Title Physiology and quality characteristics of mango (*Mangifera indica* L.) fruit grown under water deficit conditions

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Abstract

This study aimed at understanding the quality characteristics of mango (*Mangifera indica* L. cv. 'Tommy Atkins') fruit from trees subjected to water stress (non-irrigated) during the first phase of growth (up to 42 days after bloom). Selected physico-chemical and physiological parameters were monitored at two weeks interval from fruit set up to 168 days after bloom. Fruit weight and starch content increased steadily with time and slowed down towards fruit maturity with starch content being higher in fruit from non-irrigated trees. Total soluble solids and total titratable acidity increased initially and decreased to constant low levels. No ethylene was detected, although respiration rate decreased towards maturity to the climacteric minimum. Fruit from non-irrigated trees were significantly ($p<0.05$) firmer than those from irrigated trees. β-Carotene and anthocyanin contents increased with fruit maturity and the latter was higher in fruit from non-irrigated trees. There was a high correlation between the increase in firmness and starch, $r^2= 0.86$ and 0.96 for fruit from irrigated and non-irrigated trees, respectively. The abscission rate was also higher among fruit in the irrigated trees, probably due to excess weight. Fruit from irrigated trees did not develop the characteristic colour associated with this variety. These results indicate that although irrigation results in slightly bigger fruit, it affects colour development due to increased canopy cover and fruit are less firmer.