**500 Word Summary for the CRB Annual Report**

**Project 5500-06E**
**Texas Citrus Mite and Yuma Spider Mite Studies**

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Texas citrus mite and Yuma spider mite are new pests of citrus in the lower San Joaquin Valley. Texas citrus mite has been found on a wide range of citrus varieties and causes leaf drop and fruit stippling in the early fall. Yuma spider mite has only been found on mandarins and causes severe leaf and fruit stippling. Both of these pests have been long-time residents in southern citrus production areas of California, but are behaving differently in the San Joaquin Valley. Our objective was to learn about these pests in the San Joaquin Valley and to develop IPM programs to control them.

We began work in 2006 to gain an understanding of the basic biology of Texas citrus mite and Yuma spider mite in citrus in the San Joaquin Valley, including seasonal fluctuations in mite density, their location in the trees, and the effects on the crop.

Texas citrus mite biology was evaluated in two Kern County citrus orchards. In the first we evaluated mite distribution within the tree during June and July. Data showed that Texas citrus mite at this time prefers to feed on the new flush, followed by the fruit (Fig. 1). Evaluations of the inner versus outer canopy revealed that approximately 90% of the mite population is located in the outer canopy, which helps explain why miticide treatments are so effective. Unfortunately this plot was accidentally oversprayed in late July and we were not able to continue this experiment through December.

The second research site contained two side-by-side orchards of Fisher Navel and Valencia oranges. We evaluated mite densities weekly from 6 October to 20 December at two locations for each variety. Data showed that significant increases in mite densities on the leaves occurred in the early part of November, increased through November (to a maximum of 3 to 7 mites per leaf), and then decreased in early December as temperatures cooled (Fig. 2). By the 8 December evaluation mite densities for all orchards were less than 0.5 per leaf. At these low densities we were not able to correlate pest density to any leaf or fruit damage, nor were there any differences in pest density between the navel or Valencia oranges. This was despite the fact that decreased irrigation (which is thought to induce outbreaks of this pest) was utilized in the Navels and not the Valencias.

The second mite species of interest during this project was Yuma spider mite. We initiated our research during 2005 by conducting a miticide trial in a block of Clementine mandarins in Kern County. Data from the trial (Table 1) documented that Yuma spider mite is very sensitive to miticides, with all treatments (except for Evergreen and Dusting Sulfur) resulting in significant reductions in mite density.

During 2006 our goal was to evaluate the biology of Yuma spider mite. However, no citrus

producers that we are aware of reported seeing this pest during 2006. Additionally, we did biweekly monitoring from June to September at the site of the 2005 miticide trial without finding a single Yuma spider mite in 2006, despite the fact that no miticides were used in this block since the summer of 2005.

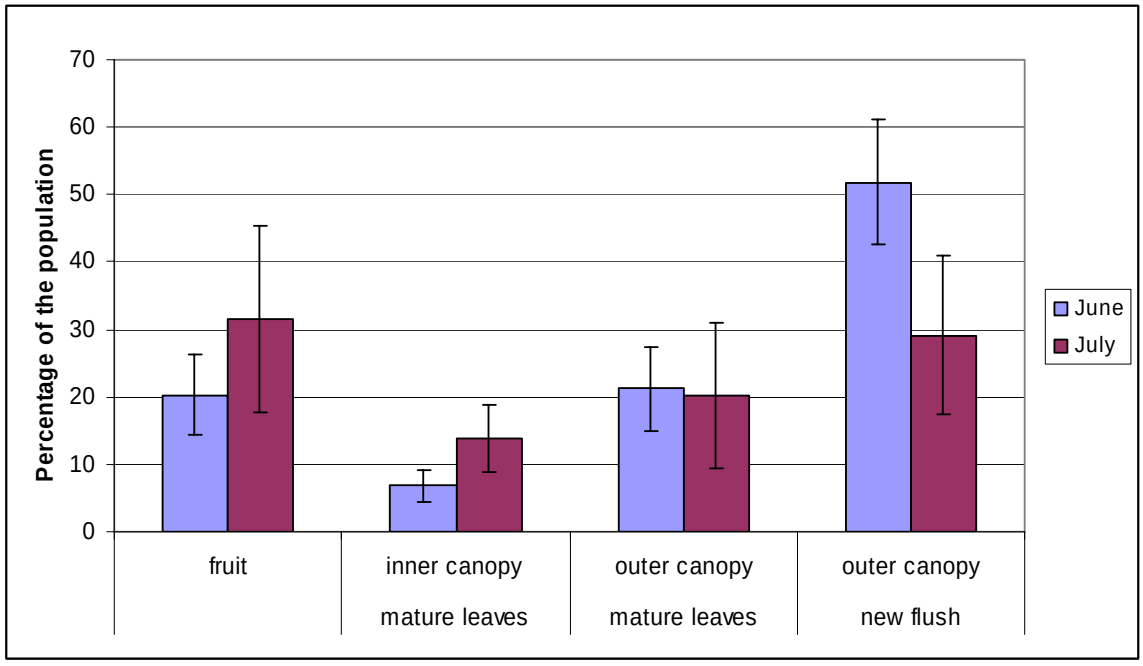


Figure 1. Distribution of Texas citrus mite on navel orange trees, Kern Co.

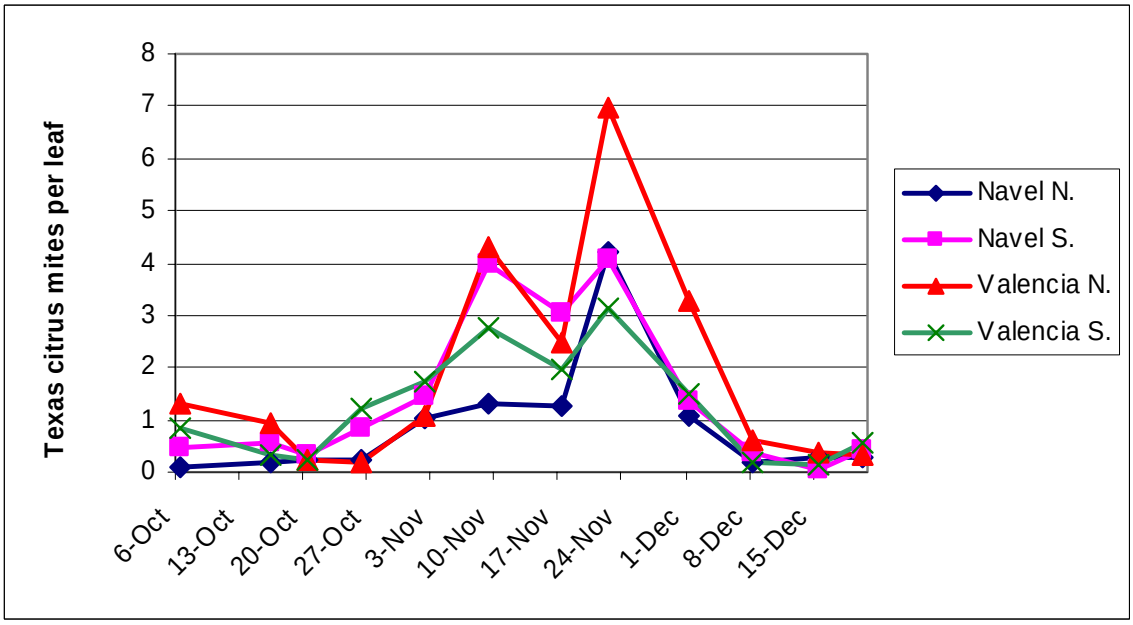


Figure 2. Seasonal changes in Texas Citrus Mite density, Fall 2006.

| Treatment/ Formulation | Rate amt product/acre | Mean no.motile Yuma spider mites per leaf Pre | 4 DAT | 7 DAT | 14 DAT | 21 DAT |
|---|---|---|---|---|---|---|
| Agri-Mek 0.15EC +1% oil | 15 fl oz | 29.5 a | 1.2 abc | 0.8 ab | 1.0 ab | 1.5 c |
| Danitol 2.4EC | 20 fl oz | 26.2 a | 0.3 a | 0.2 a | 0.2 a | 0.6 ab |
| Envidor 240SC | 18 fl oz | 37.5 a | 3.5 bcd | 0.6 ab | 0.5 ab | 0.4 ab |
| Fujimite 5EC | 2 pt | 26.0 a | 0.5 a | 0.8 ab | 1.0 ab | 0.4 a |
| Kanemite 15SC | 21 fl oz | 28.8 a | 1.7 abc | 1.0 ab | 0.8 ab | 0.3 a |
| Kanemite 15SC | 31 fl oz | 28.0 a | 0.6 a | 0.5 ab | 0.5 ab | 0.2 a |
| Nexter 75WP | 10 oz | 22.0 a | 2.4 bcd | 1.7 bcd | 1.4 bc | 0.5 ab |
| Onager 11.8EC | 20 fl oz | 36.8 a | 2.1 abc | 1.0 ab | 0.7 ab | 0.2 a |
| Vendex 50WP | 2 lb | 28.7 a | 1.2 ab | 1.1 abc | 0.8 ab | 0.3 a |
| Vendex 50WP | 4 lb | 18.6 a | 2.0 abc | 0.2 a | 0.3 a | 0.3 a |
| Zeal 72WDG | 3 oz | 30.4 a | 1.0 ab | 0.4 a | 0.7 ab | 0.4 a |
| Evergreen EC 60-6 | 8 fl oz | 31.1 a | 3.9 cd | 3.4 d | 2.5 d | 0.3 a |
| Special Electric Sulfur | 125 lb | 30.2 a | 5.2 de | 1.7 bcd | 1.3 bc | 1.0 bc |
| Water check | | 48.2 a | 7.9 ef | 1.6 bcd | 0.6 ab | 0.6 ab |
| Untreated check | | 20.7 a | 9.9 f | 2.6 cd | 2.1 cd | 0.5 ab |

Means in a column followed by the same letter are not significantly different ( $P > 0.5$, Fisher's protected LSD) after square root (x + 0.5) transformation of the data. Untransformed means are shown.

Captioned Photograph: "Adult female and nymph Texas citrus mite"