

LEAF BLIGHT OF EUCALYPTUS IN NURSERIES

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A large number of seedlings of *Eucalyptus* are raised in forest nurseries for afforestation, road side and avenue plantations. Usually the sowing is done during February and the seedlings are maintained in polythene bags for the plantation during July.

During the course of study of nursery diseases a severe leaf blight of *Eucalyptus* (*E. camaldulensis*, *E. tereticornis* and *E. hybrid*) caused by *Phaeoseptoria eucalyptii* (Hansf.) Walker was recorded. Even the big trees of 10 to 15 years were also found to be infected by this fungus. *Phaeoseptoria eucalyptii* (Hansf.) Walker was recorded on *E. globulus* from Mysore (Padaganur and Hiremath, 1973). Sharma and Mohanan (1981) also noticed this disease in *Eucalyptus* from Kerala. The present report indicated that the disease is being reported for the first time from Madhya Pradesh, Maharashtra, Gujarat, and Rajasthan under jurisdiction to this centre.

Symptoms of Disease

The infection started from the margin or tip of the leaves as minute spots. The spots later coalesced and covered the larger area of leaf lamina. Ultimately the black powdery coating of the fungus appeared on the leaf

surfaces. The severity of infection and growth of the fungus was more on the upper surface as compared to the lower surface. The infected spots became dry and brittle. Sometimes whole of the leaves dried due to severity of infection and growth of the fungus was more on the upper surface as compared to the lower

of infection. Under stereoscopic observation of the infected leaves, it was noticed that black granular dots of pycnidia spreaded all over the infected surfaces. The mycelium of the organism intensely interwoven to form a thin sheet of mycelium on the leaf surfaces. The morphology of the fungus agree with the description made by Sharma and Mohanan (1981).

At the advanced stage of infection premature defoliation of the leaves occurred. Only few leaves on the tip of the seedlings could be noticed. The seedlings were very thin and zigzag in nature. The growth was not sturdy and the seedlings appeared to be of low grade.

Occurrence of Disease

The disease occurred with a varied intensity in different localities. Disease percentage

was always related with the humidity of the area. The percentage of disease is indicated in Table-1.

Histopathology

The infected leaves were fixed in F.A.A. solution. The F.A.A. was removed by thorough washing of the leaves in 20 per cent alcohol and then thin sections were obtained. It was noticed that the mycelium was covering the whole surface of the leaves. Its inter as well as intracellular development in the mesophyll tissue was noticed. The hyphae killed the mesophyll cells and accumulated to form the pycnidia in the subepidermal region. On the maturity of pycnidia the epidermis was burst out and through the opening a large number of conidia oozed out. On examination of the infected dried leaves, the pycnidial ooze dried out which ultimately appeared as a small conidial column.

Mode of Penetration

The large number of conidia which develops on the leaves. They were wind disseminated. Sometimes the conidia perennated in the fallen litter. As soon as the conidia had fallen on the healthy leaves, they started germination under favourable humidity (50-90%) and temperature (25°-32°C). Possibly the leaf exudates under favourable moisture conditions stimulated the conidial germination on the surfaces. The germ tube penetrated either through the stomata or through the cuticle of the leaves. The fungus was capable of infecting the leaves of different age groups except the tender leaves in the growing tips.

Epidemiology

As already mentioned that the fungus survived in the fallen

Table 1

The intensity of seedling blight of Eucalyptus in nurseries

Name of nursery	Total no. of seedlings	Number of seedlings infected	Percentage of disease
Pariyat (Jabalpur)	2500	2000	80.0
SFRI (-do-)	615	300	48.7
RFRC (-do-)	540	330	61.1
Amarkantak	3000	2500	83.3
Jagdarpur	650	390	60.0

infected leaves in the litter. A large number of conidia were produced from the pycnidia which disseminated through the air. The infection was more severe during hot-humid conditions specially in August and September. The infection started after onset of monsoon when the atmospheric humidity is increased 70% or above. The regular watering in polythene seedlings or in the beds favoured the development of disease.

It was noticed that the accumulation of rain water as well as irrigation water near the seedling stock favoured the spread of disease. The contact between seedling to seedling also made the seedling vulnerable for infection. A temperature between 25° C - 32° C was most favourable for the infection. The intensity of infection was more in seedling which were given nitrogenous fertilizers.

Management

The infected material under the plantations and also below the seedling in nurseries should be removed properly as the infected fallen materials produce the huge quantity of active spores capable of infecting the healthy seedlings.

The infected seedlings should be sorted out from the seedling stock and they should be destroyed. Over crowding of the seedling in nursery should not be practised.

The water logging conditions around the nursery beds or polythene seedlings should be avoided and the seedlings should be managed with proper irrigation.

Dithane M-45 at 0.2% completely checked the germination of conidia in laboratory test. On the basis of laboratory studies the fungicide was sprayed on the nursery seedling which significantly controlled the disease. Its two sprays, one during the first week of July and another in the last week of September completely avoided the infection.

References

Padaganur, G. M. and P. C. Hiremath (1973). *Phaeoseptoria eucalyptii* A new record to India. *Mysore J. Agric. Sci.* 7: 326-337.

Sharma, J. K. and C. Mohanan (1981). An unrecorded leaf spot disease of *Eucalyptus* in Kerala caused by *Phaeoseptoria eucalyptii* (Hansf.) Walkor *Curr. Sci.* 50: 865-866.