

Title Hot water immersion as a quarantine treatment for large mangoes: artificial versus cage infestation.
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Abstract

Market demand exists in the United States for fresh mango (*Mangifera indica* L.) fruit weighing >700 g, yet fruit of this size cannot be imported for lack of a quarantine treatment against fruit flies (Diptera: Tephritidae). Therefore, the objectives of this research were to evaluate the influence of fruit infestation method on mortality of late third instar, fruit fly larvae after fruit were immersed in hot water, and to generate dose mortality and fruit quality data for mangoes >700 g. Results suggested that artificial infestation is preferable to cage infestation because artificial infestation eliminates the direct influence of fruit weight loss on the heat dose delivered to the fruit center. Other advantages of artificial over cage infestation include: fruit maturity at treatment is similar to commercial application, mortality of untreated control fruit can be calculated, larval maturity is uniform and observable, and larvae can be placed into the slowest heating part of the fruit. Infesting with 50 rather than 25 larvae per fruit was preferred because the number of larvae placed into the fruit did not influence mortality and twice as many larvae were evaluated using the same number of fruit. The dose mortality and fruit quality data generated in this research suggest that immersion in water at 46.1 deg C for 110 minutes may provide Probit 9 level quarantine security against Mexican fruit fly (*Anastrepha ludens* Loew) for mangoes weighing up to 900 g without adversely affecting fruit market quality.