

ABSTRACT

Tomato (*Solanum lycopersicum* L.) is a horticultural commodity that is highly perishable due to physiological and metabolic processes that continue after harvest. Potassium and calcium are important nutrients that play a role in plant growth and fruit quality. This study aimed to determine the effects of potassium fertilizer, calcium fertilizer, and their interaction on the growth and fruit quality of tomato. The research was conducted from December 2025 to May 2026 at the Experimental Garden and Laboratory of Agricultural, Faculty of Agriculture, Universitas Malikussaleh. The study used a factorial Randomized Block Design consisting of three potassium levels, namely K0 (0 kg /ha), K1 (225 kg/ha), and K2 (300 kg/ha), and three calcium levels, namely C0 (0 kg/ha), C1 (10 kg/ha), and C2 (20 kg/ha), with three replications. The observed parameters included plant height, number of leaves, stem diameter, weight loss, fruit color, total soluble solids, pH, vitamin C content, water content, and shelf life. The results showed that potassium significantly affected plant height at 14 and 21 days after planting (DAP), the number of leaves at 14 and 21 DAP, stem diameter at 14 DAP, vitamin C content at 8 and 32 days after harvest (DAH), and fruit water content at 28 DAH. Calcium significantly affected fruit acidity (pH) at 4 and 12 DAH and vitamin C content at 8 and 32 DAH. The interaction between potassium and calcium affected plant height from 14 to 49 DAP, the number of leaves at 42 and 49 DAP, stem diameter at 7 and 49 DAP, weight loss, fruit color, shelf life, vitamin C content at 32 DAH, and fruit pH at 16 DAH. Meanwhile, potassium, calcium, and their interaction did not significantly affect total soluble solids (TSS) throughout the observation period.

Keywords: fruit physiology, postharvest quality, storage