RESPIRATION AND ETHYLENE PRODUCTION IN RELATION TO ANTHRACNOSE DEVELOPMENT IN TWO LOCAL MANGO CULTIVARS

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ABSTRACT

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Anthracnose is a major postharvest disease in mango. Proper understanding of host-pathogen interactions and the nature of the causal organism would help to derive effective control measure.

The respiration, ethylene production and anthracnose development in "Karuthacolomban' and 'Willard" mangoes were studied at three maturity stages. One set of fruits were inoculated with a conidial suspension of *Colletotrichum gloeosporioides* and another one was with sterile distilled water. Carbon dioxide and ethylene productions were measured by headspace gas sampling using Gas Analyzer and Gas Chromatograph respectively. Peel color index and anthracnose lesion diameter were also recorded.

In vitro germination and appressorium formation of conidia exposed to different ethylene concentrations were also studied.

There were three pronounced increments in respiration and ethylene production of fruits. The first increase in respiration was at color break, the second increase was just after the first increase and the third one was when the fruit is fully yellow.

Climacteric respiration rate increased as the fruit matures in both varieties. The second increase in respiration was higher in inoculated "Karuthacolomban" and it decreased as the fruit matures in both varieties. The climacteric ethylene production of "Willard" increased as the fruit matures.

Anthracnose lesions developed according to a sigmoid pattern. The rapid development of the lesions was when the fruit is fully yellow. When consider the same maturity stage, "Willard" showed an early lesion development.

In the presence of ethylene both conidial germination and appressorium formation of *Colletotrichum gloeosporioides* was higher. Up to 10 µl/l ethylene, germination increased and after that it decreased. There was no significant increase in appressorium formation with increasing ethylene concentration.

Ethylene induces both germination and appressorium formation. Germination increases with increasing ethylene concentration up to a certain level but not appressorium formation.

Ethylene produced by the mango fruit enhances the anthracnose disease development by inducing germination and appressorium formation of conidia of the causal organism, while due to the disease, the respiration and ethylene production of the fruit increase accelerating its senescence. "Willard" is more susceptible for anthracnose than "Karuthacolomban".