

Title Fruit calcium concentration and chilling injury during low temperature storage of pineapple  
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#### Abstract

Overall calcium levels in fruit and calcium distribution in different parts within fruit were recorded in the Queen type Mauritius variety and the Cayenne type Kew variety of pineapples. Calcium was measured before and after storage where fruits were held at 10°C for 17 days followed by 2 days at ambient ( $28 \pm 2^\circ\text{C}$ ). Total overall calcium concentrations were significantly ( $P < 0.05$ ) higher in Kew pineapple compared with Mauritius. This difference corresponded to a significantly ( $P < 0.05$ ) lower incidence of chilling injury in the former. Calcium within fruits at harvest was significantly ( $P < 0.05$ ) higher in the shell region for both varieties. Browning symptoms associated with chilling injury were observed in the core and flesh regions adjacent to core, where lower concentrations of calcium were recorded. Chilling injury was minimum in flesh near the shell, where calcium concentrations were significantly ( $P < 0.05$ ) higher. Following storage, calcium concentration in the core and flesh regions had decreased while significant ( $P < 0.05$ ) increase in concentrations was recorded in the shell region of the susceptible Mauritius variety. Pre-harvest calcium treatments were then tested on the chill sensitive Mauritius variety pineapples to increase fruit calcium concentration and thereby control chilling injury. Calcium chloride spray treatment of 1.3 g and 2 g per fruit applied in three split doses was effective in reducing chilling injury to commercially acceptable levels. Post-storage calcium concentration in core and flesh regions of these fruits was significantly higher ( $P < 0.05$ ) than in untreated fruits. Soil side dressings of CaO and CaSO<sub>4</sub> at 10 and 15 g per plant applied to the soil 6 weeks after planting were observed to be less effective in controlling the disorder. Calcium concentration in such fruits was significantly ( $P < 0.05$ ) less than in fruits subjected to the CaCl<sub>2</sub> spray treatment.