i> Manohar. & Rao
<i>Sirosporium xylopyrae</i> Sharma & al.	<i>Sirosporium ziziphicola</i> Braun & Bagyan.

Stenellopsis Huguenin, Bull. trimest. Soc. mycol. Fr. 81: 695 (1966).

Type species: *S. fagraeae* Huguenin, Bull. trimest. Soc. mycol. Fr. 81: 695 (1966).

General characteristics (Kamal, 2010): Foliicolous. Stroma is well-developed, immersed, and prosenchymatous. Conidiophores macronematous, caespitose, short (rather stumpy), unbranched, may or may not emerge through stomata. Conidiogenous cells are terminal, polyblastic, and sympodial with one or a few conidial scars that are broad, flat, and thickened. Conidia solitary, dry, long and cylindrical, verruculose, unbranched, non-catenate, apex rounded base truncate with broad and thickened hilum.

Stenellopsis is morphologically similar to *Zasmidium*. It has single conspicuously verruculose conidia with scars that are somewhat thickened and darkened but lack verruculose superficial hyphae. *Stenellopsis* is closely related to *Stenella*, but molecular data are not yet available to support this assumption (Crous & Braun 2003).

Current status: Four species of *Stenellopsis* reported from India are currently accepted. Those include *Stenellopsis xeromphigena* Srivast. & al., *Stenellopsis indo-gangentica* Kamal & Majumdar, *Stenellopsis shoreae* Singh and *Stenellopsis indica* Rai & Rai.

Stigmina Sacc., Michelia 2(6): 22 (1880).

FIG. 10

Type species: *S. platani* (Fuckel) Sacc., Michelia 2(6): 22 (1880).

Synonym:

- ≡ *Marcosia* Syd. & Syd., Annales Mycologici 14 (1–2): 96 (1916).
- ≡ *Pseudopuccinia* Höhn., Mitt. bot. Inst. tech. Hochsch. Wien: 41 (1925).
- ≡ *Jaczewskiella* Murashk., Mater. Mikol. Fitopat. Ross. 5(1926)

Colonies were foliicolous. Internal mycelium is composed of hyaline to brown septate hyphae concentrated in or beneath stomata. Superficial mycelium absent or present pale brown, septate, anastomosing hyphae. Conidiomata superficial, dry, or produced in a very gelatinous matrix, punctiform to aplanate, more or less circular, composed of brown textura angularis, centred over stomata. Conidiophores are absent or micronematous, short, unbranched, formed from the upper or outer cells of conidiomata. Conidiogenous cells distinct rarely integrated, cylindrical to campanuliform, verruculose or smooth, forming holoblastic conidia, every of them is separated by an enteroblastic proliferation to form many transverse irregular ragged annellations. Conidia are apical, dry or formed in a very gelatinous matrix, smooth or verruculose, rarely aseptate, typically transversally distoseptate, brown, clavate to cylindrical, secession schizolytic (FIG. 10).

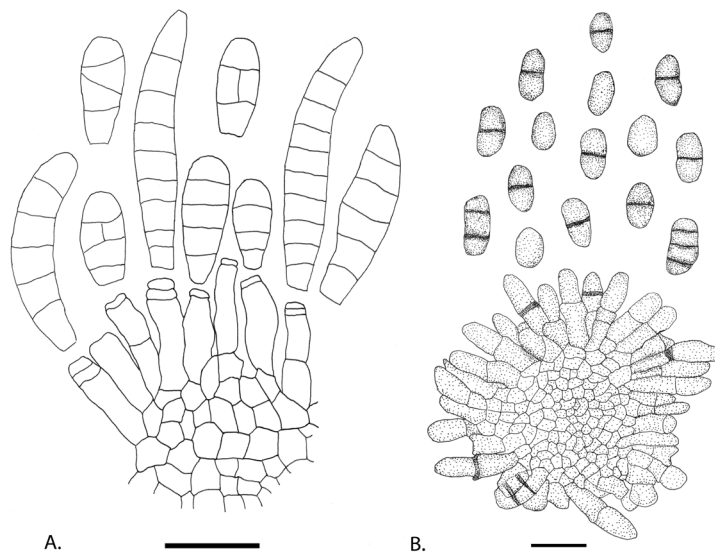


FIG. 10. A. *Stigmina bahraichiana* (IMI 244899) on *Millettia* sp. Bar = 20 µm. B. *Stigmina negundinis* (AMH 9207) on *Acer palmatum*, Bar = 20 µm. Redrawn from Kamal (2010)

Current status: At present, 20 species of *Stigmina* reported from India are currently accepted (TABLE 10).

TABLE 10. Records of *Stigmina* from India

<i>Stigmina ardisiae</i> Munjal & Kulshr.	<i>Stigmina bahraichiae</i> Singh & Kamal
<i>Stigmina bambusae</i> Subhedar & Rao	<i>Stigmina bauhiniae</i> Rai & Kamal
<i>Stigmina cycadicola</i> (Thurum.) Ellis	<i>Stigmina cycadina</i> Tilak & Rao
<i>Stigmina dehradunensis</i> Mehrotra	<i>Stigmina dendrocalami</i> Patil & Thite
<i>Stigmina diospyri</i> Patil & Thurum.	<i>Stigmina erythrinae</i> Ellis
<i>Stigmina fici</i> Pavgi & Singh	<i>Stigmina koyanensis</i> Dubey & Sengupta
<i>Stigmina millettiae</i> Ellis	<i>Stigmina obtecta</i> (Petr. & Esfand.) Ellis
<i>Stigmina palmivora</i> (Sacc.) Hughes	<i>Stigmina platani</i> (Fuckel) Sacc.
<i>Stigmina tamarindi</i> (Syd.) Morgan-Jones & Kendr.	<i>Stigmina tephrosiae</i> Agnihotr.
<i>Stigmina terminaliae</i> Munjal & Kulshr.	<i>Stigmina tubakii</i> Sharma

Verrucisporota Shaw & Alcorn, Aust. Syst. Bot. 6: 273 (1993).

Type species: *V. proteacearum* (Shaw & Alcorn) Shaw & Alcorn, Aust. Syst. Bot. 6: 273 (1993).

Synonym:

≡ *Verrucispora* Shaw & Alcorn, Proc. Linn. Soc. N.S.W. 92: 171 (1967).

FIG. 11

General characteristics (Kamal 2010): Colonies round or angular, dark blackish-brown to hairy. Mycelium is mostly immersed. Stroma is well-developed in the substomatal region, pseudoparenchymatous, brown. Setae and hyphopodia are absent. Conidiophores are macronematous, manonematous, and caespitose, emerging through stomata, unbranched, straight to flexuous, sometimes geniculate, mid to dark reddish or olivaceous brown, paler, often slightly thickened apex, smooth. Conidiogenous cells polyblastic, integrated, terminal becoming intercalary, sympodial, cylindrical or clavate, cicatrized, scars conspicuous. Conidia are solitary, dry, acropleurogenous, simple, straight or curved, cylindrical, rounded at the apex, truncate at the base, multiseptate, sometimes constricted at the septa, olivaceous or reddish-brown, end cells often paler than intermediate ones, verrucose.

Current status: Three species of *Verrucisporota* reported from India are currently accepted. Those include *V. brideliae* (Sarbhoy & al.) Shaw & Alcorn, *V. embeliae* (Rajak) Kamal and *V. indica* (Kamal & Kumar) Braun

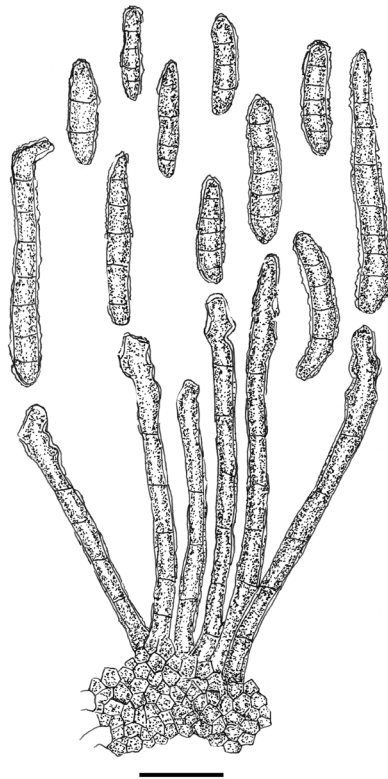


Fig. 11. *Verrucisporota smilacis* (HClO 45901) on *Smilax macrophylla*, Bar = 20 μ m. Redrawn from Kamal (2010)

Zasmidium Fr., Summa Veg. Scand. 2: 407 (1849).

FIG. 12

Type species: *Racodium cellare* Pers., Neues Magazin für die Botanik 1: 123 (1794).

Synonym:

- ≡ *Periconiella* Sacc., Atti Ist. Veneto Sci. 3: 727 (1885).
- ≡ *Biharia* Thirum. & Mishra, Sydowia 7(1–4): 79 (1953).
- ≡ *Stenellopsis* Huguenin, Bull. trimest. Soc. mycol. Fr. 81: 693–696 (1966).
- ≡ *Verrucispora* Shaw & Alcorn, Proc. Linn. Soc. N.S.W. 92: 171 (1967).
- ≡ *Verrucisporota* Shaw & Alcorn, Aust. Syst. Bot. 6: 273 (1993).

The genus *Zasmidium* was first reported by Fries in 1849. Consequently, new combinations were made into the genus, and new species were reported (Singh & Kharwar 2012). *Zasmidium* is characterized by planate conidiogenous loci (scars), verruculose superficial hyphae, and usually rough-walled, solitary, or rarely catenate conidia (FIG. 12). Although both *Stenella* and *Zasmidium* share verruculose superficial hyphae and rough-walled conidia, *Stenella* is polyphyletic (Arzanlou & al. 2007) and *Zasmidium* is paraphyletic (Singh & al. 2014). *Zasmidium cellare*, the type species of *Zasmidium*, clusters within the *Mycosphaerellaceae*, whereas *Stenella araguata*, the type species of *Stenella*, clusters within *Teratosphaeriaceae* (Singh & al. 2014).

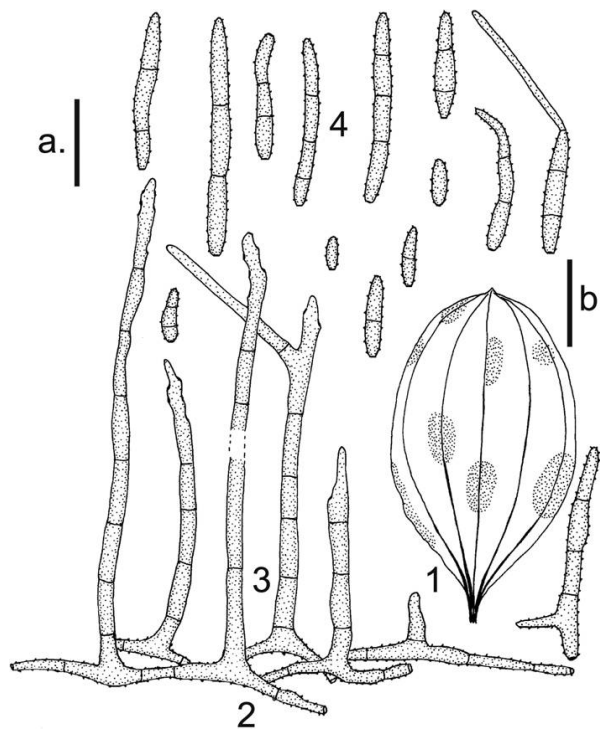


FIG. 12. *Zasmidium smilacis-proliferae* (HCIO 42542, holotype) on *Smilax prolifera*, 1–4, 1. Infection spots 2. Mycelium 3. Conidiophores 4. Conidia, Bars a = 20 µm, b = 20 µm. Reproduced from Singh & al. 2014 with permission of Sydowia.

Current status: At present, 90 species of *Zasmidium* reported from India are accepted (TABLE 11).

TABLE 11. Records of *Zasmidium* from India

<i>Zasmidium aeglicola</i> (Das) Kamal	<i>Zasmidium aegligenum</i> Kamal
<i>Zasmidium alocasiae</i> (Sarbjana & Chattopadh.) Kamal	<i>Zasmidium anamirtae</i> (Srivast. & al.) Kamal
<i>Zasmidium aphanamixidis</i> (Chaudhary & al.) Kamal	<i>Zasmidium argyreiae</i> (Bhalla & al.) Kamal
<i>Zasmidium bauhiniae</i> (Haldar & al.) Kamal	<i>Zasmidium bischofia-javanicae</i> (Chaudhary & al.) Kamal
<i>Zasmidium brideliicola</i> (Srivast. & al.) Kamal	<i>Zasmidium brownaeicola</i> (Chaudhary & al.) Kamal
<i>Zasmidium buteae</i> (Misra & al.) Kamal	<i>Zasmidium canavaliae</i> (Syd. & Syd.) Kamal
<i>Zasmidium canthi</i> (Yen & al.) Kamal	<i>Zasmidium capparicola</i> (Hansf. & Thirum.) Kamal
<i>Zasmidium capparigenum</i> (Braun) Kamal & Braun	<i>Zasmidium caryotae</i> (Liu & Liao) Kamal
<i>Zasmidium caseariicola</i> (Chaudhary & Chaudhary) Kamal	<i>Zasmidium cassiae-fistulae</i> (Braun & Kamal) Kamal & Braun = <i>Zasmidium cassia</i> (Abbasi & Shukla) Braun & Kirk
<i>Zasmidium cassiae-occidentalis</i> Kamal	<i>Zasmidium cassiae-torae</i> (Singh & al.) Kamal
<i>Zasmidium cassiicola</i> (Misra & al.) Kamal	<i>Zasmidium cedrelae</i> (Yen & al.) Kamal
<i>Zasmidium celastri</i> (Rai & Kamal) Kamal	<i>Zasmidium ceropogiae</i> (Patil & Sawant) Kamal
<i>Zasmidium cinnamomi</i> (Hosag. & Braun) Kamal & Braun	<i>Zasmidium coffeae</i> (Yen & al.) Kamal
<i>Zasmidium colocasiae</i> (Sarbjana & Chattopadh.) Kamal	<i>Zasmidium cordiae</i> Kharwar & Singh
<i>Zasmidium crotalaricola</i> (Chaudhary & al.) Kamal	<i>Zasmidium cuneaegenum</i> (Chaudhary & al.) Kamal
<i>Zasmidium cynanchi</i> (Yen & al.) Kamal	<i>Zasmidium dioscoreicola</i> (Yen & al.) Kamal
<i>Zasmidium dioscorinum</i> Singh & al.	<i>Zasmidium diospyrigenum</i> (Chaudhary & al.) Kamal
<i>Zasmidium ehretigeum</i> (Chaudhary & al.) Kamal	<i>Zasmidium elaeodendri</i> (Kamal & al.) Kamal
<i>Zasmidiumem beliicola</i> Kamal	<i>Zasmidium emblicae</i> (Firdousi & al.) Kamal
<i>Zasmidium eugeniicola</i> (Misra & al.) Kamal	<i>Zasmidium euphorbicola</i> (Chaudhary & Chaudhary) Kamal
<i>Zasmidium fabacearum</i> (Srivast. & al.) Kamal	<i>Zasmidium ficinum</i> (Kamal & al.) Kamal
<i>Zasmidium flacourtiiae</i> (Singh & al.) Kamal	<i>Zasmidium garugae</i> (Yen & al.) Kamal
<i>Zasmidium glycosmidis</i> Chaudhary & Chaudhary ex Kamal	<i>Zasmidium gorakhpurensis</i> (Kamal & Kumar) Kamal
<i>Zasmidium grewiae</i> (Bhalla & al.) Kamal	<i>Zasmidium grewiicola</i> Kharwar & Singh
<i>Zasmidium heterophragmatis</i> (Misra & al.) Kamal	<i>Zasmidium hippocratiae</i> (Srivast. & al.) Kamal
<i>Zasmidium hyptiantherigena</i> Kharwar & Singh	<i>Zasmidium ichnocarpicola</i> (Singh & al.) Kamal
<i>Zasmidium indo-gangeticum</i> (Kamal & Majumdar) Kamal	<i>Zasmidium kydiae</i> (Singh & Kamal) Kamal
<i>Zasmidium lamiacearum</i> (Chaudhary & al.) Kamal	<i>Zasmidium lantanae</i> (Misra & al.) Kamal
<i>Zasmidium lygodii</i> (Sarbjana) Kamal	<i>Zasmidium meynae-laxiflorae</i> (Srivast. & al.) Phengs. & al.
<i>Zasmidium micheliaev</i> (Chaudhary & Chaudhary) Kamal	<i>Zasmidium millettiae</i> (Chaudhary & al.) Kamal
<i>Zasmidium mirzapurensis</i> (Singh & al.) Kamal	<i>Zasmidium murrayae</i> (Khan & al.) Kamal
<i>Zasmidium myxum</i> (Syd.) Kamal	<i>Zasmidium naucleae</i> (Das) Kamal
<i>Zasmidium oroxylicola</i> (Yen & al.) Kamal	<i>Zasmidium pentatropidi</i> (Srivast. & al.) Kamal

<i>Zasmidium plectroniae</i> (Ponnappa) Kamal	<i>Zasmidium plumeriae</i> (Sarbjana & Chattopadh.) Kamal
<i>Zasmidium polyalthiae</i> (Chaudhary & al.) Kamal	<i>Zasmidium rhododendri</i> (Verma & Kamal) Kamal
<i>Zasmidium robustum</i> Singh & al.	<i>Zasmidium rubiacearum</i> (Chaudhary & al.) Kamal
<i>Zasmidium rutacearum</i> (Chaudhary & al.) Kamal	<i>Zasmidium salicis</i> (Chupp & Greene) Kamal & Braun
<i>Zasmidium satpurens</i> (Sharma & al.) Kamal	<i>Zasmidium schizandrae</i> (Pavgi & Singh) Kamal
<i>Zasmidium shoreae</i> (Khan & Kamal) Kamal	<i>Zasmidium shoreicola</i> (Braun & Crous) Kamal & Braun
<i>Zasmidium smilacis</i> (Kumar & al.) Kamal	<i>Zasmidium smilacis-macrophyllae</i> (Chaudhary & Chaudhary) Kamal
<i>Zasmidium sonapathariense</i> (Khan & al.) Kamal	<i>Zasmidium sonneratae</i> (Haldar & al.) Kamal
<i>Zasmidium stephaniae</i> (Yen & al.) Kamal	<i>Zasmidium telosmae</i> (Srivast. & al.) Kamal
<i>Zasmidium tiliacorae</i> (Sarbjana) Kamal	<i>Zasmidium trijugae</i> (Rai & Kamal) Kamal
<i>Zasmidium vangueriae</i> (Thirum. & Mishra) Kamal	<i>Zasmidium weberi</i> (Chupp) Kamal
<i>Zasmidium wendlandiicola</i> (Braun & Crous) Kamal & Braun	<i>Zasmidium xeromphigenum</i> (Yen & al.) Kamal

Miscellaneous genera

As per the current study, one or more records by Kamal (2010) and a few from recent publications until 2021 from India are now transferred to the genera other than reported above. Those include 19 different genera including *Mycovellosiella*, *Camptomeris*, *Neocercosporidium*, *Nothopassalora* and few others. The details of these genera are presented in TABLE 12.

TABLE 12. Miscellaneous records of cercosporoid fungi

<i>Camptomeris pulchra</i> (Syd.) Braun = <i>Cercospora pulchra</i> Syd.
<i>Catenulocercospora fusimaculans</i> (Atk.) Nakash. & al. = <i>Cercospora panici</i> Davis
<i>Claroehilum henningsii</i> (Allesch.) Videira & Crous = <i>Cercospora henningsii</i> Allesch.
<i>Clypeosphaerella calotropidis</i> (Ellis & Everh.) Videira & Crous = <i>Cercospora calotropidis</i> Ellis & Everh. = <i>Passalora calotropidis</i> (Ellis & Everh.) Braun
<i>Colletogloeum sissoo</i> (Syd.) Sutton = <i>Cercospora sissoo</i> Syd.
<i>Distocercosporaster dioscoreae</i> (Ellis & Martin) Videira & al. = <i>Cercospora dioscoreae</i> Ellis & Martin = <i>Passalora dioscoreae</i> (Ellis & Martin) Braun & Crous
<i>Distomycovellosiella brachycarpa</i> (Syd.) Braun & Nakash. = <i>Passalora brachycarpa</i> (Syd.) Braun & Crous
<i>Eriocercospora vitis-heterophyllae</i> (Henn.) Braun = <i>Cercospora vitis-heterophyllae</i> Samajpati
<i>Fulvia fulva</i> (Cooke) Cif. = <i>Passalora fulva</i> (Cooke) Braun & Crous
<i>Mycosphaerella pruni-persicae</i> Deighton = <i>Cercospora persicae</i> Sacc.
<i>Mycovellosiella cajani</i> (Henn.) Rangel ex Trotter = <i>Cercospora cajani</i> Henn. = <i>Passalora cajani</i> (Henn.) Braun & Crous
<i>Mycovellosiella cajani</i> var. <i>indica</i> (Singh) Deighton = <i>Cercospora indica</i> Singh

- Mycovellosiella dalbergiae* Singh & Singh
 = *Passalora dalbergiae* (Singh & Singh) Braun & al.
Neocercosporidium smilacis (Thüm.) Braun & al.
 = *Cercospora smilacis* Thüm.
 = *Passalora smilacis* (Thüm.) Braun
Nothopassalora personata (Berk. & Curtis) Braun & al.
 = *Cercospora arachidis* Henn.
 = *Cercospora personata* (Berk. & Curtis) Ellis & Everh.
 = *Passalora personata* (Berk. & Curtis) Khan & Kamal
Paracercospora egenula (Syd.) Deighton
 = *Cercospora egenula* (Syd.) Chupp & Doidge
 = *Cercospora solani-melongenae* Chupp
 = *Pseudocercospora egenula* (Syd.) Braun & Crous
Phaeoramularia capsicicola (Vassiljevsky) Deighton
 = *Cercospora unamunoi* Castell.
 = *Passalora capsicicola* (Vassiljevsky) Braun & Freire
Pruniphilomyces circumscissus (Sacc.) Crous & Bulgakov
 = *Cercospora circumscissa* Sacc.
 = *Passalora circumscissa* (Sacc.) Braun
 = *Pseudocercospora circumscissa* (Sacc.) Guo & Liu
Ragnhildiana ferruginea (Fuckel) Braun & al.
 = *Cercospora ferruginea* Fuckel
 = *Passalora ferruginea* (Fuckel) Braun & Crous
Ragnhildiana perfoliati (Ellis & Everh.) Braun & al.
 = *Cercospora assamensis* Chowdhury
 = *Cercospora perfoliata* Ellis & Everh.
 = *Passalora assamensis* (Chowdhury) Braun & Crous
 = *Passalora perfoliati* (Ellis & Everh.) Braun & Crous
Rosisphaerella rosicola (Pass.) Braun & al.
 = *Cercospora rosicola* Pass.
 = *Passalora rosicola* (Pass.) Braun
Stenella shoreicola Crous & Braun = *Cercospora shoreae* Thirum. & Chupp

Discussion

Members of cercosporoid fungi are widely distributed on a broad range of host plants in many countries, including India. The first monograph of cercosporoid hyphomycetes was published by Chupp in 1953, within which he followed a very broad generic concept for *Cercospora*. As a result, he synonymized many cercosporoid genera with *Cercospora*. Deighton (1967, 1973, 1976, 1979, 1987 and 1990) and Ellis (1971) narrowed the generic concept of *Cercospora* sensu lato and, again, formed smaller taxonomic units at the generic level (Bakhshi & al. 2015b). Crous & Braun (2003) presented a compilation of more than 3000 names that have been published or proposed under *Cercospora*, of which 659 were presently recognized in this genus and 281 were referred to as *Cercospora apii* sensu lato. In the second list, approximately 550 names of *Passalora* emend. (Including *Mycovellosiella*, *Phaeoramularia*, *Tandonella*, and *Phaeoisariopsis*) were included. In total 5720 names were separated based on a combination of characters, of which the structure of conidiogenous loci (scars) and hila, and the presence or absence of pigmentation in conidiophores and conidia are considered to be the most important. Most of the findings by Crous & Braun (2003) about generic circumscriptions were confirmed by Bakhshi & al. (2015b). Recently, many cercosporoid genera have been

introduced, and previous genera have been resurrected to obtain monophyletic clades, e.g., *Pallidocercospora*, *Paracercospora*, *Phaeocercospora*, *Porocercospora*, and *Neopseudocercospora* (Bakhshi & al. 2015a). Many previous generic names, such as *Cercosporidium*, *Fulvia*, *Phaeoramularia*, and *Raghnildiana*, have been resurrected to other genera (Videira & al. 2017). As per global databases, *Fulvia* and *Raghnildiana* are currently synonymized to the *Passalora* sect. *Mycovellosiella*, whereas *Cercosporidium* and *Phaeoramularia* are currently synonymized to *Passalora*.

A total of 120 genera are accepted within the family *Mycosphaerellaceae* (Videira & al. 2017). Except for *Cercospora*, several other cercosporoid genera are polyphyletic and paraphyletic (Bakhshi & al. 2015b). *Cercospora* is currently recognized for having pigmented conidiophores with conspicuous (thickened and darkened) conidiogenous loci and hyaline conidia with conspicuous hila as well as the ability to produce cercosporin toxin. This genus seems to have a single evolutionary origin (Groenewald & al. 2013; Bakhshi & al. 2015b). This monophyly supports the phylogenetic association of *Cercospora* taxa to the type species *C. apii* (Crous & Braun 2003; Braun & al. 2013). The identification of *Cercospora* species has integrated traditional (morphology) and molecular approaches (Crous & al. 2001). The identification of *Cercospora* based on ITS sequence data is insufficient. Groenewald & al. (2013) strongly suggested use of secondary barcode genes for species-level identification. More conserved gene regions such as the large subunit (LSU), small subunit (SSU) of rRNA, and RNA polymerase II (*rpb2*) loci provide better discrimination at the generic and family level (Wang & al. 2007; Hyde & al. 2013). Vu & al. (2019) reported that 17% and 18% of fungal species could not be discriminated against using ITS and LSU markers, respectively.

As a general rule, the resolution of barcode loci, especially ITS, is not the same among all groups (e.g., Nilsson & al. 2008; Thines & al. 2018). Therefore, analysis of additional loci is required (Stielow & al. 2015) for correct species identification. In several recent molecular phylogenetic studies, multi-locus sequence data have proven highly effective in distinguishing *Cercospora* species (Groenewald & al. 2013; Bakhshi & al. 2015a, 2015b). Bakhshi & al. (2018) put forward glyceraldehyde 3-phosphate dehydrogenase (*gapdh*) as a promising gene for species delimitation in *Cercospora* when supplemented with calmodulin (*cal*), translation elongation factor (*tef-1 α*), and β -tubulin (*tub2*).

The highest number of cercosporoid fungi in India is currently found in Uttar Pradesh, followed by West Bengal, Maharashtra, Karnataka, Andhra Pradesh, Telangana, and Madhya Pradesh (Kamal 2010). A few species are reported from Uttarakhand, Tamil Nadu, and Kerala. Only a few cercosporoid fungi are reported from northeastern India, including the states of Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim. These regions are not yet explored for the diversity of cercosporoid fungi, although they present diverse green forests favourable for the growth of these foliar fungi.

Conclusion

This study was initiated to review the records of all cercosporoid fungi reported from India up to 2021. Both monographs of *Cercospora* from India (Vasudeva 1963 and Kamal 2010) were revisited, along with new species records reported so far. We have found that many of these fungal descriptions need revision. The majority of species have been circumscribed based on morphology alone. Sequence data is available for very few species. Only a few species descriptions have been based on the combination of morphology and multi-locus sequence information.

Future prospectus

India is considered one of the 17 "megadiverse" countries in the world (Myers & al. 2000). A thorough survey of unexplored regions is necessary for foliar fungi, particularly cercosporoid fungi, to understand their global biodiversity. An initiative has become necessary to resolve the chaos in the taxonomy of cercosporoid taxa from India. The species reported need to be recollected from the original host and evaluated by morphology and sequence data. This "integrative" or "polyphasic" taxonomic approach has been shown useful in many different groups of fungi (Aime 2004; Pringle & al. 2005; Grünig & al. 2008; Stubbe & al. 2010; Van de Putte 2012; Stefani & al. 2014; Li & al. 2017; Haelewaters & al. 2018; Accioly & al. 2019; Jumbam & al. 2019). It is also necessary to conduct inoculation tests to confirm inferences drawn from taxonomic studies about host specificity and plant pathogenic behaviour. For example, it is doubtful whether isolates from different hosts with identical DNA barcodes and similar morphology have the ability to cross-infect hosts under natural conditions in the field. Although deposition of sequence data and culture is not mandatory, however, this practice would considerably enhance the value of the species descriptions, reduce confusion among species, and enrich the national and international culture collection banks as well. These critical issues, which have significant importance in plant health and quarantine, will only be resolved when fresh collections from type locations are made. As part of the initiative, we at our lab at Banaras Hindu University have begun the work involving the morphological, cultural, and sequence-based study of *Cercospora* and *Pseudocercospora* species reported from India.

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Ethical statement

All authors have read the manuscript and agreed to publish it. The authors declare no conflict of interest.

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