

## Variations in *Colletotrichum gloeosporioides* Strains from Mango

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**ABSTRACT.** Anthracnose caused by *Colletotrichum gloeosporioides* (Penz) Penz and Sacc. is the major post harvest disease of mango (*Mangifera indica*). A study was carried out to determine and group morphologically, the forms of *Colletotrichum gloeosporioides* from mango in Sri Lanka in order to understand the degree of pathogenicity of each strain. Isolates of *Colletotrichum gloeosporioides* were obtained from mango fruits, leaves and inflorescence from various locations in Sri Lanka (Batticaloa, Vavuniya, Kurunegala, Kandy, Colombo, Anuradhapura, Dambulla, Matale and Ampara districts). After 10 days on PDA at 30°C under continuous white light, characters of the colonies were examined, and were tentatively grouped as rapidly growing cultures with extensive gray pigmented mycelium (FGG) and slow growing cultures with deep orange pigmentation. The lengths and widths of at least 30 conidia per isolate were determined microscopically and were subjected to cluster analysis. The results of the pathogenicity test for each isolate showed that there are variations in the lesion sizes developed by different isolates of *Colletotrichum gloeosporioides*. There was no positive correlation between the pathogenicity and the lengths/widths of the spores of different isolate cluster analysis based on the lengths and widths of spores divided the 26 isolates into 4 distinct groups at the Median Normalized Distance < 0.8. The clustering pattern observed suggests that the *Colletotrichum gloeosporioides* may have different races and cannot be grouped geographically in Sri Lanka. The reason for this may be due to the transportation of mangoes throughout the country.

### INTRODUCTION

Anthracnose caused by *Colletotrichum gloeosporioides* (Penz) Penz and Sacc. is the major post harvest disease of mango (*Mangifera indica*). Since the disease has the ability to remain latent in green and immature fruit, an infected fruit almost invariably appears healthy at harvest but develops rot during storage and marketing.

*Colletotrichum gloeosporioides* is extremely variable in its morphology (Sutton, 1992). The various forms of *Colletotrichum gloeosporioides* from mango in Sri Lanka have not been well established.

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Therefore, the objective of this study was to determine and group morphologically, the forms of *Colletotrichum gloeosporioides* from mango in Sri Lanka in order to understand the degree of pathogenicity of each strain.

## MATERIALS AND METHODS

### Collection of isolates

Cultures of *Colletotrichum gloeosporioides* were obtained from mango fruits, leaves and inflorescence from various locations in Sri Lanka (Batticaloa, Vavuniya, Kurunagela, Kandy, Colombo, Anuradhapura, Dambulla, Matale and Ampara districts).

### Colony characteristics

Isolates were maintained on Potato Dextrose Agar (PDA) medium. After 10 days on PDA at 30°C under continuous white light, characters of the colonies for each isolate was examined. Isolates were tentatively grouped as rapidly growing cultures with extensive gray pigmented mycelium (FGG) and slow growing cultures with deep orange pigmentation (SGO). Single spore isolates were derived from all of the cultures.

### Conidial characteristics

Conidial suspensions were prepared in distilled water from 7–10 day old cultures of all isolates grown on PDA at 30°C. The lengths and widths of at least 30 conidia per isolate were determined microscopically. The data were analysed by the cluster analysis program in SAS package.

### Pathogenicity test

Mature unripened, apparently healthy fruits were selected and inoculated with each isolate separately from different areas of Sri Lanka. The largest diameters of the lesions were measured 7 days after inoculation and the correlation analysis was carried out with the SAS package to obtain the correlation of spore lengths and widths with the pathogenicity.

### Data analysis

The lengths and widths of conidia of all isolates were subjected to cluster analysis in SAS package, and the different clusters were grouped.

## RESULTS AND DISCUSSION

### Colony characteristics

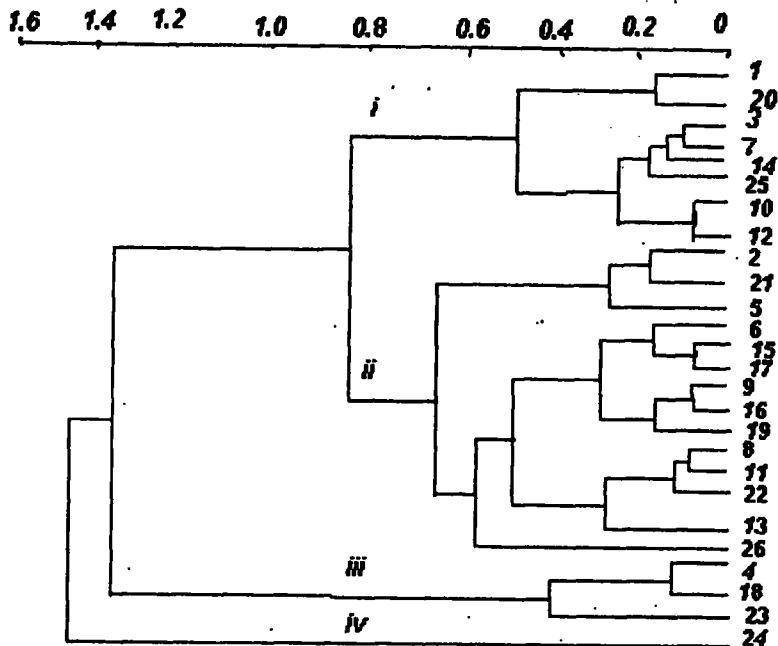
The basic growth pattern and colony type for all isolates remained constant when grown out on PDA. Within the described groups there were some variabilities in the number of spores formed on culture media.

After 10 days on PDA at 30°C under continuous white light, colonies were grouped as rapidly growing cultures with extensive gray pigmented mycelium (FGG) and slow growing cultures with deep orange pigmentation (SGO). Out of 26 isolates examined in this study, 17 were characterized as FGG and 9 were SGO.

### Conidial characteristics

Isolates displayed cylindrical conidia, rounded at both ends. A sexual phase (Perithecia) was observed in all isolates in 2 months old cultures on PDA at 30°C under continuous white light.

### Cluster analysis



Cluster analysis based on the lengths and breaths of spores divided the isolates into 4 distinct groups at the Median Normalized Distance < 0.8

### Pathogenicity test

There are variations in the lesion sizes developed by different isolates of *Colletotrichum gloeosporioides*. This may be due to the different races of the pathogen isolates. And also it was observed that there is no positive correlation between the pathogenicity and the lengths/widths of the spores of different isolates.

### CONCLUSIONS

The clustering pattern observed and the variation in the pathogenicity of the isolates suggests that the *Colletotrichum gloeosporioides* from mango may have different races and cannot be grouped according to the geographical distribution in Sri Lanka. The reason for this may be due to the transportation of mangoes throughout the country without any restrictions.

### REFERENCES

- Sutton, B.C. (1992). The genus *Glomerella* and its anamorph *Colletotrichum*. pp. 1-26. In: Bailey, J.A. and Jeger, M.J. (Eds). *Colletotrichum* biology, pathology and control, CAB International, Wallingford.