

***Neohydatothrips burungae* (Thysanoptera: Thripidae) Phenology & Survey**

New Project: Year 1 of 1

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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, *Pseudacysta perseae* (Hemiptera: Tingidae). *Neohydatothrips burungae* has been collected from avocados in Mexico and Guatemala by Hoddle (Hoddle et al., 2002). In Mexico and Guatemala 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 this thrips 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 conducted it was unknown how widespread *N. burungae* was on California grown avocados or how common this thrips is 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.

Objectives

To determine the threat *N. burungae* poses to California grown avocados and 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 for potential future DNA analysis (similar to the completed DNA fingerprinting project for *S. perseae*) and photography for educational and outreach purposes (see Fig. 1). Regular field surveys have been conducted to delineate the range of *N. burungae* in California and the results of this work are presented here.

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 August 2005, February, March, June, and August 2006. Survey results suggest that

N. burungae is widespread in San Diego County but populations are very low in comparison to avocado thrips, *Scirtothrips perseae*. Very few specimens of *N. burungae* have been found in Riverside and Ventura counties. The significance of these 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 to California conditions and is continuing to spread at low almost undetectable densities. Populations may erupt and cause significant damage once the lag phase is over and this thrips is more easily detected and damage is observable.

In sites surveyed in San Diego County in August 2005, 41% had *N. burungae*, but just 6% (58) of collected thrips (4,932 *S. perseae* were collected) were *N. burungae*. In 2005, just one site (10%) in Riverside County (UC Ag. Ops) had *N. burungae* and four females were found. In 2005, 3,979 thrips were collected from Ventura, Santa Barbara, and San Luis Obispo County avocado orchards and 0 (zero) *N. burungae* were found.

Survey results in late February – early March, June, and August 2006 differed little from results of the August 2005 survey. Low numbers of *N. burungae* were found in San Diego County, and fewer were detected in Riverside County (four females had been found the previous August [2005]). This resulted in *N. burungae* comprising 0.7% of total thrips collected from San Diego and Riverside Counties. A single female was found in Ventura County in February 2006. Singletons were again collected in Ventura in June and August 2006 and one specimen was found in Carpinteria in August 2006. No *N. burungae* have been found in San Luis Obispo County over the entire duration of this study. The single finds of *N. burungae* in Ventura County have accounted for <1% of total thrips collected from avocados north of Los Angeles. Survey Results are summarized in Table 1.

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. Extensive surveys for thrips in urban and undeveloped wilderness areas in San Diego, Riverside, Ventura, Santa Barbara, and San Luis Obispo Counties have failed to discover *N. burungae* populations of any consequence making it impossible to compile host plant lists for this thrips in California. It is recommended that surveys for *N. burungae* continue, but the intensity of the effort be scaled down, with just two surveys being conducted in spring and mid-summer in 2007.

Table 1. Summary collection data for *Scirtothrips perseae* and *Neohydatothrips burungae*. In 2005, 23 (San Diego and Riverside Counties) and 27 sites (Ventura, Santa Barbara, and San Luis Obispo Counties) were sampled for *N. burungae* north and south of Los Angeles, respectively. In 2006, the number of sites sampled was reduced to 18 (San Diego and Riverside Counties) and 11 (Ventura, Santa Barbara, and San Luis Obispo Counties) north and south of Los Angeles, respectively.

Sampling Date	Total <i>S. perseae</i> collected		Total <i>N. burungae</i> collected		% <i>N. burungae</i> collected		% Sites with <i>N. burungae</i>	
	SD & Riverside Counties	Vent., SB, & SLO Counties	SD & Riverside Counties	Vent., SB, & SLO Counties	SD & Riverside Counties	Vent., SB, & SLO Counties	SD & Riverside Counties	Vent., SB, & SLO Counties
Aug. 2005	953	3979	58	0	5.74%	0%	60% (n=14)	0%
Feb. 2006		1306		1		0.07%		9% (n=1)
March 2006	561		4		0.71%		16% (n=3)	
June 2006	367	1338	24	1	6.14%	0.07%	39% (n=7)	9% (n=1)
Aug. 2006	11	284	4	2	26.67%	0.07%	11% (n=2)	18% (n=2)
Total	1892	6907	90	4	4.54%	0.06%		

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.

