

***Neohydatothrips burungae* Phenology & Survey**

Project Leader:

Mark Hoddle (mark.hoddle@ucr.edu)

Cooperators:

Tom Roberts - Integrated Consulting Entomology, David Machlitt – Consulting Entomology Services, Rick Shade – Calavo, Frank Alegria – Calavo, Nile Peterson – Calavo, Scott Scarbrough – Mission Produce, & Gary Bender - UCCE

Benefit to the Industry

In December 2004, *Neohydatothrips burungae* was collected from avocado trees in San Diego California during a survey for avocado lace bug. *Neohydatothrips burungae* has been collected from avocados in Mexico and Guatemala by Hoddle (Hoddle et al., 2002). In Mexico, this thrips was as common as avocado thrips, *Scirtothrips perseae*, in areas of intermediate altitude. In colder high altitude areas *S. perseae* dominated, almost exclusively, and in warmer more humid lowland areas *N. burungae* was dominant on avocados. *Neohydatothrips burungae* has also been collected in large numbers from mangoes in Nayarit, suggesting it may be more polyphagous than *S. perseae*. With a hand lens, *N. burungae* is very similar looking in color and size to *S. perseae* and without specialized training PCA's and growers would not be able to easily separate the two if collected together in the field. When this work was originally initiated, it was unknown how widespread *N. burungae* was on California grown avocados or how common this thrips would be in comparison to the widespread and pestiferous *S. perseae*. Consequently, a survey through all major avocado growing areas in California was undertaken to survey for *N. burungae* to determine its distribution and abundance. To effectively manage foliage and fruit damaging thrips it is imperative to determine how widespread and abundant *N. burungae* is in comparison to *S. perseae*. Additionally, specimens need to be collected and preserved for potential future DNA analysis (similar to the completed DNA fingerprinting project for *S. perseae*) and photography for educational and outreach purposes. Consequently, on going field surveys over a three year period have been conducted to delineate the range and to ascertain the abundance of *N. burungae* in Hass avocados in California.

Summary of Results to Date

Extensive surveys in avocado orchards for *N. burungae* have been conducted in San Diego, Riverside, Ventura, Santa Barbara, and San Luis Obispo counties for *N. burungae*. Surveys were conducted in spring and late summer over 2006 through 2008. Survey results have consistently suggested that *N. burungae* is widespread in San Diego county but populations are very low in comparison to avocado thrips, *Scirtothrips perseae*. Similarly, very few specimens of *N. burungae* have been found in on Hass avocados grown in Riverside and Ventura counties. This thrips has not been collected from avocados growing north of Ventura County. At all sites where *N. burungae* has been collected, populations have typically consisted of just 0.5-10% of thrips collected. *S. perseae*, the abundant avocado thrips, has accounted for >95% of collected thrips.

The long-term significance of these survey results is uncertain and several scenarios are possible: (1) Climatic and growing conditions are unfavorable for *N. burungae* in California and

populations and geographic range of this insect are not going to increase significantly from currently observed levels. (2) *S. perseae* under California growing conditions is too strong a competitor for *N. burungae* and will suppress population growth of *N. burungae*. (3) *N. burungae* is going through a lag phase as it adjusts and adapts to California conditions while continuing to spread at low almost undetectable densities. Given sufficient time (possibly many years from time of first detection) populations may unexpectedly erupt and cause significant damage once the lag phase is over and populations of this thrips are more easily detected and pest densities cause readily observable damage.

Due to the very low numbers of *N. burungae* encountered at survey sites so far, there have been no substantial populations to follow for phenology studies, or to initiate laboratory colonies for insecticide evaluations. The final field survey for *Neohydatothrips* is planned for July 2008. If no significant increases in abundance and distribution are observed it will be concluded that for the time being *N. burungae* does not present a significant pest threat to the California avocado industry.

Fig. 1. (A) Avocado thrips, *Scirtothrips perseae*, and (B) *Neohydatothrips burungae* are very similar in size, color, and habit. This makes them very difficult to accurately distinguish apart in the field when examining avocado leaves with a hand lens. A distinguishing feature of *N. burungae* is the heavy “tiger-stripping” or maculation on the dorsal surface of the thorax and the bold patterning or “spotching” on the thorax.

