Growth, Yield, and Postharvest Characteristics of Grafted Bitter Gourd using Different Sponge Gourd Rootstocks

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Abstract
Grafting is an emerging technology that addresses adverse agricultural problems in both soil and climatic conditions. The study was conducted to evaluate the growth, yield, and fruit quality of bitter gourd or ampalaya (Momordica charantia L.) grafted with different sponge gourd or patola (Luffa cylindrica L.) rootstocks. The experiment was laid out in randomized complete block design with four treatments replicated thrice. The treatments were as follows: T0—Control (ungrafted), T1—Hybrid patola (var. Mutya), T2—Open-pollinated variety (var. Esmeralda), and T3-Bureau of Plant Industry bacterial wilt–resistant variety patola rootstock (BPI BW resistant var.). Results revealed that grafted ampalaya plants markedly produced female flowers first rather than male. Generally, nongrafted plants produced more laterals, longer vines on the early weeks from transplanting, more marketable fruits per plant, as well as higher total soluble solids (TSS) and electrical conductivity (EC). Nevertheless, nongrafted plants also exhibited more non-marketable fruits, greatest disease incidence, and lower percent free-radical scavenging activity (%FRSA). On the other hand, grafted ampalaya plants have lesser disease incidence, minimal percent weightloss, delayed color changes, firmness, and initial pH readings after the eighth harvest. Postharvest life or shelf life and visual quality rating of grafted ampalaya were extended but were not statistically different with the nongrafted fruits. However, grafted ampalaya fruits have higher chlorophyll a and b and carotenoid content and significantly had the highest %FRSA. These findings imply that improvement of ampalaya plant through grafting, specifically into different patola rootstocks, were compatible, reduced disease incidence, and have more nutritious fruits compared to nongrafted ampalaya plants.

Keywords
• bitter gourd (Momordica charantia)
• cucurbit grafting
• sponge gourd (Luffa cylindrica)