

Research Paper :

# Effect of pH levels, carbon and nitrogen sources on the mycelial growth and bio-mass production of *Colletotrichum gloeosporioides* (Penz.) Penz. and Sacc.

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## SUMMARY

Anthracnose caused by *Colletotrichum gloeosporioides* (Penz.)Penz. and Sacc. is one of the important diseases in mango. The present studies was concerned with different pH levels, culture media, carbon and nitrogen sources which were tested against *C. gloeosporioides*. The results revealed that among the pH levels tested, 7.0 was the best for the mycelial growth (88.3mm) and mycelial dry weight (730.5 mg) of *C. gloeosporioides*. Among the ten culture media tested, PDA was found to be best in mycelial growth (84.8mm), mycelial dry weight (625.4mg) and excellent in acervuli production of *C. gloeosporioides*, while least on water agar. With regard to different carbon and nitrogen sources tested, the pathogen produced maximum mycelial growth and mycelial dry weight when the basal medium was supplemented with manitol (79.5mm and 590.8mg) as a carbon source and ammonium nitrate (86.6mm and 680.8mg) as a nitrogen source.

## Key words :

*Colletotrichum gloeosporioides*, pH, Culture media, Carbon and nitrogen sources.

The mango (*Mangifera indica* L.) is an important fruit crop in India. It belongs to the family Anacardiaceae and it is popularly known as “king of fruits” or “apple of tropics”. In India, it is grown in an area of 1.01 million ha. with a production of 9.45 million ton (Prabakar *et al.*, 2008). India stands first in global mango production 51% (FAO, 1999). However, the productivity of mango is affected by various fungal diseases. Among them, anthracnose incited by *Colletotrichum gloeosporioides* (Penz.) Penz. and Sacc. is more responsible for serious loss in mango production. It destroys the developing and developed fruits both in field and storage conditions. It causes leaf, blossom blight and tree die-back in the orchard and can subsequently give rise to rotted fruits during storage and thus, poses severe problems.

All the fungi have specific requirement for their nutrition. Carbon and nitrogen are the most important and essential elements, besides others, for their infection, growth and reproduction. Hence, the present study was carried out to investigate the effect of different culture media, pH, carbon and nitrogen sources on the *in vitro* growth of *C. gloeosporioides*.

## MATERIALS AND METHODS

### Isolation of pathogen :

The pathogen was isolated from infected

fruits of mango which was collected from local market. The isolation was done as per the method described by Sundravada *et al.* (2007). After obtaining pure culture, the identification was done based on the conidial characters and acervuli production. Then it was confirmed as *C. gloeosporioides*.

### Effect of different pH levels :

#### Liquid medium:

Erlenmeyer flasks of 250 ml size, containing 50 ml of Potato dextrose broth and various pH levels were prepared *viz.*, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0 and 10.0. The pH of the medium was adjusted with 0.1 N NaOH (or) HCl. The plates were inoculated with 9 mm mycelial discs of the pathogen obtained from 7 days old grown on PDA in Petri plates and incubated for 10 days. After incubation period, the mycelial mat was harvested and kept in a sterilized filter paper. Then the mycelium along with the filter paper was dried in hot air oven at 105°C for 48 h. Then the mycelial dry weight was calculated. Three replications were maintained for each treatment.

#### Solid medium :

To assess the influence of pH levels on linear growth of *C. gloeosporioides*, on Potato dextrose agar (PDA) medium was prepared at various pH levels *viz.*, 4.0, 5.0,

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