

Papaya ripeness and post-harvest storage conditions affect growth, survival and death kinetics of *Salmonella* and spoilage organisms

Amandeep Singh, Md. Asfakur Rahman, Rajat Sharma and Veerachandra Yemmireddy

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Abstract

The purpose of this study was to determine the effect of papaya ripeness level (0, 25, 50, 75 and/or 100 %) and post-harvest storage conditions (i.e., Temperature: 4, 12 and 21 °C, and RH: 55 and 90 %) on the survival kinetics of *Salmonella* spp., and spoilage organisms. In addition, the effect of test conditions on the physico-chemical properties of fresh-cut papayas was also determined. Maradol papayas of different commercial ripeness levels were cut into 3 cm² cubes either with or without a peel. The samples were spot inoculated with 25 µL of nalidixic acid adopted *Salmonella* spp (4-strain) to achieve 4–5 log CFU g⁻¹. The inoculated samples and uninoculated controls were stored in an environmental chamber for up to 14 d. Papaya ripeness level in combination with storage temperature and RH have shown to affect *Salmonella* survival on both fresh-cut papaya and papaya peel. Increasing the fruit ripeness level from 0 to 100 %, storage temperature from 4 to 21 °C and RH from 55 to 90 % increased the log survival. Samples at low ripeness levels showed slower growth of yeast and molds compared to samples at higher ripeness levels. Ripeness levels also showed an effect on the total soluble solids content of fresh-cut papaya during the storage. Based on these findings, papaya ripeness level in combination with post-harvest storage conditions need to be considered to maximize the microbiological safety while maintaining the quality.