

## GROWTH AND SPORULATION OF COLLETOTRICHUM ACUTATUM AND C. GLOEOSPORIOIDES AND BIOCHEMICAL CHANGES DUE TO INFECTION IN HEVEA BRASILIENSIS

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The *Colletotrichum* leaf disease caused by *Colletotrichum acutatum* and *C. gloeosporioides* is an important disease during the immature phase of rubber (*Hevea brasiliensis*). The aggressiveness of the pathogen varies between the species and therefore a study was undertaken to understand the physiological requirement of both the species and the biochemical changes consequent to infection. Both species preferred fructose as carbon source and asparagine as nitrogen source. They also responded similarly to pH and temperature levels, with pH 6.0 to 7.5 and temperature 25 °C being optimum for growth and sporulation. The changes in the activity of peroxidase, phenylalanine ammonia lyase and total protein content were studied by inoculating the two species of *Colletotrichum* on the leaves of clones RR11 105 and RRIM 600. Significantly higher activities of peroxidase and phenylalanine ammonia lyase were noticed in the clone RRIM 600 inoculated with *C. acutatum* at 24 and 48 h after induction, respectively. Steady increase in total protein content was also observed up to 72 h in this clone when inoculated with *C. acutatum*. The tolerance in the clone RRIM 600 to *Colletotrichum* is attributed to this higher enzyme activity.

**Keywords:** Carbon, *Colletotrichum acutatum*, *C. gloeosporioides*, *Hevea brasiliensis*, Nitrogen, Oxidative enzymes

### INTRODUCTION

*Colletotrichum* leaf disease of rubber [*Hevea brasiliensis* (Willd. ex A.D. de Juss.) Muell. Arg.] is widespread in the traditional rubber growing areas in India and causes significant damage to plants in nurseries and young plantations (Deka, *et al.*, 1996; Manju, *et al.*, 1999). Economic losses due to the disease have also been reported from other rubber growing countries. In Indonesia, the persistence of this disease over a long period

resulted in loss of yield up to 50 per cent and delay in maturity of rubber trees up to three years (Basuki, 1992). The disease generally occurs from April to May and August to October in traditional regions, whereas in North East India, it prevails throughout the year except in the winter months (December-February).

Tender leaves are highly susceptible to the disease. Initially the symptoms develop as minute brown circular lesions on the

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