



HANDLING OF 'TOMMY ATKINS' MANGO (*Mangifera indica* L.) FOR RIPE AND READY TO EAT MARKETS

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INTRODUCTION

The demand for ripe and ready to eat mango (RRTEM) has increased, offering an interesting possibility to Mexican producers because of the geographic closeness of production sites to US markets. The objectives of this research were to determine the optimum fruit ripening stage at harvest and to define shipping temperature and warehouse temporary storage conditions to maintain mango quality.

MATERIALS AND METHODS

The study was carried out on the mango production 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 divided according to 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) 3/4 (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: Weight loss, external appearance, pulp firmness, pulp color, and total soluble solids (°Bx). We used a factorial design with 20 replications (fruit) for weight loss and eight fruits for all the other variables.

RESULTS AND DISCUSSION

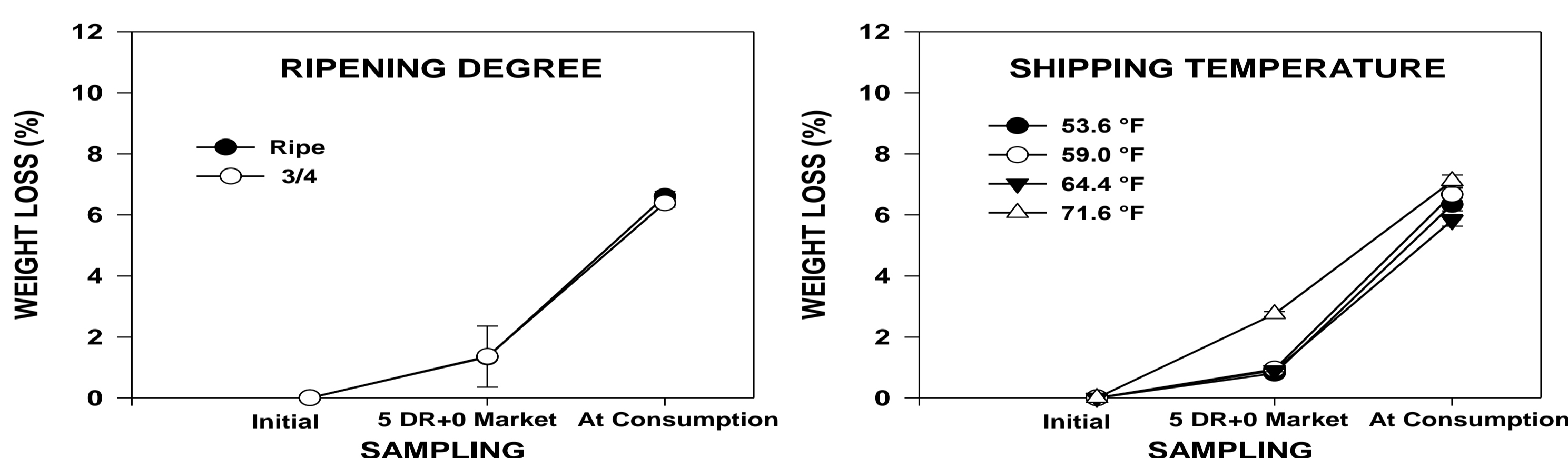


Figure 1. Effect of ripening degree and shipping temperature on weight loss (%) of 'Tommy Atkins' fruit from harvest to consumption stage. Each point is the mean of 20 observations ± Standard Error.



Figure 2. Effect of ripening degree and shipping temperature on external appearance of 'Tommy Atkins' fruit from harvest to consumption stage. Each point is the mean of eight observations ± Standard Error.

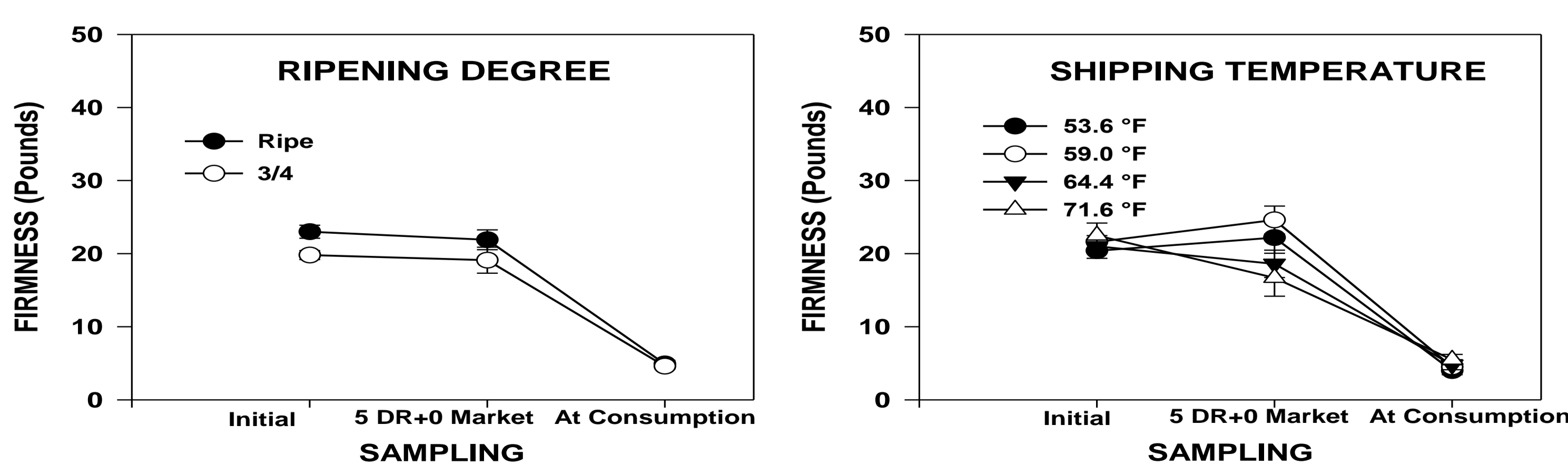


Figure 3. Effect of ripening degree and shipping temperature on firmness (pounds) of 'Tommy Atkins' fruit from harvest to consumption stage. Each point is the mean of eight observations ± Standard Error.

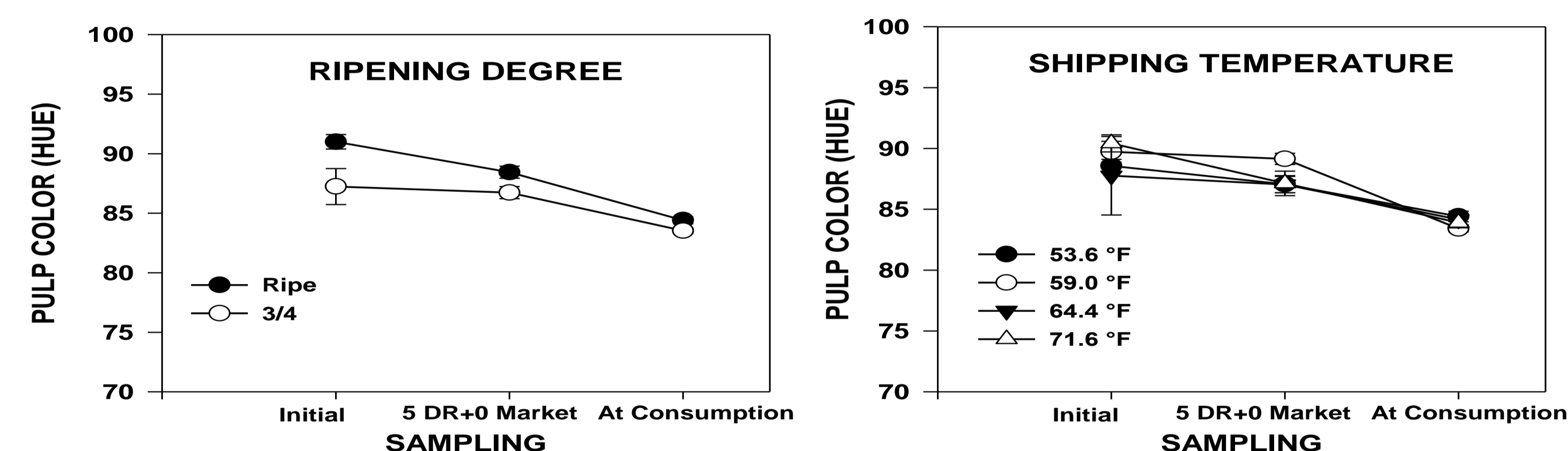


Figure 4. Effect of ripening degree and shipping temperature on pulp color (Hue) of 'Tommy Atkins' fruit from harvest to consumption stage. Each point is the mean of eight observations ± Standard Error.

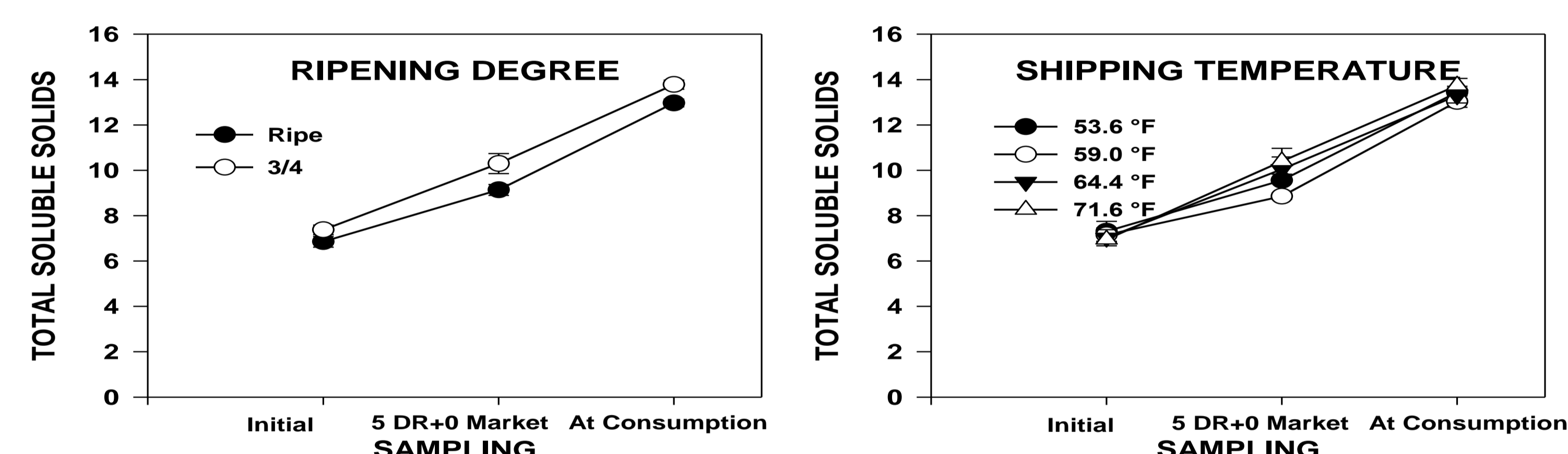


Figure 5. Effect of ripening degree and shipping temperature on TSS (°Bx) of 'Tommy Atkins' fruit from harvest to consumption stage. Each point is the mean of eight observations ± Standard Error.



Figure 6. External appearance due to ripening degree and shipping temperature of 'Tommy Atkins' fruit from harvest to consumption stage.

CONCLUSIONS

Ripening degree affected external appearance, pulp firmness, pulp color, and total soluble solids (°Bx). Shipping temperature significantly influenced most of the variables, especially at the end of shipping simulation. The lower the temperature, the less the weight loss, higher pulp firmness, and less development of pulp color and total soluble solids. The suggested ripening degree at harvest is 3/4 and the shipping temperatures are 59.0 ± 1.5 and 64.4 ± 1.5 °F.

REFERENCES

Osuna-García J.A., Nolasco-González Y. and Rodríguez-Venegas O.M. 2015. Handling of Refrigeration (Temperature and Time) During Shipping of 'Ataulfo' Mango Exported from Mexico to the United States. HortScience 50(9) Supplement 2015 ASHS Annual Conference. S376.

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