

Title Ripening and quality of 'Golden' papaya fruit harvested at different maturity stages
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Abstract

The objective of this study was to determine how ripening physiology and quality of 'Golden' papaya are affected by maturity stages at harvest. Papayas were harvested at four maturity stages (Stage 0: totally green; Stage 1: up to 15% of yellow skin; Stage 2: 16-25% of yellow skin; Stage 3: 26-50% of yellow skin) and evaluated during ripening at 23°C. Physical and physico-chemical (skin color, pulp firmness, soluble solids, titratable acidity, and ascorbic acid), physiological (respiratory activity and ethylene production), and sensorial (flavor, odor, firmness, and appearance) characteristics were evaluated. Regardless of maturity stages, fruit showed similar variation in respiration rate, exhibiting constant values after the 2nd day of storage at 23°C (~31 mL CO₂ kg⁻¹ h⁻¹ for stages 0, 1, and 2, and ~37 mL CO₂ kg⁻¹ h⁻¹ for stage 3). Typical climacteric behavior was not observed for any maturity stage. Only fruit harvested at stage 0 and 1 showed a well defined ethylene production peak of 2.1 µL C₂H₄ kg⁻¹ h⁻¹ after 7 d of storage and 1.3 µL C₂H₄ kg⁻¹ h⁻¹ after 6 d, respectively. Fruit harvested at stages 0, 1, 2 and 3 reached the edible condition (pulp firmness ≤ 20 N) after 7, 6, 4, and 3 d at 23°C, respectively. The ascorbic acid concentration increased 20-30% during ripening, while skin hue angle and titratable acidity was reduced. Independent of the maturity stages at which papayas were harvested, soluble solids did not alter during ripening. Fruit harvested at stages 2 and 3 had superior scores for sensorial evaluation, mainly for flavor and appearance. Harvest at different maturity stages altered fruit postharvest physiology and when effectuated at early stages, it reduced fruit quality but did not make its consumption unacceptable.