

# Comparative effects of canopy position on physicochemical properties of ‘Marsh’ grapefruit during non-chilling postharvest cold storage

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## Abstract

The physicochemical properties of citrus fruit play critical roles in its maturity and quality determination. Hence, this study investigated the effect of canopy position on physicochemical properties of ‘Marsh’ grapefruit across different production regions at harvest and after storage at 7.5 °C for 3, 6, and 9 weeks. The study also evaluated the use of BrimA as an adoptable internal quality and maturity parameter for ‘Marsh’ grapefruit. Fruit from inside canopy (IC) and outside canopy (OC) were harvested from KwaZulu-Natal (KZN) and Mpumalanga (MP) provinces in South Africa. Titratable acidity was determined by titration and calculation of the sugar/acid ratio (TSS/TA) was established while BrimA was derived from sugar and acid with tongue sensitivity index. Colour indices were measured using calibrated colorimeter while sugars were measured using high performance liquid chromatography (HPLC). At harvest, IC fruit from MP province were more luminous than the OC fruit while inverse results were recorded for fruit from KZN. At harvest, IC fruit had higher percentage of titratable acidity (TA) (2.73%) than OC fruit (2.40%) from MP, with opposite results from KZN. The BrimA showed a strong and positive correlation with TSS/TA ( $r = 0.9364$ ). Overall, our result suggested that canopy position affect some physicochemical properties of ‘Marsh’ grapefruit. However, harvested fruit displayed a high level of maturity and quality over the period of cold storage. BrimA could potentially be used as an index of internal quality of grapefruit but further studies into the subject is required.