Abstract

Postharvest shelf life of mango fruits stored in a Coolbot™ cold room

The Coolbot™ technology is an innovative cold storage technology promoted among smallholder farmers as a low-cost alternative to conventional cold rooms. The objective of the present study was to establish the efficacy of a Coolbot™ cold room to preserve quality and extend shelf life of mango fruits. The study was conducted in a participatory approach with smallholder mango farmers in Makueni County of Kenya between 2014 and 2015. Fruits of a popular mango cultivar (‘Apple’) were harvested from commercial farms, selected for uniformity and separated into two batches of 100 fruits each. One batch was stored in the Coolbot™ cold room with the temperature set at 10±2°C. The second batch was stored at ambient room temperature (24–35°C). A random sample of five fruits was drawn from each storage condition every three days to evaluate ripening-related changes including, respiratory activity, peel/flesh color and firmness, total soluble solids, titratable acidity and weight loss. The shelf life of mango fruits which were stored in the Coolbot™ cold room was extended by 23 days compared to fruits under ambient room conditions. Cold storage significantly (p<0.05) reduced the respiratory activity of the stored fruits. At the end stage (day 12) ‘Apple’ mango fruits stored at ambient room conditions had a respiration rate of 53.9 mL kg⁻¹ h⁻¹ compared to 40.5 mL⁻¹ kg⁻¹ h⁻¹ for cold-stored fruits. The lower respiration rate was mirrored positively in other ripening-related changes including peel/flesh firmness and colour confirming the efficacy of the Coolbot™ technology as a low-cost alternative to the expensive conventional cold rooms.