

## Some Additions to Indian Cercosporae — I

By Udit Narain & B. S. Mehrotra,

Botany Department, University of Allahabad, Allahabad

For the last few years a survey of the parasitic fungi in the neighbourhood of Allahabad was made. From the collections made 17 species of *Cercospora* on 18 hosts were found. They are listed below in Table 1.

Table I — Showing the list of hosts infected with species of *Cercospora* in the vicinity of Allahabad.

Sl.-No.	Host	Species
1.	<i>Nerium indicum</i> Mill.	<i>C. neriella</i> Sacc.
2.	<i>Gynandropsis pentaphylla</i> DC.	<i>C. cleomes</i> Ell. & Halst.
3.	<i>Quisqualis indica</i> Linn.	<i>C. quisqualidis</i> sp. nov.
4.	<i>Amberboa ramosa</i> (Roxb.) jafri	<i>C. amberboae</i> sp. nov.
5.	<i>Blumea lacera</i> DC.	<i>C. blumeicola</i> Das
6.	<i>Launaea asplenifolia</i> Hk. f.	<i>C. asplenifoliae</i> sp. nov.
7.	<i>Tridax procumbens</i> Linn.	<i>C. tridacis procumbentis</i> Govindu & Thirumolachar
8.	<i>Euphorbia hirta</i> Linn.	<i>C. euphorbiae</i> Kell. & Swingle
9.	<i>E. neriifolia</i> Linn.	<i>C. euphorbiae</i> Kell. & Swingle
10.	<i>Cyamopsis tetragonolobus</i> (Linn.) Taub.	<i>C. psoraleae</i> Ray
11.	<i>Glycine max</i> (L.) Merr.	<i>C. sojina</i> Hara
12.	<i>Wisteria chinensis</i> DC.	<i>C. wisteriae</i> Muller & Chupp
13.	<i>Lawsonia alba</i> Lamk.	<i>C. lawsoniae-albae</i> Thirum. & Govindu.
14.	<i>Abelmoschus esculentus</i> (L.)	<i>C. abelmoschi</i> Ell. & Ev.
15.	<i>Boerhaavia diffusa</i> Linn. Moench.	<i>C. boerhaavicola</i> Thirum. & Govindu
16.	<i>Lantana camara</i> Linn.	<i>C. lantanae-indicae</i> Munjal, Lall & Chona
17.	<i>Verbena</i> sp.	<i>C. verbeniphila</i> Spagazzini
18.	<i>Ipomoea carnea</i>	<i>C. ipomoeae</i> Winter

Collections from three of the hosts have been found to be new species based on the fact that they have never been reported on any species of their respective host genera, a criterion which is still found to be the only plausible course for speciation in the genus *Cercospora*. One species, *C. ipomoeae* Winter has never been reported earlier on *Ipomoea carnea* from any part of the world. The collections are kept in the personal herbarium of the second author and will also be deposited at U.S. National Herbarium at Beltsville, Maryland.

Description of the three new species and the other three species which were not known to be infected by *Cercosporae* in India are given here.

***Cercospora amberboae* spec. nov.**

Maculae orbiculares, plerumque 1—3 mm diam., obscure brunneae, purpureo-marginatae, hypostromate indistincto vel parum evoluto; conidiophora 2—15 fasciculata, divergentia, olivacea, non ramosa, 2—8 septata, recta, raro curvula vel geniculata,  $3.5\text{--}5.3 \times 53.4\text{--}163.9 \mu$ ; sporarum cicatrices superne tantum distinctae; conidia hyalina, recta, raro curvula, postice rotundata, a medio apicem versus attenuata, 3—14-septata,  $1.7\text{--}5.3 \times 28.5\text{--}124.7 \mu$ , raro usque ad  $192.5 \mu$  longa.

Leaf-spots circular, mostly 1—3 mm. in diameter, dark-brown with purplish border; stromata lacking or slight; conidiophores in fascicles of 2—15, divergent, olivaceous brown, uniformly coloured, not branched, multiseptate (3—8), mostly straight and rarely curved, tips always blunt, not or very rarely geniculate, spores distinct at tips only,  $3.5\text{--}5.3 \mu \times 53.4\text{--}163.9 \mu$ ; conidia hyaline, multiseptate (3—14), mostly straight and rarely curved towards apex, base rounded, broader in middle and narrower towards apex,  $1.7\text{--}5.3 \mu \times 28.5\text{--}124.7 \mu$ , rarely as long as  $192.5 \mu$  (Fig. 1 & 2).

Host: *Amberboa ramosa* (Roxb.) Jafri: Syn. *Volutarella ramosa* (Roxb.) Santapau, Compositae.

Type: *Amberboa ramosa*, Allahabad, Nov. 30, 1967, BSM Herbarium No. 10.

***Cercospora verbeniphila* Spegazzini**

(Bol. Acad. Nacion. Cienc. Repub. Argentine 29: 179, 1926)

Leaf-spots circular to irregular on the upper surface, yellowish to black, lower surface dull brown; stroma none or a few brown cells; conidiophores dark brown, paler and narrower towards the apex, septation of rare occurrence, unbranched, in fascicles, geniculate with prominent numerous scars,  $3.5\text{--}5.3 \times 64.1\text{--}117.6 \mu$ ; conidia sub-hyaline to pale olivaceous, obclavate to almost linear, straight to mildly curved, tip acute, 3—13 septate,  $1.7\text{--}5.3 \times 58.5\text{--}135.5 \mu$  (Figs. 3 & 4).

Host: *Verbena* sp. (Verbenaceae), collected at Allahabad, December 14, 1967; BMS Herbarium No. 11).

***Cercospora quisqualidis* sp. nov.**

Maculae lineares vel irregulares, brunneae, interdum confluentes et majores; hypostromate pseudoparenchymatico, obscure brunneo, 10—25  $\mu$  diam.; conidiophora pallide brunnea non ramosa, dense fasciculata, divergentia, raro septata, postice latiora, apicem versus attenuata, ibique tantum etiam interdum geniculata; conidia hyalina vel leniter curvula, angustissime obclavata vel cylindracea, postice

rotundata, antice attenuata, obtusiuscula vel subacuminata, 5—12-septata,  $1.7-3.5 \times 24.9-114 \mu$ .

Leaf spots to irregular, brown, coalascing with one another to form bigger brown patches, stromata of dark brown cells,  $10-25 \mu$  in diameter; conidiophores lighter brown, unbranched, in dense fascicles, divergent, septation of rare occurrence, base broader and apex tapering, geniculations mostly at tips, spore-scars prominent and abundant,  $3.5-5.5 \mu \times 35.60-71.0 \mu$  in size; conidia hyaline, straight to slightly curved, obclavate to cylindrical, base broad and tip acute, 5—12 septata,  $1.7-3.5 \mu \times 24.9-114.0 \mu$  (Fig. 5 & 6).

Host.: *Quisqualis indica* Linn. (Combretaceae).

Type: *Quisqualis indica*, Allahabad, Dec. 19, 1968, BMS Herbarium No. 12.

*Cercospora wistaria* Muller & Chupp  
(Arch. Inst. Biol. Vegetal. Rio de Janeiro 3: 97, 1936)

Leaf spots circular to angular, 1—8 mm. in diameter, mostly with dark brown centre and yellowish or orange margin; stromata usually absent or rarely slight with a few brown cells; conidiophores pale olivaceous brown, fascicles of 2—10, divergent, septations very rare, not branched, mostly straight, geniculation usually indistinct, spore scars a few at the tip,  $2.6-5.3 \mu \times 17.8-71.3 \mu$ ; conidia sub-hyaline to pale olivaceous, narrowly obclavate or almost cylindrical, straight to mildly curved, multiseptate (4—8), base obconic to subtruncate, tip conic,  $1.7-3.5 \mu \times 28.5-89.1 \mu$  (Fig. 7 & 8).

Host.: *Wistaria chinensis* DC. Papilionaceae.

Collected at Allahabad, Jan. 3, 1968, BSM Herbarium No. 13.

*Cercospora asplenifoliae* sp. nov.

Maculae orbiculares vel angulosae, 1—4 mm diam., in centro luteo-brunneae, brunneo-marginatae; hypostromate plerumque non evoluto; conidiophora obscure brunnea, non ramosa, 2—7-septata, recta vel curvula, raro geniculata,  $3.5-5.3 \times 71.3-188.9 \mu$ ; sporarum cicatrices plerumque raras; conidia hyalina, acicularia, recta vel leniter curvula, 6—19-septata, postice truncata apicem versus attenuata vel subacuminata,  $1.7-4.4 \times 53.4-142.6 \mu$ , interdum usque  $260 \mu$  longa.

Leaf-spots circular to angular, 1—4 mm. in diameter, brown in colour, centre tan and margin brown; stromata almost absent; conidiophores dark brown, unbranched, septate (2—7), straight to curved, geniculate occasionally once, visible spore scars rare,  $3.5-5.3 \mu \times 71.3-188.9 \mu$ ; conidia hyaline acicular, straight to slightly curved, multi-septate (6—19), base truncate, tip acute to subacute,  $1.7-4.4 \times 53.4-142.6 \mu$ , longest ones upto  $260 \mu$  (Fig. 9 & 10).

Host.: *Launaea asplenifolia* Hk. f.

Type: *Launaea asplenifolia*, Allahabad, Dec. 13, 1967, BSM Herbarium No. 14.

This species differs from *C. launaeae* Kothari, Bhatnagar & Bhatt described on the species of *Launaea nudicaulis* Hk. f. in having no stroma. Also the conidia are however more longer and narrower ( $1.7-4.4 \mu \times 53.4-260 \mu$  in *C. asplenifoliae* as compared with  $4-6 \mu \times 35-80 \mu$  in *C. launaeae*).

*Cercospora ipomoeae* Winter

(Hedwigia 26: 34, 1887)

Leaf-spots circular and scattered, centre gray with dark margin, 1-5 mm. in diameter, stromata lacking, conidiophores dark brown, septate, unbranched, geniculate,  $3.5-7.1 \mu \times 42.7-124.7 \mu$ ; conidia acicular to obclavate, straight to curved, hyaline multiseptate (upto 20), tip acute,  $1.7-3.5 \mu \times 53.4-320.0 \mu$  (Fig. 11 & 12).

Host.: *Ipomoea cernua* (Convolvulaceae).

Collected at Allahabad, July 25, 1968, BSM Herbarium No. 15.

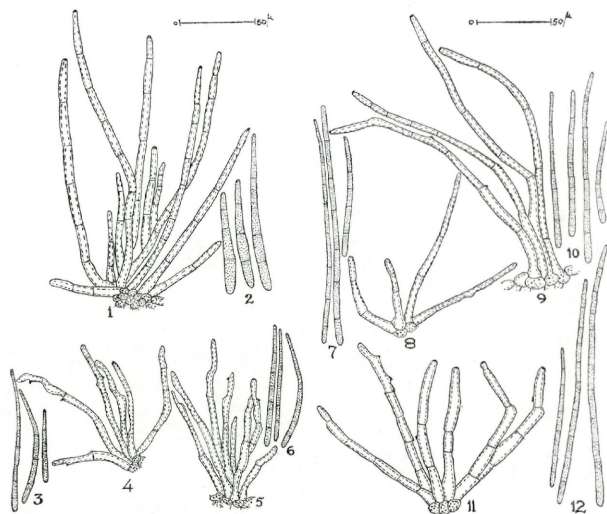


Fig. 1-2. Conidiophores and conidia of *Cercospora amberboae*; 3-4. Conidia and conidiophores of *C. verbeniphila*; 5-6. Conidiophores and conidia of *C. quisqualidis*; 7-8. Conidia and conidiophores of *C. wistariae*; 9-10. Conidiophores and conidia of *C. asplenifoliae*; 11-12. Conidiophores and conidia of *C. ipomoeae*.

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Autor(en)/Author(s): Narain Udit, Mehrotra B. S.

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