Postharvest quality characteristics of fruit derived from intra and intergeneric grafted tomato

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Abstract
Tomato is the second most important vegetable in terms of value in Kenya. However, its production is plagued by challenges including disease complexes that lead to poor quality fruit and significant post-harvest losses. While grafting is an incredibly popular technique for tomato production in other parts of the world, it is almost non-existent in Kenya. Grafting is an ideal technique for vegetable production because scions that are susceptible to soil-borne disease can be grafted onto rootstock that are more resistant to these stresses. Tomato grafting studies tend to focus on yields and disease resistance with limited studies on quality characteristics of fruit. The objective of this study was to compare postharvest quality characteristics of bacterial wilt susceptible tomato (Anna F1) grafted on African eggplant (intergeneric) rootstocks and bacterial wilt resistant hybrid tomato (Intrageneric) rootstocks. The grafted tomato was grown under greenhouse conditions in JKUAT and fruit harvested at mature green, turning, and red ripe stages. The fruits were analysed for physical and physiological characteristics. At mature green stage the intergeneric grafted fruits had higher firmness (6.3 N mm-1) compared to control (4.69 mm-1). The respiration rate of intrageneric grafts were (7.12 ml/kg/h) lower than the controls (36.9 to 0.1 ml/kg/h) while the ethylene production rate of the intragenic grafted fruit was lower (0.16 µl/kg/h) at ripe stage compared to control (0.41 µl/kg/h). In general, fruits derived from one intergeneric graft and the intrageneric grafts displayed desirable, superior and better postharvest qualities with prolonged shelf life than the non-grafted controls.

Keywords: African Eggplant, Wilt resistant hybrid, firmness, respiration, ethylene