




Updated spider mite management guidelines for California almonds as sixspotted thrips replace phytoseiids as predominant predator*

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Spider mites (*Tetranychus* sp.) are a universal pest of almonds in California that are naturally regulated by a variety of biological control organisms. Historically, phytoseiids have served as the predominant predator whereas recent changes in pesticide spray programs have caused a higher-level predator, the sixspotted thrips, *Scolothrips sexmaculatus*, to gain importance. Given the changing dynamics, we conducted research to re-evaluate treatment thresholds for spider mites and compare those to previous thresholds established in the 1980s. Efforts were made to develop a sticky card trap system to monitor for sixspotted thrips (Haviland *et al.*, 2021a) that was used to generate key information on its biology, phenology, and role in predator-prey relationships (Haviland *et al.*, 2021b). Finally, capture data for sixspotted thrips were used to develop thresholds based on sixspotted thrips sampling that could be used to predict whether mite populations would increase, decrease, or stay the same (Haviland *et al.*, 2021c).

Data from all of these trials have been used to develop an integrated pest management program for almond growers that allows treatment decisions to be made according to densities of the pest, as well as its natural enemies. During the spring and early summer, data showed that the capture of 1 sixspotted thrips/trap/week is sufficient to maintain biological control of *T. pacificus*. Surveys of >20 commercial almond orchards during April and May revealed that 100% of these orchards met this biological control threshold for which no treatment with miticides is needed. This was in contrast to the well-established industry practice of making prophylactic applications of miticides at this time of year, primarily with abamectin that is toxic to sixspotted thrips.

Separate treatment thresholds were established for the period of time referred to as hull split that occurs approximately 2 to 4 weeks prior to when the first variety is harvested. This is because treatment thresholds cannot be based on whether an orchard currently meets a treatment threshold, but instead must be made based on projections of whether a threshold will be reached during the next two months of harvest after the last opportunity to make a miticide application has passed. Probability tables revealed that orchards with a minimum of 3 sixspotted thrips/card/week have a 77% probability that spider mite density will decrease within 14 days, and that no miticide needs to be included with hull split insecticide applications.

Keywords: monitoring, treatment thresholds, sampling, sticky traps, integrated pest management

References

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