

Title Modeling of color values for nondestructive evaluation of maturity of mango
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Abstract

Mango, an important tropical fruit, is marketed throughout the world. Quality of ripened mango depends on its maturity at harvest, which is hitherto determined subjectively by experience. In the present investigation, the potential of a nondestructive method for predicting maturity using color values taken by a handheld colorimeter was explored. Maturity of mango was defined in term of maturity index (I_m), a ratio of total soluble solids (TSS) of mango under experiments and minimum level of TSS (8 °Brix) of matured mango, expressed in percentage. Hunter L , a , and b values of 315 freshly harvested mangoes ranging from immature to over matured were measured using HunterLab colorimeter. TSS of whole mango juice was measured by a handheld refractometer and maturity index was computed. The maturity index and L , a , and b values of 160 samples were fitted in different forms of models using multiple linear regression (MLR), partial least square and principal component regression. The model using MLR on variables a , b and the product ab was selected. The prediction performance of the model was tested with another set of 100 unripe samples. Precision of prediction was also verified by sensory evaluation of 55 ripe mangoes and was found that the fruits predicted to be mature could ripe with high-satisfied taste while the ones predicted to be immature or over mature were mostly rejected by the panels.