Improving Integrated Pest Management of Spider Mites on Almond

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PROJECT SUMMARY

Objectives for current year:

- Determine the effectiveness of a prophylactic, early-season application of abamectin and other miticides to manage spider mite populations on almond.
- Determine if southern San Joaquin Valley populations of *T. urticae* and *T. pacificus* have developed resistance to abamectin.
  a) Establish base-line LD_{50} for susceptible strains of twospotted and Pacific spider mites to abamectin.
  b) Evaluate spider mite populations collected from various locations in the southern and central San Joaquin Valley against the susceptible strain.

Background and Discussion:

Preventing economic damage from twospotted spider mite, *Tetranychus urticae* Koch, and pacific mite, *Tetranychus pacificus* McGregor, is a key component of arthropod management strategies on almond. One spray strategy is to apply abamectin in May while spider mite densities are well below threshold levels. Often these spring abamectin applications occur in conjunction with another insecticide targeting navel orangeworm.

No studies, however exist that have evaluated if these prophylactic sprays provide a better management strategy than the recommended threshold tactic.

Moreover, the heavy reliance on abamectin to manage spider mites on almond has caused concern that resistance has developed in some populations, most notably in the southern San Joaquin Valley. This project is investigating mite populations primarily in the southern and mid-San Joaquin Valley for abamectin resistance.

Between June and Sept. of 2017, we evaluated abamectin resistance of Pacific spider mite populations collected from seven orchards in Fresno, Kings, Tulare, and Kern counites. Among four of the sites, resistance ratio of an untreated lab colony vs. field collected colonies ranged from ~3 to 16.

In 2017 we evaluated three prophylactic treatments (applied 9 June): 1) Abamectin, 2) Nealta, and 3) Zeal, against 4) abamectin applied at threshold (~2 mites per leaf), and 5) an untreated control at two sites.

In 2017, site two tended to have higher mean mite counts than did site one. Two mites per leaf (threshold) was not reached until 24 and 31July at sites two and one respectively, therefore treatment 4 was not applied at either site due to the proximity of harvest. At site one (low pressure) in treatments 1, 2, and 3, mean mites per leaf remained below one to 7 Aug. In contrast, at site two (high pressure) mite counts per leaf exceeded a mean of six in treatment 1 and ~16 mites per leaf in treatments 2, 3, 4, and 5. A precipitous decrease to below one mite per leaf occurred over a three-week period from 7 to 30 Aug in all plots at both sites.

Similar to 2016, our 2017 data support that prophylactic treatments did not provide any benefit - mean density remained below 2 mites per leaf well into the hull split period.

Project Cooperators and Personnel:
Ashlee DeSilva, Wonderful Orchards; Samantha Rodriguez and Matthew Hartwig

For More Details, Visit

- Poster location 109, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2018) at Almonds.com/ResearchDatabase
- 2016 - 2017 Annual Reports (16-ENTO17-Tollerup) on the web at Almonds.com/ResearchDatabase