Short Communication

The Journal of Animal & Plant Sciences, 23(2): 2013, Page: 670-671
ISSN: 1018-7081

FIRST REPORT OF LEAF SPOT DISEASE OF *CALOTROPIS GIGANTEA* CAUSED BY *PASSALORA CALOTROPIDIS* IN LAHORE, PAKISTAN

I. Mukhtar, I. Khokhar and S. Mushtaq

First Fungal Culture Bank of Pakistan (FCBP), Institute of Agriculture Sciences, University of the Punjab, Lahore, Pakistan
Corresponding author e-mail: erumm21@yahoo.com

ABSTRACT

Aak [*Calotropis gigantea* (L.) R. Br. ex. Ait.] leaf and stem samples infected by leaf spot were collected during August and September 2011 from Lahore Pakistan . Infected leaf and stem surfaces were covered with circular to irregular blackish spots. Conidiophores 15-50 × 4-6 x µm, arising from substomatal stroma in loose fascicles of 8 -15, pale to light golden yellow, simple, sometimes geniculate near tip, 0-3 transversely septate. Conidia solitary, thin and smooth walled, cylindric to cylindro-obclavate, 0-8 septate, obconic base, subobtuse to bluntly rounded tip, 10-130 × 4-6 µm. Morphological characteristics and pathogenecity test confirmed the identification as *Passalora calotropidis* . However, this is the first report of *P. calotropidis* on *Calotropis gigantea* from Pakistan.

Key words: leaf spot, Calotropus, Pakistan, *Passalora calotropidis.*

In September 2011, a leaf spot epidemic of ak [*Calotropis gigantea* (L.) R. Br. ex. Ait.], growing in wasteland sites was observed in Lahore, Pakistan. Infected shurb population was young to mature, producing flower as and seeds, ranging from 2-6 feets in height. Disease incidence was more than 80% along with extensive defoliation of shrub. In early stage, small, circular to irregular dark brownish spots of 0.5 cm - 2 cm in size were visible on both sides of the leaf. A halo chlorotic yellow tissue zone was also observed with disease spot on leaves (Fig 1 A and D). As the disease progressed, the leaf turned yellow followed by abscission (Fig 1B). Disease spots had been observed on older leaves and lower stem (Fig 1C). A voucher specimen (IR00027) has been deposited in First Fungal Culture Bank of the Pakistan (FCBP), Institute of Plant Pathology, University of the Punjab, Lahore, Pakistan.

To observe characteristics of fungus, fresh hyphae, conidiophores and conidia were stripped off from infected leaf surface with clear adhesive tape, mounted on a microscopic slide with water and examined using a light microscope. Morphological characteristics of the pathogen were recorded for identification.

Conidiophores arising from superficial mycelium in loose fascicles of 8 to15, pale to light golden yellow, emerging from substomatal stroma, somewhat irregular in width, sparingly, mostly simple often variously curved, sometimes once mildly geniculate near tip, 0-3 transversely septate 15-50 × 4-6 x µm, rarely branched. Small conidiogenous scars were mostly inconspicusous and not markedly thickened on conidiophores (Fig 2E). Conidia were solitary, initially hyaline later pale to light golden yellow, thin and smooth walled, cylindric to cylindro-obclavate, straight or nearly so, 0-8 septate, sometimes constricted at septa, obconic base, sub obtuse to bluntly rounded tip, 10-130 × 4-6 µm (Fig 2F). The fungus was identified as *Passalora calotropidis* [(Ellis and Everh.) U. Braun 2000].

Isolation of *P. calotropidis* was done on 2% Malt Extract Agar (MEA) and 2% Potato Dextrose Agar (PDA) media. Fresh conidia were transferred from infected leaf to media plates by using a sterilized culturing needle. Inoculated plates were incubated at 25^{o}C in dark for 5 days. Pure fungal colonies reaching 3-5 cm in diameter; golden brown to dark brown, circular with entire margin with fuscous-black reverse. Fungal colony was convex and pale greenish grey medium aerial mycelium on surface. (Fig 2 A- D).

Figure1: Leaf spot infections of *Calotropis gigantea* by *Passalora calotropidis*. (A) Severe infections on the plants (B) yellowing of leaves due to infection (C) infection of stem (D) leaf spot on both surfaces of leaf

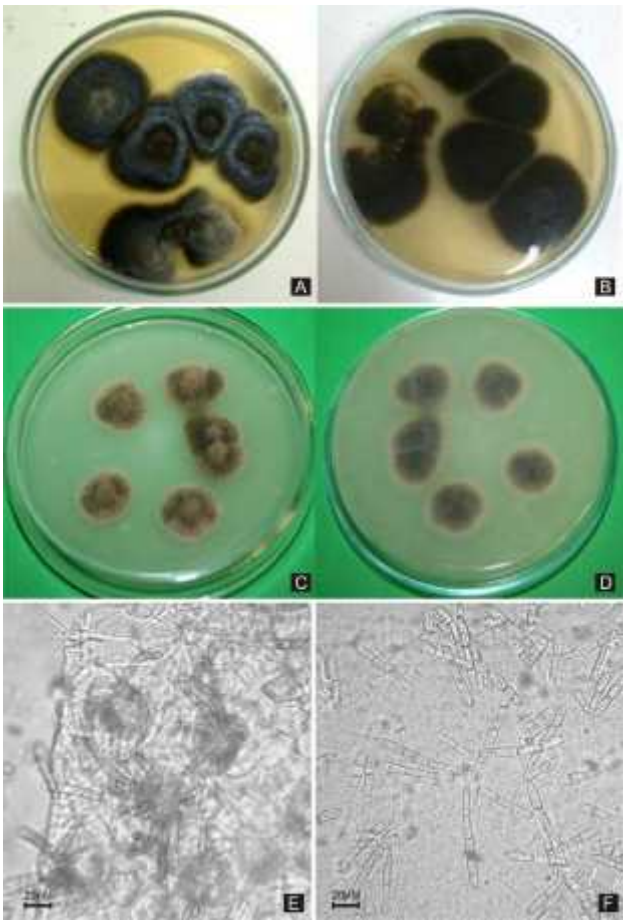

Figure 2: Morphological characters of *Passalora calotropidis* . (A) colony morphology on MEA (B) colony reverse on MEA (C) colony morphology on PDA (D) reverse on PDA (E) fasiculate conidiophore on leaf (F) shapes of conidia

Koch's Postulates were carried out by dusting conidia from the affected leaves on 3 healthy plants of 60 days old healthy ak plants. A sterile brush was used to transfer conidia from the affected leaves to fully expanded leaves of healthy plants. For control, sterile brush was touched on healthy plant leaves. A plastic bag was placed around each plant for a week and then removed. Leaf spots appeared on both upper and lower surfaces of older leaves of inoculated plants after 10 days. Leaf spots were similar to those described previously on effected plant. No symptoms were developed in control plants. Fungal colony morphology on the leaves and the morphological characteristics were as described above.

Passalora calotropidis has been reported throughout America Australasia (Wilkinson et al. 2005) and Jammu Kashmir valley (IMI 95545, 1961). However, *P. calotropidis* has been identified as leaf spot pathogen of *Calotropis procera* in India and Pakistan (Khan, 1961; Chaudhary, 1988). Due to lack of mycological and pathological study on *C. gigantean*, no disease record has been found in literature Thus, this is the first record of leaf spot disease of *Calotropis gigantea* caused by *Passalora calotropidis* from the Lahore district of the Punjab state of Pakistan.

REFERENCES

Braun, U. (2000). Annotated list of *Cercospora* spp. described by *C. Spegazzini*. *Schlechtendalia* **5**: 57-79.

Chaudhary, R. (1988). IMI 330842, *Passalora calotropidis* associated with *Calotropis procera*. Uttar Pradesh, India. IMI records for geographical unit Asia.1988-11-11.

Khan, S. A. (1961). IMI 90118, *Passalora calotropidis* associated with *Calotropis procera* Pakistan. IMI records for geographical unit Asia. 1961-11-15.

IMI 95545. *Passalora calotropidis* associated with *Calotropis gigantean*. Jammu-Kashmir. IMI records for geographical unit Asia. 1961-12-20.

Wilkinson, P. M., S. T. Hall, T. S. Marney, R. G. Shivas (2005). First record of *Passalora calotropidis* in Australia and it generic position. *Australian Plant Pathology* **34**: -95-98.