

DOI: 10.15740/HAS/IJPS/11.2/288-290 Visit us - www.researchjournal.co.in

Research Article

New record occurrence of mycosphaerella leaf spot of eucalyptus in Himachal Pradesh

SUNITA CHANDEL AND VIJAY KUMAR

SUMMARY

A study on occurrence and distribution of Mycosphaerella leaf spot of Eucalyptus was conducted at Solan district of Himachal Pradesh during August, 2015 to December, 2015. On the basis of the morphological characteristics, the fungus was identified as *Mycosphaerella cryptica* and *Mycosphaerella marksii* which produced symptoms like necrotic spots and patches on leaves and presence of crinkled and distorted foliage. Ascopores of *M. cryptica* and *M. marksii* are hyaline, with one septum, fusiform to tunecate and whose size varies from 12-16 x 2-4 µm and 11-14 x 2-3 µm, respectively.

Key Words : Mycosphaerella spp., Eucalyptus, Conidia

How to cite this article : Chandel, Sunita and Kumar, Vijay (2016). New record occurrence of mycosphaerella leaf spot of eucalyptus in Himachal Pradesh. *Internat. J. Plant Sci.*, **11** (2): 288-290, **DOI: 10.15740/HAS/IJPS/11.2/288-290**.

Article chronicle : Received : 14.03.2016; Revised : 09.05.2016; Accepted : 15.06.2016

Euclyptus are highly favoured plantation species as they are fast growing and easy to cultivate. Its timber is an important source of fibre to the international pulp and paper industry. The plant is also used for the control of various weeds, tolerant to air pollution, insect pests and plant fungal diseases (Vaid *et al.*, 2010; Thakar and Mishra, 2010 and Bisht *et al.*, 2013). A number of foliar plant pathogens have been reported to impact on yields in plantations of Eucalyptus species in Asia including *Mycosphaerella* spp., *Phaeophleospora* spp., *Cryptosporiopsis* spp. and

----- MEMBERS OF THE RESEARCH FORUM 🕶

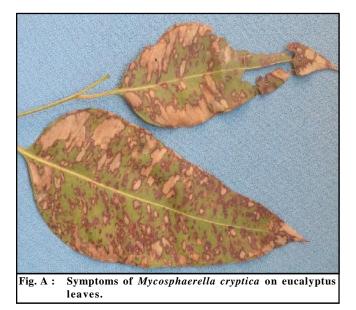
Author to be contacted :

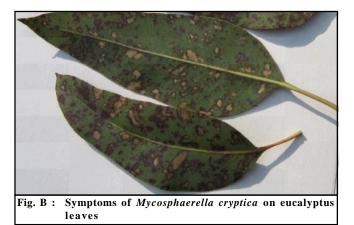
SUNITA CHANDEL, Department of Plant Pathology, Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, SOLAN (H.P.) INDIA Email: schandelmpp@yahoo.co.in

Address of the Co-authors: VIJAY KUMAR, Department of Plant Pathology, Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, SOLAN (H.P.) INDIA Email: vnarwal777@yahoo.com Cylindrocladium spp. (Old et al., 2003 and Barber, 2004). Among these, Mycosphaerella spp. are most prominent leaf spot encountered in various eucalyptus plantations. The losses estimated to be 25 per cent from the foliar pathogens (Balmelli et al., 2012). The evidence of leaf spots losses was apparent during the routine surveys conducted which resulting into high magnitude of losses in Nauni, Baddi and Nalagarh region of district Solan of Himachal Pradesh. Therefore, the present study was conducted to study the symptoms to ascertain the cause of the leaf spot pathogen by proving the pathogenesity of the same (Park et al., 2000). The genus Mycosphaerella as observed on Eucalyptus is well defined and its several distinct anamorphic states were also listed by various workers (Crous and Wingfield, 1996; Crous et al., 1993; Dick and Gadgil, 1983 and Dick and Dobbie, 2001). Mycosphaerella leaf spot diseases were detected by presence of necrotic spots or patches and pseudothecia on leaves and presence of crinkled and distorted foliage (Dick and Dobbie, 2001). The pathogen M. marksii Carnegie and Keane, a species first described in Australia (Carnegie and Keane, 1994) was reported in 1995 causing a leaf spot on E. camaldulensis from Vietnam. M. cryptica infects both juvenile and adult leaves of a wide range of eucalyptus. This pathogen in severe cases produces large, strawcoloured necrotic areas. Many variations in symptom development are associated with Mycosphaerella infections resulting in different combinations of lesion size, colour and morphology. Affected trees suffer premature defoliation and severe disease can cause stunting of trees (Carnegie and Keane, 1994; Carnegie, et al., 1997; Park and Keane, 1982; Park and Keane, 1987 and Park 1988). Objective of this study was to know the occurrence of the foliar diseases infecting eucalyptus in Himachal Pradesh and monitoring their occurrence, so that in future this disease could be manageable, if become severe.

MATERIAL AND METHODS

In order to record the symptom of leaf spotting fungi the eucalyptus plantations were regularly surveyed from August, 2015 to December, 2015 of different regions in district Solan of Himachal Pradesh. The characteristic symptoms were observed and the infected leaves of the eucalyptus tree were collected in polythene bags and brought to the laboratory for microscopic examination. Morphological characteristics of the fungus were studied with help of light microscope and conidial size was measured with micrometry (Park *et al.*, 2000) (Fig. A and B).





RESULTS AND DISCUSSION

During the continuous surveys of different regions of the Solan district of Himachal Pradesh eucalyptus plantation was predominated with leaf spoting pathogens which were identified as Mycosphaerella cryptica and *Mycosphaerella* marksii. The pathogens Mycosphaerella cryptica infected young as well as older foliage of eucalyptus trees, resulting in necrotic spots or patches, pseudothecia formation on leaves and presence of crinkled and distorted foliage whereas Mycosphaerella marksii is commonly associated with older juvenile leaves (Carnegie and Keane, 1994). Pathogenicity of the fungi isolated was proved by artificially inoculating the spores/conidia on the leave surfaces by covering the eucalyptus seedlings with perforated polythene sheets and separately moistened for 15 days. Initially the symptom observed were redbrown colour lesions (often with a purple margin) later becoming grey-brown. These were round or irregular in shape and present on both sides of the leaves. Ascopores of *M. cryptica* and *M. marksii* were hyaline, with one septum, fusiform to tunecate and whose size varied from $12-16 \times 2-4 \,\mu\text{m}$ and $11-14 \times 2-3 \,\mu\text{m}$ (Fig. 1) as reported by Park, (1988) and Carnegie and Keane (1994), respectively.



Fig. 1: Ascopores of Mycosphaerella cryptica

Internat. J. Plant Sci., 11 (2) July, 2016 : 288-290 289 Hind Agricultural Research and Training Institute

REFERENCES

- Balmelli, G, Simeto, S., Altier, N., Marroni, V. and Diez, J.J. (2012). Long term losses caused by foliar diseases on growth and survival of *Eucalyptus globulus* in Uruguay. *New Forests*, **44**(2) : 249-263.
- Barber, P.A. (2004). Forest pathology: the threat of disease to plantation forests in Indonesia. *Plant Pathol. J.*, **3**: 97-104.
- Bisht, S., Kumar, P., Raghavan, S. and Purohit, J. (2013). *In vitro* management of Curvularia leaf spot of maize using botanicals, essential oils and bio-control agents. *Bioscan*, **8**(3): 731-733.
- Carnegie, A.J. and Keane, P.J. (1994). Further *Mycosphaerella* species associated with leaf diseases of Eucalyptus. *Mycolog. Res.*, **98**: 413-418.
- Carnegie, A.J., Keane, P.J. and Podger, F.D. (1997). The impact of three species of *Mycosphaerella* newly recorded on Eucalyptus in Western Australia. *Australasian Plant Pathol.*, **26**: 71-77.
- Crous, P.W., Ferreira, F.A., Alfenas, A.C. and Wingfield, M.J. (1993). *Mycosphaerell asuberosa* associated with corky leaf spots on Eucalyptus in Brazil. *Mycologia*, **85**: 705-710.
- Crous, P.W. and Wingfield, M.J. (1996). Species of *Mycosphaerella* and their anamorphsa ssociated with leaf blotch disease of Eucalyptus in South Africa. *Mycologia*, **88** : 441-458.
- Dick, M.A. and Dobbie, K. (2001). *Mycosphaerell asuberosa* and *M. intermedia* on Eucalyptus in New Zealand.

New Zealand J. Bot., 39: 269-276.

- Dick, M.A. and Gadgil, P.D. (1983). Eucalyptus leaf spots. Forest Pathology in New Zealand, 1: 7.
- Old, K.M., Wingfield, M.J. and Yuan, Z.Q. (2003). *A manualof diseases of Eucalypts in South-East Asia*. Center for International Forestry Research, Bogor.
- Park, R.F. (1988). Effect of certain host, inoculum and environmental factors on infection of Eucalyptus species by two *Mycosphaerella* species. *Trans. British Mycolog. Soc.*, **90**: 221-228.
- Park, R.F. and Keane, P.J. (1982). Leaf diseases of Eucalyptus associated with *Mycosphaerella* species. *Trans. British Mycolog. Soc.*, **79** : 101-115.
- Park, R.F. and Keane, P.J. (1987). Spore production by Mycosphaerella species causing leafdiseases of Eucalyptus. Trans. British Mycolog. Soc., 89: 461-470.
- Park, R.F., Keane, P.J., Wingfield, M.J. and Crous, P.W. (2000). Fungal diseases of eucalyptfoliage. In: Keane, P.J., Kile, G.A., Podger, F.D. and Brown B.N. (eds). *Diseases* and pathogens of eucalypts, 153-239. CSIRO, Collingwood, Victoria.
- Thakar, B.K. and Mishra, P.C. (2010). Dust collection potential and air pollution tolerance index of tree vegetation around Vedanta aluminium limited, Jharsuguda. *Bioscan*, **3**: 603-612.
- Vaid, S., Batish, D.R., Singh, H.P. and Kohli, R.K. (2010). Phytotoxic effect of eugenol towards two weedy species. *Bioscan*, **5**(3): 339-341.

