

# Developing Sampling Methods for Pre-Season Mite Detection and Implementing Management Decisions in Almonds

**Project Leaders: Jhalendra Rijal<sup>1</sup> and Kris Tollerup<sup>2</sup>**

<sup>1</sup>UC Cooperative Extension-Stanislaus, 3800 Cornucopia Way, Ste. A, Modesto, CA 95358 (209) 525-6800, jrijal@ucanr.edu

<sup>2</sup>Kearney Ag. Res. and Ext. Center, 9240 S. Riverbend Ave., Parlier, CA 93648 (559) 646-6527, ketollerup@ucanr.edu

## PROJECT SUMMARY

### Objectives for current year:

1. Characterize mite overwintering locations in the soil in relation to tree trunks
2. Determine the soil depth in which overwintering mites are abundant
3. Identify the time of the year in which spider mites are moving from the soil to the trees using trunk-band traps

### Background and Discussion:

Several species of mites that include brown mites, European red mites, and web-spinning spider mites can feed on almond leaves. Although there has been an increased concern of non-web-spinning mites, the web-spinning spider mite is still the important problem in the majority of almond growing area in California. Mite feeding can ultimately lead to tree health and productivity decline. Based on our understanding, spider mites overwinter in orchard floor during the winter and move to tree canopy during the season. In practice, we only know the mite infestation after we see their damage on leaves (leaf stippling) in spring or later. If there are ways to quantify overwintering mite population in the soil and/or during their movement to the tree canopy from the ground, we can potentially use that knowledge for pre-season mite detection. Two key goals of the project are 1) to develop early sampling method(s) to detect and estimate overwintering mites when they are on the orchard floor (using soil samples), and 2) to assess mite population and timing when they begin to move from the ground to tree canopy (using tree-band traps).

More than 1000 cups of soil samples taken from almond orchards representing the San Joaquin Valley during the winter, were processed and inspected for the mite presence. No overwintering spider mites were recovered from soil samples that were taken from the surface to the 2-inch deep, and at different distances from the tree (base, 3 ft, 6 ft).

In addition, we used tree-band traps to capture migrating mites in the trunk while they are moving to tree canopy from the ground. We were able to capture a substantial number of brown mites which has become an important pest in many almond orchards in recent years. Finding brown mites in the trunk has never been reported before, and we suspect that there must be a new species of "brown mite" present in almond orchards. The UC IPM Guideline describes only one species of brown mite, *Bryobia rubrioculus*, which is not supposed to be caught in tree trunks. Based on the preliminary identification, the new species has been identified as clover mite, *B. praetiosa*. Given the abundance of this mite species in the trunk, tree-band trapping may be used as the early-detection tool for the "brown mites" monitoring in almond orchards. No web-spinning spider mite was recovered from tree-band traps. Although further study is required to develop and recommend a sampling protocol for brown mite monitoring in almond orchards, use of tree-band traps (i.e., 2-inch wide duct tape encircling the tree trunk) from late February- April should help in detecting brown mite presence in the orchard.

### Project Cooperators and Personnel:

Frank Zalom, UC Davis - Entomology; Roger Duncan, UCCE - Stanislaus; Nicola Nicole, UC Davis - Entomology

### For More Details, Visit

- Poster location 110, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2018) at [Almonds.com/ResearchDatabase](http://Almonds.com/ResearchDatabase)
- 2016 - 2017 Annual Reports (16-ENTO10-Rijal-Tollerup) on the web at [Almonds.com/ResearchDatabase](http://Almonds.com/ResearchDatabase)