

STUDIES ON THE CERCOSPORAE OF PAKISTAN

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Abstract

Seven species of *Cercospora* viz., *C. brachiata*, *C. catalpae*, *C. centrostachydis*, *C. daturicola*, *C. eucalypti*, *C. grewiae* and *C. polygonacea* are reported for the first time from Pakistan and a new species, *C. ehrlicola* 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 & Kamal 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. ehrlicola*, as a new species.

C. brachiata Ell. & Everhart, Jour. Mycol., 4: 5, 1888.

Leaf spots circular to angular, dark brown in colour, margins darker and well marked, 1-5 mm in diameter; fruiting amphigenous; 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.

Cercospora catalpae Winter, Hedwigia, 24: 203, 1885.

Leaf spots oval or angular to irregular, brown to fuliginous gray, 2-13 mm in diameter; fruiting amphigenous but chiefly hypophyllous, 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: *Catalpa bignonioides* (MHL 1969) collected by Zakullah from Jallo, Lahore on 18.9.1968.

Cercospora centrostachydis Chupp. A monograph of Fungus genus *Cercospora*. Tulaca N.Y. 32, 1953.

Leaf spots circular to angular, light brown to black in colour, 1-3 mm in diameter, fruiting amphigenous, but mostly on the lower surface; stromata small consisting of a few brown cells. Conidiophores fasciculate divergent, up to 7 conidiophores in a fascicle, pale to dark brown, with dusty hyaline tip, somewhat irregular in width, straight to tortuous, base swollen, 0-3-geniculate, 0-5-septate, 17.6-210 X 4.4-5.5 μ , spore scar distinct, consisting of thick ring. Conidia hyaline, rarely sub-hyaline, obclavate, straight to mildly curved, multiseptate, obconically truncate base, subacute 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 Gatwala 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* Tirm. & 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.

= *Cercosporina daturicola* spgazzini, Anal. Mus. Nac. B. Aires, 20: 425, 1910.

Leaf spots circular to oval, white in the centre, margins definite, and darker in colour, 1-7 mm in diameter; fruiting amphigenous but mostly epiphyllous, stromata small, olivaceous in colour. Conidiophores fasciculate, 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-geniculate, 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 subobtuse to subacute tip, 33-88 X 3.3-44 μ .

Specimens examined: *Datura alba* (MHL 1344) collected by C.H. Jafri from Faisalabad on 20.8.76; *D. alba* (MHL 290) collected by Zakullah & J.H. Mirza in March, 1966 from Faisalabad, (MHL 292) collected by Zakullah & J. H. Mirza from Faisalabad in March, 1966.

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

Cercospora eucalypti Cook & Masses, Grevillea, 18: 7, 1889

Leaf spots none to circular or irregular, dark brown in colour, lighter in centre, 1-8 mm in extent; fruiting amphigenous but mostly on the upper surface; stromata small light brown, up to 25 μ in diameter. Conidiophores fasciculate, fascicles dense, light to dark olivaceous; uniform in colour and width, straight tortuous, 0-2-septate, 0-1 geniculate, 13.2-38 X 2.2-3.3 μ ; spore scar very minute. Conidia subhyaline to light pale olivaceous, acicular to somewhat cylindrical, straight to mildly curved, indistinctly multiseptate, 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 Zakaulah from Jallo, Lahore on 17.3.1969. *Eucalyptus* sp. (MHL 1904) collected by Zakaulah 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 greviae 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 fasciculate, fascicles dense, up to 12 conidiophores in fascicle, light to dark brown, straight to mildly curved, 0-3-septate, 0-2-geniculate, 39.6-110 X 3.3-4.4 μ ; spore scar small, prominent, consisting of fairly thickened ring. Conidia hyaline, acicular to somewhat obclavate, multiseptate, straight to slightly curved with rounded base and subacute tip, 33-66 X 4.4-5.5 μ .

Specimen examined: *Grewia asiatica* (MHL 1278) collected by Mirza & Nasir from University of Agriculture, Faisalabad on 30.12.1965.

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 ehreticola Saleem & Mirza sp. nov. Fig. 1.

Stromata parva, olivacea vel brunnea, usque ad 50 μ in diameter. Conidiophora fasciculata, olivacea vel brunnea, 0-3-septata, 0-2-geniculata, in inferiore parte occasionem attenuata, 22-71.5 X 3.3-4.4 (—5.5) μ . Conidia hyalina, aciculata multiseptata, linearia vel leniter curvata, basaliter 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; stromata small filling the stomatal cavity, olivaceous to dark brown in colour, up to 50 μ in diameter. Conidiophores fasciculate, fascicles dense, up to 20 conidiophores in a fascicles, olivaceous to light brown, uniform in colour, almost uniform in width, straight to mildly curved, 0-3-septate, 0-2-geniculate, 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 multiseptate, straight to slightly curve, with truncate base and acute tip, 23.1-69.3 X 2-3.3 μ .

Specimen examined: *Ehretia accuminata* (MHL 1908) collected by Zakaulah 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-obclavate conidia. Our specimen is quite distinct and hence has been made the type of a new species.

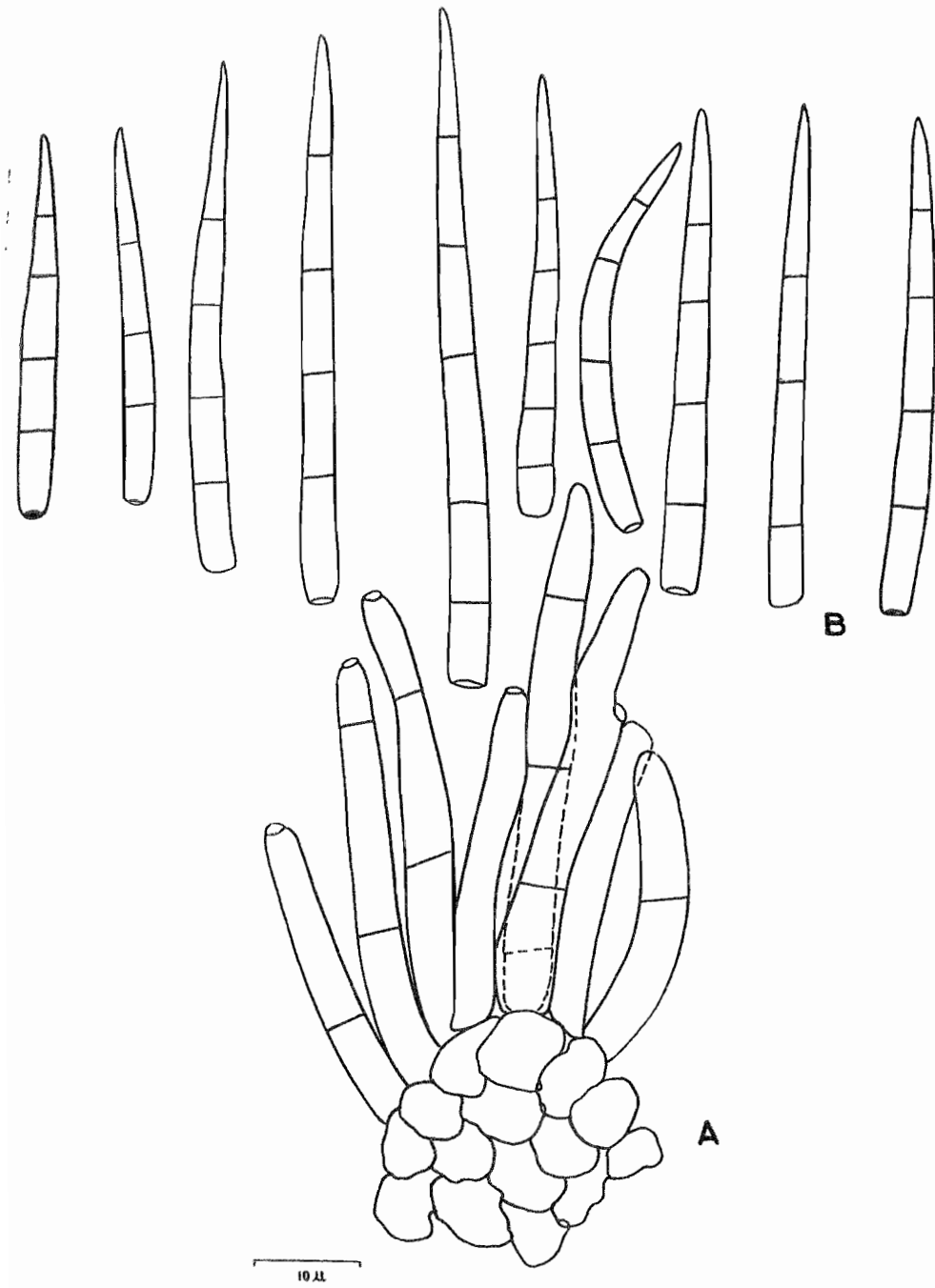


Fig. 1. *Cercospora ehrlicola*. A. stroma with conidiophores; B. Conidia.

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; stromata dark brown small up to 20 μ in diameter. Conidiophores fasciculate, 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, multiseptate, with truncate base and subacute tip: 33-93.5X2.2-4.4 μ .

Specimen examined: *Polygonum barbatum* (NHL 1536). Collected by Mirza *et al.* from Gatwala, Faisalabad on 3.11.1968.

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

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