

**INDUCTION OF COLD TOLERANCE OF PINEAPPLE (*ANANAS COMOSUS*) CV. MAURITIUS USING HEAT SHOCK TREATMENT FOLLOWED BY MODIFIED ATMOSPHERE STORAGE**

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Internal browning, commonly encountered in pineapple during prolonged cold storage, is a major obstacle to long distance export of fruit under sea freight. Of the two local cultivars cv. *Mauritius* is more susceptible to internal browning than the cv. *Kew*.

Three-week storage trials were conducted using freshly harvested pineapples at 100% green stage and simulating the sea freight export conditions at 10°C and 85% RH. In *Mauritius*, the internal browning symptoms appeared within a week of storage at 10°C initially in the marginal core tissue which subsequently spread to the surrounding flesh. But in *Kew*, the symptoms commenced only after 2-3 weeks of storage as isolated patches in the tissue surrounding the core.

Heat shock treatment in the form of a hot water dip immediately after harvest was found to induce fruit tolerance to internal browning in both cultivars and the best temperature-time combination was 38°C for 60 minutes. The treated fruit developed 75% and 50% lesser browning in the flesh and core regions respectively. The overall reduction of internal browning was about 55-60%. Heat shock treatment studies at different temperature-time combinations indicated that an internal tissue temperature of 36-38°C is a prerequisite for induction of cold tolerance in pineapple. Heat treatment while significantly reduced internal browning, also slowed down fruit ripening and associated changes and increased water loss compared to untreated controls. However, provision of modified atmosphere conditions to heat-treated fruit during cold storage enhanced cold tolerance by another 10% and reduced water loss. SDS-PAGE studies revealed the presence of heat shock proteins in treated fruits. It is possible that the cellular repair mechanisms following cold injury may be taking place more rapidly in heat treated fruit.