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Black Heart Disorder in relation to variation of acid levels in Sri Lankan pineapples

The cause of high post harvest loss in pineapple during sea shipment was identified as being due to a temperature related physiological disorder referred to as back heart. The disorder is known to occur in fruits, subjected to low temperatures below 18C° either, in the field prior to harvest or during storage. The study was conducted to determine the variation in acidity and ascorbic acid levels in chill sensitive Mauritius variety (Queen type), and chill resistant Kew variety (cayenne type) pineapple in relation to symptom development of back heart disorder, during storage.

Mauritius and Kew pineapples harvested at 10% -20% yellow stage of maturity were stored for 0,1,2,3, and 4 weeks at 10C° and 85-90% relative Humidity.

Severity of black heart disorder and observations on total acid levels, (as % citric acid) and ascorbic acid levels (mg/100g) were recorded before storage and after each week of storage, at 10C°.

Development of the symptoms of black heart disorder commenced one week after low temperature storage in Mauritius pineapples, while Kew fruits remained unaffected until the third week.

Mauritius pineapples showed significant increase in fruit acidity ($p < 0.05$) during the first week of low temperature storage and were observed to stabilize thereafter. A positive correlation was found between acid levels ($p < 0.1$) and symptom development of black heart in Mauritius pineapples while a negative correlation ($p < 0.1$) was observed with the Kew variety.

While it has previously been reported that fruits with high levels of ascorbic acid are less likely to develop symptoms of the disorder, the chill sensitive Mauritius fruits showed higher levels of ascorbic acid compared with the chill resistant Kew variety. However, negative correlation was observed in ascorbic acid levels and the symptom development of the disorder in both varieties.