

**Aesthetic damage threshold for twospotted spider mites, *Tetranychus urticae*
Koch (Acari: Tetranychidae) on impatiens**

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ABSTRACT

The effects of plant age and infestation level of the twospotted spider mite, *Tetranychus urticae* Koch, on visible plant damage, as well as the effect of plant age on spider mite population growth on impatiens, were determined by inoculating impatiens plants of three different ages with two densities of spider mites. To achieve different spider mite densities and ensure that plants of all three ages received the same spider mite density, each plant was inoculated with either 1 adult female mite per 3 leaves or 6 leaves based on the average number of leaves on plants of each of the three age classes. Subsequently, leaf damage was correlated with cumulative spider mite density (cumulative numbers/leaf/day) and action thresholds were developed. The results showed that older-aged plants exhibited greater damage than younger ones. Regression models of damage thresholds for each plant age were created. The results suggest that monitoring for spider mites must be done periodically throughout the entire plant production cycle and more attention should be given towards the end of the cycle. I found that measurements of visible leaf damage were correlated with plant marketability. Specifically, the level of damage (proportion of damaged leaves/plant) at which plant marketability changes from a 'premium' to a 'discounted' category was (0.04 - 0.06). Thus, regression equations of the damage threshold could be used to estimate a cumulative spider mite density equivalent to the economic threshold. Based on these equations, 5% leaf damage corresponds to cumulative spider mite densities of 2.1, 1.51, and 1.25 for youngest, intermediate, and oldest plants, respectively. Because the damage threshold on impatiens was shown to be very low, the action threshold for biological control is essentially zero and predators would need to be released as soon as damage is observed.

