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First Report of Eye Leaf Spot (ELS) Disease of *Pleomele reflexa* var. *gracilis* and *Pleomele reflexa* var. *variegata* caused by *Drechslera australiensis* in India

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A B S T R A C T

An eye leaf spot (ELS) disease of *Pleomele reflexa* var. *gracilis* and *Pleomele reflexa* var. *variegata* is prevalent in India. They are very popular and hardy ornamental plants which are found mostly in Indian houses and gardens. Symptomatic can be seen on the leaves like an eye shaped with dark brown margin and light brown in the centre. Purified fungal suspension (2 x10^5 conidia/ml) was sprayed on healthy plants for the confirmation of pathogencity test. Koch's Postulates were established. This fungus was identified as *Drechslera australiensis* and is the first report of 'eyespot disease' on these hosts from India.

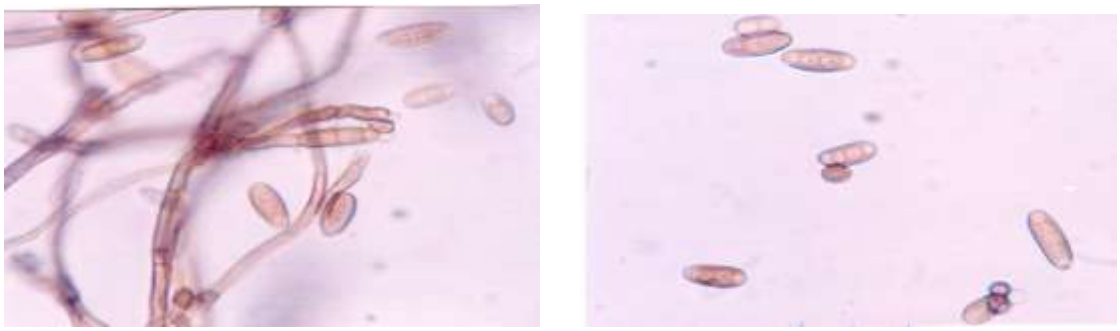
Introduction

Pleomele reflexa var. *gracilis* is a showy plant. Leaves are densely clustering, short, narrow, leathery, glossy and dark green. *Pleomele reflexa* var. *variegata* have leaves margined by two wide bands of golden yellow or cream colour. Both these plants are very popular and hardy house's plants (Figure 1). These can be grown in semi- shade and bright diffused light. Disease encountered by these plants reduces their ornamental values (Bose *et al.*, 2004). The leaves are important photosynthetic organ of a plant. Large number of leaves and their bigger size provide an ideal substratum for landing of numerous microbes. Many of these microbes with a capacity to enter through natural openings or through dissolution of cell wall can cause leaf spot diseases (Arya and Arya, 2003). *Pleomele reflexa* var. *gracilis* and *P. reflexa* var. *variegata* are grown in Department of

Horticulture, C.S. Azad University of Agriculture and Technology, Kanpur for production of ornamental nursery for beautification purpose. Some lesions were observed on these plants during April to August- 2007. These lesions were minute dots to circular and round to oval in shape with dark brown margin and light brown in the centre like an 'eye-shaped' appearance and approximately 3-8 X 0.5-4mm in size. Sometimes these spots are surrounded by a yellowish halo and coalesce with each other thus becoming irregular in shape. The infected leaves exhibited drying from tip downwards. The disease infection can be first observed on older leaves. Gradually all leaves get infected in the later stages of infection and finally result in an eye leaf spot. The infected portion of the leaves finally looked papery (Figure 2). Infected leaves were collected in clean polyethylene bags and brought to the laboratory. The infected leaves should be disinfected /surface sterilized in 10%Clorex (0.5%) solution for 2 minutes. Thereafter, wash the material thoroughly using sterilized distilled water. Then small leaf bits from margin of newly emerged spot were cut with the help of a sterilized scalper.

Fig.1&2 Nursery of of *Pleomele reflexa* var. *gracilis* and *Pleomele reflexa* var.*variegata* plants & Eye Leaf spot caused by *Drechslera australiensis* on *Pleomele reflexa* var. *gracilis* (B,C) and variegate (A,D).

Fig.3A&B Spores and mycelium of *D. australiensis* and Spores of *Drechslera australiensis*



The leaf bits were dipped in 0.1%$Hgcl_2$ solution for 30 seconds with the help of sterilized forcep and washed thoroughly 4-5 times with sterilized water to remove the traces of $Hgcl_2$. The pieces were transferred with the help of sterilized forcep into Petri dishes already poured in with sterilized 2% potato dextrose agar (PDA) medium and were kept in B.O.D. chamber at 25^0+1^0C for incubation of the pathogen. The myclial growth was viable around the pieces; hyphal tips from the advancing mycelium were transferred aseptically into the sterilized culture tubes containing 2% PDA medium. The culture was purified by single spore technique method (Vishunavat and Kotle, 2008). For confirmation of the pathogenicity test, it was prepared to homogenous suspension from one week's old culture in sterilized water. The suspension containing conidia and mycelia bits was churned in warring blender and strained with muslin cloth. The suspension containing approximately 2 $x10^5$ conidia/ml was sprayed on healthy plants with the help of automizer and sterile water was used as a control. The characteristic lesions developed within 7 days of inoculation and Koch's postulates were fully established. On the basis of pathogenicity, morphological and cultural characteristics of fungus were identified *Drechslera australiensis* (Bugnicourt) Subram and Jain ex M.B. Ellis. The fungus was also confirmed by Indian Type Culture Collection, Department of Mycology and Plant Pathology, Indian Agricultural Research Institute, New Delhi, India and they provide to me an accession number (ITCC - 6321). Mycelium was brown to blackish brown, effuse and conidiophores were 85.2-304.9 X 2.7-6.0 µm with brownish colour. Dimensions of conidia were 14.2 – 31.2 X 8.5 – 14.7 µm, brownish colour and round at the both ends with mostly three septate (Figure 3A and B). Arya and Arya (2003) reported presence of *Helminthosporium australiensis* on *Tabebuia pentaphylla* from Gujarat (India). Leaf blight of Sorghum caused by *Drechslera australiensis* from India reported by Mathur and Bunker (2002). *Drechslera* sp. has been also reported as causing brown spot or sheath blight disease of rice in Colombia, Panama, Peru and India (Ahn, 1980, Rangaswani and Mahadevan, 1999) and leaf spot disease of barley in Uruguay (Gamba and Tekauz, 2003) and net blotch symptoms on barley in Australia(Jayasena *et al.,* 2004). The pathogen has a wide host range which is evident from its presence in various cereals, grasses, vegetable crops, fruits and ornamental plants etc. (Sivanesan, 1987; Shoemaker, 1959; Subramanian and Jain, 1966; Al-Kassim and Monawar, 2000; Akhund *et al.,* 2010; Kushwaha *et al.,* 1999). To the best of our knowledge, this is the first report of *Drechslera australiensis* as a pathogen on *Pleomele reflexa* var. *gracili*s and *Pleomele reflexa* var. *variegata* in India.

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