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Handling of 'Tommy Atkins' Mango (*Mangifera indica* L.) for Ripe and Ready-to-eat Markets

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Abstract Text:

Recently, demand for ripe and ready to eat mango (RRTEM) has increased, offering an interesting possibility for Mexican producers because of geographic closeness from the production sites to the USA markets. The objectives were to determine the optimum fruit ripening stage at harvest and to delimit shipping temperature and warehouse temporary storage to maintain mango quality. The study was carried out on the mango zone of Nayarit, Mexico with presence of fruit fly. 'Tommy Atkins' fruit were collected from a packing line of a commercial packinghouse during the 2016 harvest season. Fruit were separated by ripening stage, and then submitted to quarantine treatment (115.0 °F for 100 minutes and hydrocooling 69.8-73.4 °F for 30 minutes). Two factors were considered: I. Two levels of fruit ripening at harvest: a) Ripe (rounded form with full cheeks and raised shoulders, pulp color ranging from stage 2 to 3, and a total soluble solid content > 7.3 °Bx); b) ¾ (higher ripening degree with skin turning color and total soluble solid content > 9.0 °Bx) and; II. Four levels of shipping temperature: a) 53.6 ± 1.5 °F; b) 59.0 ± 1.5 °F; c) 64.4 ± 1.5 °F; and d) 71.6 ± 3 °F. In all cases, the relative humidity was 85 ± 10 %. Sampling was done at the beginning and at the end of the shipping simulation period (5 days), and at consumption time. The variables were: Dry matter, weight loss, external appearance, skin color, pulp firmness, pulp color, total soluble solids (°Bx), tritatable acidity, and ratio °Bx/Acidity. We used a Factorial design with 20 replications (fruit) for weight loss and 8 for all the other variables. Results showed that ripening degree was one of the main factors in the handling of RRTEM mango, since the more mature mango showed the highest quality index (QI), and acceptability by consumers. Ripening degree affected pulp firmness, pulp color, and total soluble solids (°Bx), and the ratio of °Bx/Acidity. The shipping temperature significantly influenced most of the variables, especially at the end of shipping simulation. The lower the temperature, the lower the weight loss, higher pulp firmness, and less development of pulp color and total soluble solids. This factor is very important for retailers to plan their orders volume of RRTEM according to their needs. The suggested ripening degree at harvest is ¾ and the shipping temperatures are 59.0 ± 1.5 and 64.4 ± 1.5 °F.