

Effect of calcium chloride vacuum infiltration on storage quality of Mauritius pineapples

Black heart, is a physiological disorder, known to occur in pineapples subjected to low temperature storage. Sri Lankan Mauritius variety pineapple has been observed to be highly susceptible to this disorder causing 80% loss of the product during reefer shipments.

Calcium applied to various commodities after harvest was found to be effective in delaying senescence and retarding physiological disorder development. The present investigation was conducted to study the effect of calcium chloride vacuum infiltration on storage quality of Mauritius pineapples. Mauritius pineapples harvested at 10-20% yellow stage of maturity were vacuum infiltrated with a solution of 4% calcium chloride in 975 mbar for 10min, 15 min and 20 min duration. Non infiltrated pineapples served as controls.

Severity of black heart disorder, total calcium content (mg/100g) and electrolyte leakage (as a % of total electrolytes) in the flesh and core regions of the pineapple were recorded before and after low temperature storage at 10C for 17 days followed by two days at ambient temperature ($28 \pm 2C^{\circ}$) . Enhanced electrolyte leakage could probably be due to

damage of cell membranes as a result of high pressure build up within the tissue during the process of vacuum infiltration.

A significant increase in total calcium content in both flesh and core regions of pineapple ($p < 0.05$) was observed with vacuum infiltration compared to untreated controls. A significant increase in calcium content; was observed in flesh samples when the time duration of vacuum infiltration was increased - 65.9mg/100g after 10mins. To 113.3mg/100g after 15mins. And 120mg/100g after 20 mins. However, vacuum infiltrated pineapples stored at low temperature showed a higher incidence of black heart disorder due to the damage of cell membranes during the process of vacuum infiltration.