

Tree physiology, fruit growth and nutrient elements of Wax apple (*Syzygium Samarangense*) as affected by branch bending angle

ABSTRACT

This study was conducted to evaluate the potential effects of branch bending angle on the plant physiological characteristics, mineral nutrients accumulation and fruit quality of wax apple. Different treatments with five replicates each by Randomized Complete Block Design (RCBD) layouts were arranged in this study. All the treatments represent different branch angles which were at 5° (control), 20°, 45°, 65° and 85° from vertical axis. Leaf chlorophyll content (SPAD chlorophyll index) was significantly affected by different bending treatments at a budding stage, flowering, fruit development and after harvesting of wax apple. Total soluble solids (TSS) content in the leaves of bent branches increased significantly at before bud development, flowering, fruit ripening and after harvesting stages of wax apple trees. During fruit development and maturation stages, leaf TSS content was decreased in all bent branches. The results showed that 20° to 65° angle bent branches increase weight and firmness of fruit, fruit diameter and produced dark-coloured fruit compared to control. The results showed that 65° bent branches give the highest potassium (K⁺) and magnesium (Mg²⁺) content in the fruits. Higher sodium (Na⁺), iron (Fe²⁺) and calcium (Ca²⁺) content in fruits were found in 20° bent branches. There was a positive correlation between fruit TSS with Mg²⁺ ($r = 0.70$), with Na⁺ ($r = 0.67$) and with Ca²⁺ ($r = 0.57$) content in the bent branches of wax apple. Fruit TSS content also positively correlated with firmness and peel colour of wax apple fruits. The number of fruit, fruit weight and fruit diameter of wax apple also positively correlated (weak) with leaves TSS content. It can be concluded that 20° to 65° branch bending angle are promising for enhancing plant physiology, fruit growth and quality of wax apple fruits.