

Effect of pre-harvest calcium fertilizer application at different stages for the control of internal browning development under cold storage of pineapple

Pineapple [*Ananas comosus* (L) Merr.] is an important fruit crop grown in Sri Lanka for the local market and for the export. Development of Internal Browning (IB) under the refrigerated shipment is the major problem of exporting pineapple. This study was conducted to find the effect of pre-harvest calcium fertilizer application as basal dressing only and basal dressing followed by a top dressing for the control of IB in Mauritius pineapple. Two field experiments were conducted at two different locations in Gampaha and Kurunegala districts. In the first experiment three different levels of calcium (CaO-100kg ha^{-1} , 125 kg ha^{-1} and 150kg ha^{-1}) applied as basal dressing. The second experiment was applied with a top dressing (CaO-50kg ha^{-1} , 75kg ha^{-1} and 100kg ha^{-1}) in addition to basal dressing. Immediately after harvest fruits were stored in a cold room (15C , $80\text{-}85\%\text{RH}$) and analyzed them at weekly intervals for four weeks for the intensity of IB, percentage weight loss, ascorbic acid, pH, total soluble solids (TSS) and titratable acidity.

The results showed that, 100kg ha basal dressing and 75kg ha^{-1} top dressing treated fruits had significantly low IB development, high TSS, ascorbic acid content up to the fourth week of cold storage. Fruits from calcium 150kg ha basal dressing with 100kg ha^{-1} top dressing treated plants were having significantly low IB development and high ascorbic acid content up to the fourth week and significantly low percentage weight loss and high TSS up to the third week. In these two experiments, up to the fourth week the IB was less than 1.5 of the scale ($0=\text{noIB}$, $5=11\%\text{IB}$), percentage weight loss increased from 5.92% to 10.53% , TSS changed from 13.86% to 12.4% and ascorbic acid reduced from

30.32mg/100ml to 14.96mg/100ml. No significant difference between these two experiments. There is no clear evidence of controlling IB in calcium basal dressing only treated plants. Control fruits are having highest IB development, highest percentage weight loss and lowest ascorbic acid contents up to the third week of cold storage. The application of calcium 100kg ha basal dressing and 75kg ha⁻¹ top dressing is most effective for the control of IB under cold storage of pineapple.