

ABSTRACT

Studies on the pathogen and chemical control of mango anthracnose in the Caribbean.

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Anthracnose is the most important disease of mango in the Caribbean, causing damage to flowers, leaves, twigs and fruits in the field. It is also a serious post-harvest problem. The causal organism in the Caribbean is *Colletotrichum gloeosporioides* (Penz.) Penz. and Sacc. (teleomorph *Glomerella cingulata* (Stonem.) Spauld. and Schrenk. Investigations on the taxonomy of the pathogen, using morphological, biochemical and DNA characters, revealed a separation of Caribbean isolates, as a distinct group, from the Old World isolates. However, variation at the population level in the Caribbean was detected. The most common site of entry of the pathogen in leaves was found to be the glandular trichome, the density of which decreases with leaf size. Although not fully understood, the arrest of development of anthracnose lesions in green mango tissue seemed to be related to a combination of factors, including available infection sites, water and nutrient availability and fungistatic substances. From *in vitro* studies on 9 fungicides, (cupric hydroxide, thiabendazole, chlorothalonil, mancozeb, carbendazim, propiconazole, prochloraz, iprodione and sodium carbonate), chlorothalonil was found to be the most effective in controlling the growth and development of the mango anthracnose pathogen. Of the seven *in vitro*

tests used, four gave measurable results (bioassays using detached leaves, poisoned food tests, spore germination tests and filter paper disc tests). Bond (synthetic latex and aliphatic oxy alkylated alcohols) proved to be a superior spray adjuvant to SKH, Hyvis 30 and Nu-film-17 in increasing the tenacity of copper hydroxide fungicide. From field experiments at three sites in Trinidad, the recommended control package developed for anthracnose was as follows: (a) Application of 18.5 g chlorothalonil (25 g Daconil) per medium sized tree per fortnight for two fortnights whenever leaf or flower flushing occurs during the off-season of August – February, (b) Application of 18.5 g chlorothalonil per medium sized tree per fortnight from flower initiation to mature green fruit stage during the on-season of March – July, (c) The addition of 4 mL L⁻¹ Bond sticker with all applications. The major benefit of anthracnose control was found to be in the improvement of fruit quality. This control package resulted in over 90% marketable fruit, while untreated control trees produced approximately 40% marketable fruit. Yield response was not always related to disease control. The financial benefit of this control package depends on the initial anthracnose level of the orchard and the yield obtained; high disease levels and high yields increasing the usefulness of the package.