COLOUR QUANTIFICATION OF CARAMBOLA

(Averrhoa carambola L.)

AT VARIOUS STAGES OF MATURITY

by

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ABSTRACT

Changes in peel colour of "B10" carambola (Averrhoa carambola L.) was measured over the period of maturation, that was stage one to six. Colour was measured objectively using a colour difference meter and by extraction and measurement of chlorophyll and carotenoid content. Also, other maturity indices such as soluble solids concentration, titrable acidity (oxalic acid) and fruit firmness were determined. All colour coordinates ($L^*$, $a^*$ and $b^*$) increased significantly during the maturation period from stage one to six. As the maturation stages progressed, the fruit was significantly lighter ($L^*$), redder ($a^*$) and yellow ($b^*$) in colour. Using on the $a^*$ and $b^*$ values, the $C^*$ and $h^0$ were calculated and was found to be significant. $C^*$ became less saturated while $h^0$ changed from greenish-yellow to orange-yellow. This showed that the present visual colour used for carambola fruit grading by FAMA was inaccurate. In addition, during the maturation period, chlorophyll was degraded and carotenoid was synthesized. It was also found that as the colour value increased, a decrease in the fruit firmness and acidity were recorded. Whereas, soluble solids concentration followed the trend of the colour. The high correlation shown in all test
indicated that there were positive relationship between carambola and the maturity indices. Thus, the measurement is consistent with respect to visible colour changes and is reliable to be used in commercial maturity grading.