

Within-Plant Distribution of Twospotted Spider Mites (Acari: Tetranychidae) on Impatiens: Development of a Presence–Absence Sampling Plan

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ABSTRACT The twospotted spider mite, *Tetranychus urticae* Koch, is an important pest of impatiens, a floricultural crop of increasing economic importance in the United States. The large amount of foliage on individual impatiens plants, the small size of mites, and their ability to quickly build high populations make a reliable sampling method essential when developing a pest management program. In our study, we were particularly interested in using spider mite counts as a basis for releasing biological control agents. The within-plant distribution of mites was established in greenhouse experiments and these data were used to identify the sampling unit. Leaves were divided into three zones according to location on the plant: inner, intermediate, and other. On average, 40, 33, and 27% of the leaves belonged to the inner, intermediate, and other leaf zones, respectively. However, because 60% of the mites consistently were found on the intermediate leaves, intermediate leaves were chosen as the sampling unit. These results lead to the development of a presence–absence sampling method for *T. urticae* by using Taylor coefficients generic for this pest. The accuracy of this method was verified against an independent data set. By determining numerical or binomial sample sizes for consistently estimating twospotted spider mite populations, growers will now be able to determine the number of predatory mites that should be released to control twospotted spider mites on impatiens.

KEY WORDS binomial sampling, spider mites, floriculture, bedding plants