
STUDIES ON THE CERCOSPORAE OF PAKISTAN

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Abstract

Seven species of Cercospora vir., C. brachiata, C. catalpae, C. centrostachydis, C. daturicola, C. eucalyti, C. grevii and C. polygonacea are reported for the first time from Pakistan and a new species, C. ehriticola is described.

Introduction

Cercospora is a large cosmopolitan genus of dematiaceous hyphomycetes, causing leaf spots on a wide variety of host plants (Chupp, 1953). Ahmad (1956) reported 29 species of Cercospora on 31 hosts from Pakistan. Forty-two species have since been added to this list through the efforts of various workers specially by Khan & Kanal from Sind (Ahmad 1969). The writers have studied a large number of herbarium specimens and fresh collections and report here the following seven species for the first time from Pakistan and describe C. ehriticola, as a new species.


Leaf spots circular to angular, dark brown in colour, margins darker and well marked, 1-5 mm in diameter; fruiting amphiogenous; stromata small, light brown, up to 35 μ in diameter. Conidiophores fasciculate, up to 17 conidiophores in a fascicle, mostly divergent, pale to olivaceous brown, uniform in colour, slightly narrower near the tip, 0-3-geniculate, 0-4-septate, 22-148.5(231) X 3.5-5.5 μ, spore scar large and prominent. Conidia hyaline, acicular, straight to mildly curved, multiseptate. with truncate base and acute tip, 19.8-123.0 X 2.2-4.4 μ.

Specimen examined: Amaranthus sp. (MHL 1905) collected by A. Saleem from Risalawala, Faisalabad on 23.5.1971.

This is a new record of this species for Pakistan.


Leaf spots oval or angular to irregular, brown to fuliginous gray. 2-13 mm in diameter; fruiting amphiogenous but chiefly hypophysyllous, stromata none to small, dark brown in colour, up to 35.2 μ in diameter. Conidiophores fasciculate, olivaceous to light brown, uniform in colour, may be variously curved, 0-4-geniculate, 0-4-septate, unbranched, 44-130.9 X 3.3-5.5 μ; spore scar distinct consisting of fairly thickened ring. Conidia hyaline acicular, multiseptate, with truncate base and acute to sub-acute tip, 36.3-77 X (2.2—) 3.3-4.4 μ.

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Specimen examined: *Cataipa bignonoides* (MHL 1909) collected by Zakaullah from Jallo, Lahore on 18.9.1968.


Leaf spots circular to angular, light brown to black in colour. 1-3 mm in diameter; fruiting amphiogenous but mostly on the lower surface; stromata small consisting of a few brown cells. Conidiophores fasiculate divergent, up to 7 conidiophores in a fascicle, pale to dark brown, with dusty hyaline tip, sometimle irregular in width, straight to tortuous, base swollen, 0-3-genericate, 0-5-septate. 17-6-210 X 4.4-5.5 µ, spore scar distinct, consisting of thick ring. Conidia hyaline, rarely subhyaline, obclavate, straight to mildly curved, multi-septate, obconically truncate base, subcute to more or less obtuse tip. 24.2-128 X 3.3-5.3 µ.

Specimen examined: *Achyranthes aspera* (MHL 1538) collected by Mirza et al. from Gattwara on 3.11.1968.

As far as known to the authors, this is the first report of this fungus from Pakistan. Two other species, *C. achyranthes* H. & P. Sydow & C. achyranthina* Tliirm. & Chupp, have also been reported on this host. *C. centrostachydis* is distinct from *C. achyranthina* and *C. Achyranthes* in having obclavate conidia with obconic base and obtuse apex.

*Cercospora daturicola* (Spegazzini) Ray. Mycologia 36: 175, 1944.


Leaf spots circular to oval, white in the centre, margins definite, and darker in colour, 1-7 mm in diameter; fruiting amphiogenous but mostly epiphyllous, stromata small, olivaceous in colour. Conidiophores fasiculate, divergent, up to 10 conidiophores, (mostly 2-4) in a fascicle, pale to dark olivaceous in colour. 0-4-septate, septa rather indistinct, 0-3-genericate, 24.3-121 X 33.3-5.5 µ; spore scar small consisting of thin ring. Conidia hyaline, acicular, straight to mildly curved, with truncate base and subcute to subobtuse tip. 32-88 X 3.3-44 µ.


As far as known, this is a new record of this fungus for Pakistan. *C. Jamai-
censis* Chupp has also been reported on the same host genus, but it differs from *C. daturicola* in having hyaline, obclavato-cylindrical conidia with obconically truncate base.

*Cercospora eucalypti* Cook & Mass. Grivillea. 18: 7, 1889

Leaf spots none to circular or irregular, dark brown in colour, lighter in centre, 1-8 mm in extent; fruiting amphiogenous but mostly on the upper surface; stromata small light brown, up to 25 µ in diameter. Conidiophores fasiculate, fasiculate dense, tinged to dark olivaceous; uniform in colour and width, straight tortuous, 0-2-septate, 0-I genericate. 13.2-38 X 2.2-3.3 µ; spore scar very minute. Conidia subhyaline to tinged pale olivaceous, acicular to somewhat cyindric, straight to mildly curved, indistinctly multi-septate, with truncate to obconically truncate base, and acute (rarely subacute) tip. 28.7-726 X 2.2-3 3 µ.
Specimens examined: *Eucalyptus bicostata* (MHL 1903) collected by Zakaullah from Jallo, Lahore on 17.3.1969. *Eucalyptus* sp. (MHL 1904) collected by Zakaullah from Jallo, Lahore on 16.9.1968.

It is the first record of this fungus from Pakistan. These specimens agree with the description of *Cercospora eucalypti* except that conidiophores are more variable in colour and conidia are acicular. There is no other species of *Cercospora* occurring on *Eucalyptus* species which has acicular, conidia. However, the fungus is placed here tentatively under *C. eucalypti* till more information is available to justify the establishment of a new species.

*Cercospora grewiae* Srivastava & Mehta. Indian Phytopath. 4: 67. 1951.

Leaf spots circular to irregular, dull brown in colour involving major portion of the leaf surface; fruiting amphigenous but mostly epiphyllous; stromata small, not very clear, dark brown, up to 27.5 μ in diameter. Conidiophores fuscate, fasicules dense, up to 12 conidiophores in fasicule, light to dark brown, straight to mildly curved, 0-3-septate, 0-2-germinulae, 39.6-110 X 3.3-4.4 μ; spore scar small, prominent, consisting of fairly thickened ring. Conidia hyaline, acicular to somewhat obclavate, multi-septate, straight to slightly curved with rounded base and subacute tip. 33-66 X 4.4-5.5 μ.


As far as the writers are aware, this is the first record of this fungus from Pakistan and is the only species so far reported on *Grewia* species.

*Cercospora ehretiae* Saleem & Mirza sp. nov. Fig. I.

Stromata parva, olivacea vel brunnea, usque ad 50 μ in diameter. Conidio- phora fasiculata, olivacea vel brunnea, 0-3-septata, 0-2-germinulae, in inferiore parte occasionem attenuata. 22-71.5 X 3.3-4.4 (--5.5) μ. Conidia hyalina, acicularis, multi- septata, linearia vel leniter curvata, basalis truncata apice acuta. 23.1-69.3 X 2.2 --3.3 μ.

Leaf spots circular to irregular, dark brown, almost white centres with dark margins, 2-8 mm in diameter; fruiting amphigenous; stroma a small filling the stomatal cavity, olivaceous to dark brown in colour, up to 50 μ in diameter. Conidiophores fuscate, fasicules dense, up to 20 conidiophores in a fasicule, olivaceous to light brown, uniform in colour, almost uniform in width, straight to mildly curved, 0-3- septate, 0-2-germinulae, may be attenuated near tip. 22-71.5 X 3.3-4.4 (--5.5) μ; spore scar consisting of thin ring; conidia hyaline, acicular, indistinctly multi-septate, straight to slightly curve, with truncate base and acute tip. 23.1-69.3 X 2-3.3 μ.

Specimen examined: *Ehretia acuminate* (MHL 1908) collected by Zakaullah from Peshawar on 20.3.1971 (Type).

As far as we know the only species so far known to occur on *Ehretia* species is *C. ehretiae* Togashi & Katsuki, which has pale olivaceous and cylindero-oblanceolate conidia. Our specimen is quite distinct and hence has been made the type of a new species.
Fig. 1. *Cercospora ehriticola*. A: stroma with conidioaphores; B: Con'dia.
Cercospora polygonacea Ellis, Jour. Mycol. 1: 24, 1885.

Leaf spots circular, ferruginous brown to dark brown, 2-5 mm in diameter; fruiting amphigenous, chiefly on the upper leaf surface; stroma dark brown small up to 20 μ in diameter. Conidiophores fasiculate, fascicles divergent, up to 13 conidiophores in a fascicle, pale olivaceous to light brown, uniform in colour, 0-2-septate, 0-3-geniculate, straight to undulate, 38.4-177.7X4.4-5.5 μ, spore scar prominent. Conidia hyaline, acicular, straight to slightly curved, multisepitate, with truncate base and subacute tip: 33-93.5X2.2-4.4 μ.


Out of the five species of Cercospora reported on Polygonum species only two namely C. paludicola Cooke and C. polygonacea Ell. have hyaline conidia. C. polygonacea differs from C. paludicola in having acicular instead of obclavate conidia.

References

