

Pacific Spider Mite Control in the Lower San Joaquin Valley

David Haviland and Stephanie Rill, University of California Cooperative Extension, Kern County

Cooperators: Paramount Farming Company (Brad Higbee, Doug Blair)



Overview

Pacific spider mite is a perennial problem for almond growers throughout the San Joaquin Valley. In the lower SJV, mites have historically been controlled by an application of abamectin around May, followed by a contact miticide at hull split. North of Fresno County, one miticide (if any) around hull split typically provides season-long control, though early-season 'preventative' management strategies have become common.

Now, however, there are many new miticide tools available to growers that have allowed a rethinking of how we manage mites. The purpose of our 2009 research program was to compare the use of abamectin as a 'preventative' treatment to the use of Envidor, Zeal or Onager once mites reached a treatment threshold. We also evaluated Fujimite as a rescue treatment for situations where mite populations have reached levels far beyond recommended action thresholds.

Large Scale Trials- May or June 2007 and 2008

Field Trials- May 2007 and June 2008

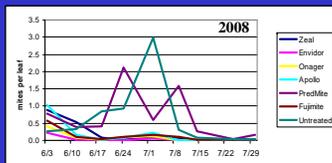
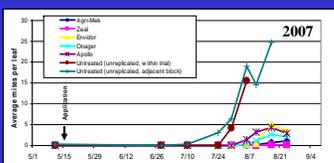
Mature Almond Block, Paramount Farming Company, Kern Co.

Procedures

- 5-6 treatments, 5-6 blocks
- Untreated check not replicated
- Plot size = 2.5 Acres, Total trial size 80 ac.
- Application made in mid-May 2007 and early June 2008
- Air-blast sprayer @200GPA.

Results

- New growth regulators were all effective in May and June
- Fujimite was effective in June
- Good mite pressure in 2007
- Moderate mite pressure in early July 2008, but biocontrol took care of it.



Large Scale Treatment Program 2009

Field Trials-Treatment Program Comparisons

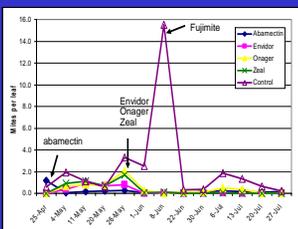
Mature Orchards, Paramount Farming Company, Kern Co.

Procedures

- 5 treatments (same as 2010 except there were rescue treatments with Fujimite in mid-June)
- RCBD design, 4 blocks
- 17-acre plots (~1,500 trees), 280 acre trial

Results cont...

- Treatment thresholds from the University of California accurately predicted when miticides were needed or not needed. This occurred throughout the season.



- Preventative abamectin treatments provided season-long control
- Threshold-based programs with either Envidor, Onager, or Zeal all provided season-long control
- Fujimite did an excellent job as a rescue treatment and lowered mites from 15 mites/leaf to below treatment threshold.
- Treatment programs that target mites at levels up to a treatment threshold provided better season-long control than did a rescue treatment program

Large Scale Treatment Program Evaluation 2010

Field Trial 2010- Treatment Program Comparisons Mature Almond Orchard- Paramount Farming Company

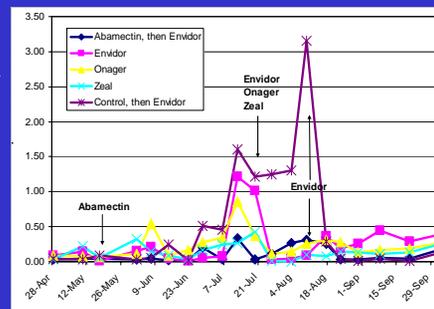
Procedures

- Five treatments (all including 1% 415° Oil)
 - Preventative abamectin + Envidor at hull split
 - Envidor at threshold
 - Onager at threshold
 - Zeal at threshold
 - Untreated check, then rescue treatments with Envidor

- RCBD design, 4 blocks
- 17-acre plots (~1,500 trees), 280 acre trial

Applications

- Preventative abamectin + 1% oil treatments were made in mid-May as a tank mix with an alternaria spray. These plots were oversprayed at hull split with Envidor + Oil as part of a grower standard program for the lower San Joaquin Valley.
- Envidor, Onager and Zeal (all with 1% oil) were sprayed on 21 July when mite populations reached treatment thresholds recommended by the Univ. of CA. This occurred in mid-July.
- Mite populations in the untreated checks needed to be cleaned up in mid-August and were oversprayed with Envidor + Oil as a 'rescue' treatment.



Results and Conclusions

During 2010 excellent spider mite control was achieved by the grower standard program of May abamectin followed by Envidor at hull split as well as by the threshold-based programs using Envidor, Onager or Zeal. However, the threshold-based programs were able to achieve control with only one foliar miticide application compared to two for the grower standard program. This was similar to the results we found in 2009. The main difference between 2009 and 2010 was that threshold-based scouting in 2009 recommended treatments for mites in May compared to 2010 when thresholds were not reached until late July. In either case, one miticide was sufficient for season-long mite control.

These data suggest that the University of California presence/absence threshold-based programs for spider mites can be effectively employed for spider mite management, and have the potential to reduce the number of miticides needed compared to standard May abamectin + hull split spray programs.

Miticide Screening Trials 2009-10

Field Trials-Miticide Screening Comparisons

First or Second-leaf Almonds, UCCE Almonds Orchard, Kern Co.

In summer 2009, we conducted one miticide screening trial that evaluated several potential miticides. In summer 2010, we had three different miticide trials. One miticide trial that compared the different formulations of Acramite (Acramite 50WS and Acramite 4SC), and two early development miticide trials.

Acknowledgements:

- The authors wish to thank Minerva Gonzales, Celine Carlson, Amanda Shumway, Sara Walker, Jed Dubose, Natalie Hernandez, Soledad Chocoteo, Angelica Duran, Russell Goolsby, Samantha Williams, Tiana Armbricht, Analiese Scrivano, Allison Mebane, Matt Zimmerman, Cory Bryant and Cornelius Harris for data collection and evaluation.
- We thank Paramount Farming Company for providing equipment, time, and large research sites with untreated controls for use in these trials. We thank the almond growers throughout the state for funding provided by the Almond Board of California.
- Anybody with questions regarding this research and its results can contact David Haviland, UC Cooperative Extension, Kern Co., dhaviland@ucdavis.edu, 661 868-6200, or your local almond farm advisor.

IPM Program Recommendations

Guiding principles

- Mite treatments should only be made when mites are present
- Mite treatments should be made based on established treatment thresholds
- The UC presence-absence method, which also takes into account the presence or absence of beneficials, is accurate in predicting the need for a treatment
- Viable treatment programs exist for any time of the season.

Management Practices

- If you have no mites, don't treat.
- If you have mites, don't treat until they reach a treatment thresholds (let beneficials get established and do their jobs).
- If a treatment threshold is reached in May (rare in areas north of Fresno Co.), treat with an abamectin product, Envidor, Zeal, Onager, or Apollo.
- If a treatment threshold is reached in June, treat with Zeal, Onager, Envidor, Fujimite, or Acramite
- If a treatment threshold is reached in July, treat with Envidor, Fujimite, Zeal, Acramite, or other contact miticide
- If it is hull split and a few mites are present, but not at a threshold, consider 1-2% 415 oil with a navel orangeworm spray to suppress mites and maintain beneficial organisms
- If something goes wrong and mites take over, the best option for 'rescue' treatments is Fujimite
- To get the best out of miticide treatments, all applications should be made in sufficient water volume and at ground speeds conducive to good coverage.

The UC Spider Mite Monitoring Program

www.ucipm.ucdavis.edu

(under the pest management guidelines for almonds)