

Section VIII.

Mites & Sap-Sucking Insects

A SAMPLING PLAN FOR TWOSPOTTED SPIDER MITES ON HOPS

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Twospotted spider mites, *Tetranychus urticae*, were sampled on hop, *Humulus lupulus*, main stem leaves at the 0, 1, 2, 3, 4 and 5 m heights to determine which elevation(s) would provide the best estimate of the number of mites over the whole vine. The number of mites at the 2 and 4 m heights had the highest correlations with whole vine means but the number at 2 m overestimated the vine mean and the number at 4 m underestimated the vine mean. The number of mites on main stem leaves at the 2 and 4 m elevations combined had the highest correlation ($r = 0.980$) with the mean number of mites over all the heights sampled. The mean number of mites at 2 and 4 m was also the closest to the vine mean of the leaves sampled. Therefore, we developed a sampling plan based on the total number of adult female mites on main stem leaves at the 2 and 4 m heights combined. The sampling plan was based on the adult female spider mite because it is easier to count in the field and should give a good indication of the potential for change in mite numbers. Additional sampling was only done at the 2 and 4 m elevations to increase the number of observations used to develop the sampling plan.

A binomial sequential sampling plan was developed to make sampling faster and easier than a numerical plan. The binomial sampling plan requires only that the sampler determines if a sample of main stem leaves from the 2 and 4 m heights has more than 3 adult female twospotted spider mites. Counting the total number of mites is not necessary. A running total of the number of samples with > 3 adult females is kept. After each sample, the sampler checks the total against the numbers representing the sampling plan upper and lower decision lines. When the total is greater than the value for the upper line, a control treatment is indicated and the sampler can quit sampling. If the total is below the lower decision line value, sampling can cease and no control is needed at that time. If the total is between the two sampling plan values, more information is needed and another sample must be taken. The sampling plan was tested for accuracy and precision by sampling computer generated data sets that had known means and variances.