

Research Paper :

Effect of different carbon and nitrogen sources on the growth and sporulation of *Alternaria alternata* (Fr.) Keissler causing leaf blight of cowpea

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SUMMARY

The pathogenic fungus was isolated on PDA medium. The pathogen was taxonomically identified as *Alternaria alternata* (Fr.) Keissler. The colony of *Alternaria alternata* was circular, grayish black with whitish growth on the upper surface on PDA with profuse growth and sporulation. The good growth and sporulation of the test fungus was obtained on Maltose as a source of carbon while Ammonium nitrate was found to be good nitrogen source for growth of the test fungus.

Key words :

Alternaria alternata, Carbon and nitrogen source, Cowpea

India grows a variety of pulse crops on about 223.91 lakh hectares with annual production of 133.81 lakh tonnes. In Maharashtra, pulses are cultivated on 34.32 lakh hectares area with a productivity of about 584 kg^{-ha} (Anonymous, 2007). Among the pulses, cowpea [*Vigna unguiculata* (L.) Walper] is nutritionally the most important legume crop containing 63.6 per cent carbohydrates, 24.8 per cent proteins, 1.9 per cent fats, 6.3 per cent fiber, 3-3.8 per cent ash and 9-11 per cent moisture. It is a rich source of Calcium and Iron.

Area under cowpea in India is to the tune of 1.5 million hectares with annual production of 0.5 million tonnes (Reddy, 2004). In Maharashtra, it is cultivated on 11800 hectares area with a productivity of about 390 kg^{-ha} (Apte and Jadhav, 2002). In the Konkan region of Maharashtra cowpea is grown as a sole crop, mostly during late *Kharif* or *Rabi* or *summer* season after rice on 1200 hectares area with a productivity of 400 kg^{-ha} (Apte and Jadhav, 2002).

Among the various diseases of cowpea, the leaf blight caused by *Alternaria alternata* was noticed in severe form on cowpea crop at the farms of Agril. Botany and Agronomy, College of Agriculture, Dapoli during summer sown crop in the year 2008. The disease incidence was observed to be more than 40 per cent. Prevalence of such newly introduced leaf blight disease on cowpea in Konkan region was found damaging. Since no research was

undertaken, on this disease in Konkan, therefore, it was felt necessary to carry out the investigation on the physiological aspects of the causal organism.

MATERIALS AND METHODS

To study the effect of various carbon sources on the growth and sporulation of the test fungus, the amount of carbon present in 50 g of sucrose in the basal medium (Richard's medium) was calculated and replaced by an equivalent amount of carbon compounds calculated on the basis of their molecular weight (Table 1).

Richard's medium broth of 100 ml quantity was prepared without sucrose for each carbon source and 25 ml of medium was dispensed in each 100 ml conical flasks. Four replications per treatment were maintained. One additional treatment was kept as control without adding any carbon source. After sterilization, the flasks were inoculated with 7 days old culture of the test fungus and incubated $27 \pm 1^\circ\text{C}$ for 10 days. After incubation period, the mycelial mat was filtered through Whatman's No. 42 filter paper. Before use, the filter papers were previously oven dried at 70°C for 3 consecutive days until constant dry weight was achieved and weighed (W_1) after keeping them in dessicator. The mycelial mat over the filter paper disc was washed three times with sterilized water in order to remove the traces of salts adhering to mycelial mat and then, filter papers along with

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