A STUDY ON PAPAYA ANTHRACNOSE CAUSED BY *COLLETOTRICHUM GLOEOSPORIOIDES* (PENZ.) SACC. AND *C. CAPSICI* (SYD.). WITH SPECIAL REFERENCE TO ITS LATENT PHASE

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ABSTRACT

Colletotrichum gloeosporioides, a cause of anthracnose disease of papaya, develops progressive rotting only when the fruit has reached fully ripened stage (maturity stage 4); whereas *C. capsici*, another pathogen causes similar much larger anthracnose lesions 1-2 days prior to the fruit attains fully ripeness (maturity stage 3). Both fungi become latent in unripe fruit.

Following factors were investigated to explain the resistance of unripe fruit to the two pathogens: nutrient difference between the unripe and ripe fruit, enzyme potential of the pathogen to degrade the cell walls of unripe fruit, antifungal activity of the fruit tissue and the effect of the latex on two pathogens.

Leachate, fruit tissue and sequential solvent extractions taken from both healthy and inoculated fruits were tested for fungitoxic substances using carefully monitored assay techniques. However they gave no positive evidence for the presence of preformed or post-infectionally formed fungitoxic compounds in papaya fruit at any of the maturity stages tested.

Both pathogens were capable of producing pectinases *in vitro* and *in vivo*. *In vitro* pectinase production by both fungi was greatly stimulated by cell wall materials from fully ripened fruit. An inhibitor of pectinase was detected in papaya cell walls and the inhibitor content seems to be higher in unripe fruit.

Conidia of both the Colletotrichum species were completely disrupted, when they were exposed to the water soluble fraction of the papaya latex even at 25% (w/w) dilution. This may probably be due to the proteolytic activity of the latex, which is normally high in unripe fruit but decreases sharply during ripening. As both the fungi develop progressive lesions in the fruit free of latex, the resistance of the unripe to these two pathogens seems to be related to papaya latex.

It has therefore been concluded that the resistance of unripe papaya fruit to C. gloeosporioides and C. capsici may be directly related to the latex content of the fruit and perhaps to the pectinase inhibitory substances in cell walls. Early appearence of lesions due to C. capsici during ripening may be due to its ability to produce higher levels of pectinase than C. gloeosporioides. The unripe fruit does not seem to possess antifungal activity. Nutrients do not seem to play a direct role in the resistance of unripe fruit.