

Research Article

## ***In vivo* evaluation of salts, bioagents, hot water treatment and fungicides against anthracnose of papaya caused by *Colletotrichum gloeosporioides***

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### ABSTRACT

Papaya suffers from several diseases and anthracnose is one of them and this disease is one of the limiting factors for papaya marketing because it caused postharvest losses. Under *In vivo* evaluation of effect of salts, biocontrol agents solution at two concentrations (2 and 5 per cent) and hot water treatment at 49°C for 20 minutes, the least PDI was found in case of sodium chloride + hot water treatment (26.67%) followed by sodium chloride (33.33%), hot water treatment (46.67%) and *T. harzianum* + *Pseudomonas fluorescens* (43.33%) at 5 per cent concentration and more growth of fungus was noticed in *T. harzianum* (76.67%). Similarly *in vivo* evaluation of fruit treatment with different fungicides at the two concentration (0.05 and 0.10%), carbendazim was found to be effective and it showed least PDI (26.67%) followed by mancozeb (40.00%) at 0.1 per cent concentration and carbendazim (40.00%) at 0.05 per cent concentration. Less inhibition was noticed in benomyl (83.33%) at 0.05 per cent concentration.

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## INTRODUCTION

Papaya (*Carica papaya* L.) is an important fruit crop, which belongs to the family *Caricaceae*. *Carica* is the largest of the four genera with 48 species, among which *Carica papaya* L. is most important one cultivated all over the world (Badillo, 1971). The popularity of papaya fruit has made it ubiquitous in tropical and subtropical regions of the world. Papaya is the native of tropical America (Singh, 1990). Papaya is prone to many diseases incited by fungi, bacteria, nematodes and viruses leading to heavy loss in yield, of which papaya anthracnose caused by *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. appears to be more severe causing devastation of papaya fruits during transit and storage. Papaya anthracnose is the most important disease throughout the year in India and a major limiting factor in transit and storage. It is important in many other tropical regions where papaya is grown (Bolkan *et al.*, 1976). First symptoms of papaya anthracnose are round, water-soaked, and sunken spots on the surface of the ripening fruit. Brown

sunken spots develop on the fruit surface. The symptoms appear only upon ripening and may not be apparent at the time of harvest. The flesh beneath the affected portion becomes soft and begins to rot (Baker *et al.*, 1940 and Dickman and Alvarez, 1983).

## MATERIALS AND METHODS

*In vivo* study was carried out on papaya fruits against postharvest anthracnose disease caused by *Colletotrichum gloeosporioides* by imposing various salts and bioagents at 2 and 5 per cent concentrations. The treatments given were sodium chloride, sodium chloride + hot water, calcium chloride, *Trichoderma harzianum*, *Pseudomonas fluorescens*, *Trichoderma harzianum* + *Pseudomonas fluorescens*, hot water treatment and distilled water, which served as control. Fruits were treated with hot water at 49°C for 20 minutes. Disease intensity in different treatments was scored using the following 0-5 scale (Prasanna Kumar, 2001).

Per cent Disease Index (PDI) of postharvest disease was