

EFFECT OF PRE HARVEST CALCIUM AND POTASSIUM APPLICATION
ON THE REDUCTION OF THE INCIDENCE OF INTERNAL
BROWNING PINEAPPLE [*Ananas comosus* (L) Merr.]

By

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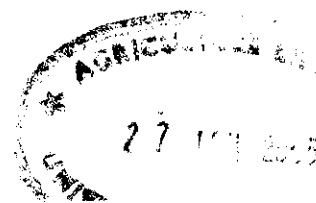
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ABSTRACT

Internal Browning which is also known as black heart or endogenous brown spots is a physiological disorder caused by chilling temperatures in the export of pineapple. Experiments were conducted at three locations namely Pallewela and Wagolla in the Gampaha district and Giriulla in the Kurunegala district to investigate the effect of pre harvest calcium (Ca) and potassium (K) application. Effect of different levels of calcium (Ca) and potassium (K) fertilizer applied as basal dressing for the control of internal browning (IB) was tested with the application of three levels of calcium and potassium fertilizer in nine different treatment combinations. In another study, effect of different levels of Ca and K fertilizer applied as basal and top dressing for the control of IB was tested with the application of three levels of calcium and potassium fertilizer in nine different treatment combinations. Effect of different sources of Ca (lime - CaO, Fused Magnesium Phosphate and dolomite - CaCO₃, MgCO₃) applied as basal dressing for the control of IB was tested with the application at three levels of each source. Control plots were maintained without calcium or potassium fertilizer. Pineapple cv. Mauritius was planted in a randomized complete block design with three replicates. Fruits at quarter ripe maturity stage were harvested and uniform size fruits were stored in a cold room at 15° C and 80 - 85 % RH. They were removed from the cold room at weekly intervals for four weeks and analyzed after keeping 72 hours at room temperature. The IB intensity, ascorbic acid, total soluble solids (TSS), pH, calcium and potassium content of fruits, titratable acidity and the percentage weight loss were determined.

In the experiment where Ca and K were applied as a basal dressing, the IB development in fruits harvested from all the treated plots were significantly lower than the control up to the fourth week of cold storage. The treatment with the combination of calcium 150 kg ha⁻¹ and potassium 220 kg ha⁻¹ showed significantly high fruit calcium and potassium contents, high ascorbic acid, high TSS and low percentage weight loss up to the third week of cold storage. In the experiment where Ca and K were applied as basal dressing and top dressing applied experiment, the IB development in fruits harvested from all the calcium and potassium treated plots were significantly lower than the control up to the fourth week of cold storage. Treatments with the combination of basal calcium 150 kg ha⁻¹ with potassium 110 kg ha⁻¹ + top dressing calcium 100 kg ha⁻¹ with potassium 110 kg ha⁻¹ (T 8) and basal calcium 150 kg ha⁻¹ with potassium 220 kg ha⁻¹ + top dressing calcium 100 kg ha⁻¹ with potassium 220 kg ha⁻¹ (T 9) showed significantly high fruit calcium and potassium contents, low percentage weight loss, high ascorbic acid and TSS values up to the fourth week of cold storage. In the experiment where different Ca sources were used, fruits harvested from treatments which had 125 kg ha⁻¹ and 150 kg ha⁻¹ lime had significantly low IB development (< 3 of the scale) from first to the fourth week of cold storage. The fruit calcium, ascorbic acid, TSS were significantly higher and percentage weight loss significantly lower than the control from first to the fourth week in the above two treatments. The results of this study indicate that the application of calcium and potassium fertilizer as basal dressing and basal dressing with a top dressing had a significant effect over the control of internal browning in Mauritius pineapple up to the fourth week of cold storage.