

Title Physiology and quality response of harvested banana fruit to cold shock
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Abstract

Experiments were conducted to examine softening and quality responses of harvested banana fruit to cold shock treatment intended to extend shelf-life. Fruit were immersed in ice-water for 1 h, then treated with or without $100 \mu\text{L L}^{-1}$ ethylene for 24 h at 24°C , and finally stored at 20°C . Fruit firmness, chlorophyll content, ethylene production, respiration rates, contents of pectin, starch and sugar, and the activities of the cell wall modifying enzymes polygalacturonase (PG), pectin methylesterase (PME) and CMCCase (cellulase, endo-1,4- β -glucanase) were analyzed. Total amylase activity was also measured. Immersion in ice-water for 1 h effectively inhibited ripening-associated processes, including peel de-greening and pulp softening during storage or ripening. The delay in ripening was also manifest in reduced ethylene production and respiration rates. The inhibition of softening by cold shock treatment was related to decreased PG and PME activities, that is, retardation of pectin solubilization/degradation. Reduced activities of CMCCase and total amylase and conversion of starch to sugar by ice-water immersion also contributed to the delay in softening of harvested banana fruit.