

Thresholds, Monitoring and Sampling

Monitoring European Red Mite Eggs in Winter

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Very few people sample for European red mite eggs in the dormant season. Most growers routinely treat mite eggs in the delayed dormant period, regardless of the population density. The treatment, usually oil, is important for added prevention of San Jose scale. The savings of skipping an inexpensive oil treatment for a few seasons may not be worth the cost of scale treatment for several seasons once the scale become established. Nevertheless, some growers do skip the oil. If the grower insists on only treating when necessary, some scouting for overwintering eggs can be done. This would be most useful for targeting the worst blocks for preventive sprays and blocks that need to be monitored carefully for potential problems in the summer.

In 1995, I did some preliminary scouting to determine if there was a correlation between egg densities in winter and mite damage in summer. The sampling plan was designed to be as quick as possible in order to cover as many blocks as necessary. Therefore, the sample sizes were determined with these time constraints. I collected 20 2-inch spurs per block from the outside of trees at chest level in 50 blocks. I divided the mean number of eggs per spur into three categories: less than one per spur, one to ten per spur, and greater than ten per spur. For this trial the eggs were counted as accurately as possible with the aid of a field glass. The grower applied no egg treatments. Starting in June, mite damage was rated every week as very low to very high. A rating of "high" meant chlorosis was visible from a distance of at least 10 ft, was widespread throughout the orchard, and, above all, could cause concern to the grower. The egg estimates were matched with the highest damage rating during the summer for each block.

A small percentage of the blocks was damaged by European red mite, even when the overwintering egg population was estimated to be less than one per spur. However, as the egg density increased, there was an apparent increase in the percentage of blocks that incurred significant damage (Fig. 1). An action threshold of ten per spur was selected because it roughly correlated with a more than 10% chance of damage to the orchard.

The threshold was tested in 1996 and 1997 with 168 blocks. In 1996, the threshold resulted in 68% correct predictions. Of the incorrect predictions, 30% of blocks were expected to develop damage but did not, and 2% of blocks were expected have no damage but did. In 1997, the percentages were 70%, 23% and 7%, respectively. The sampling method, although crude and with a very low sample size, helps in targeting orchards for future scouting attention.

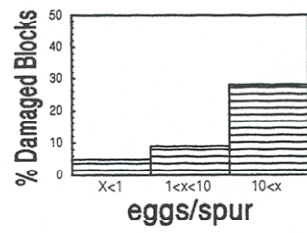


Fig. 1. Percentage of blocks with mite damage in Summer, after blocks are sorted according to density of overwintering European red mite eggs. Blocks rated "high" for mite feeding during Summer scouting were considered damaged.