

**Title** Controlled in vivo infestation of mandarin fruit with *Ceratitis capitata* for development of quarantine treatments

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#### **Abstract**

Movement of citrus fruit from *Ceratitis capitata*-infested areas requires mandatory quarantine treatments. Development of such treatments requires the use of infested fruit. The in vivo approach is the most realistic way to obtain these fruit. However, it requires previous studies to determine the optimal fruit:fly ratio to minimize the number of decayed fruit and to maximize the number of flies per fruit obtained. In this study, the optimal fruit:fly ratio for the in vivo infestation of mandarin fruit was investigated. The effect of different fruit:fly ratios from 1:5 to 1:50 for an exposure time of up to 3 days on the number of both decayed fruit and puparia per fruit was determined. Provided that an adequate fungicide treatment is applied before the infestation to avoid fruit decay, the use of a 1:10 fruit:fly ratio for 48 h is enough to obtain almost 20 healthy puparia per fruit. These results allow the use of the in vivo approach to develop quarantine treatments against *C. capitata* in mandarins.