

STUDIES ON
SPECIFIC PRE AND POST HARVEST TREATMENTS
FOR REDUCING INCIDENCE OF CHILLING INJURY
IN
PINEAPPLES.

By

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ABSTRACT

Sri Lankan pineapples are appreciated in overseas countries due to their exceptional flavour. A physiological disorder referred to as black heart or endogenous brown spot or internal browning occurs in fruits subjected to extended periods at low temperatures. This restricts extending storage and transportation of this commodity under refrigerated conditions. Of the two varieties of pineapples grown in Sri Lanka, Kew variety shows less susceptibility to the disorder compared to the popular Mauritius variety. Thus, field and storage trials were conducted to test the effect of time of harvest, pre-harvest fertilizer treatments and the effect of post harvest treatments on the storage life and symptom development of black heart disorder in pineapples. Varietal variation in chemical composition in relation to symptom development of this disorder was also investigated.

Physico-chemical parameters, severity and incidence of the disorder were recorded to evaluate the fruit quality before and after low temperature storage at 10°C and 85 – 90% Relative Humidity.

The overall calcium level in disorder resistant Kew variety was higher compared to the more susceptible Mauritius variety. Mauritius pineapple harvested in the evening (between 4.30 pm to 5.30 pm.) and treated with FMC Stafresh 7055 wax solution was least affected by low temperature storage compared to fruits harvested in the morning (between 7.30 am to 8.30 am.).

Controlled atmosphere of 7% CO₂ and 3% O₂ combined with wax treatment reduced the severity but did not totally eliminate the symptoms of the disorder when stored at 10°C for 17 days followed by 2 days at ambient temperature of 28°C ± 2°C.

Post harvest treatments of calcium chloride dip and vacuum infiltration were less effective in reducing the symptoms. Pre-harvest soil application of CaO and CaSO₄ were also less effective in reducing the symptoms of this disorder.

Results obtained from field trials confirmed that calcium chloride spray (1.3 g per fruit) followed by post harvest wax treatment (Stafresh 7055) could be used to reduce the incidence and the severity of the black heart disorder in Mauritius pineapple.