

**D20****PISTACHIO:** *Pistacia vera* L.**NAVEL ORANGEWORM CONTROL IN PISTACHIO, 2009****David R. Haviland and Stephanie M. Rill**

University of California Cooperative Extension, Kern County

1031 South Mount Vernon Ave.

Bakersfield, CA 93307

Phone: (661) 868-6215

Fax: (661) 868-6208

E-mail: dhaviland@ucdavis.edu

Navel Orangeworm: *Amyelois transitella* (Walker)

In 2009 we conducted a trial near McFarland, Kern County, CA to evaluate the effects of insecticides on navel orangeworm in pistachio. A total of 138 trees in a mature pistachio orchard were each assigned to one of 21 treatments or two sets of untreated checks in a CRD with 6 replications (Table 1). Trees were treated with a hand gun using 250 gpa of water on 20 or 21 Aug, and then a second time on 9 or 10 Sept to coincide with the third and fourth flights of navel orangeworm, respectively. Trees corresponding to the NAI-2302 treatment received a third application on 31 Aug. Trees were harvested individually on 28, 29 or 30 Sept using a pneumatic, hand-held shaker to shake approximately 25 lb of nuts (wet weight) from one side of each tree onto a tarp. We then sifted through each sample of nuts and removed a subsample of 50 of the most susceptible 'early splits', which we defined as nuts that had a split in the hull such that either the shell or kernel could be seen through the split. Hulls were removed by hand within 12 hours of harvest and the nuts were cracked open and evaluated for navel orangeworm infestation on 5 or 6 Oct. Data were analyzed by ANOVA with means separated by Fisher's Protected LSD ( $P=0.05$ ).

The untreated checks averaged 7.9% and 9.7% damage. The untreated check with 7.9% damage was statistically equivalent to both the best and worst treatments, whereas the untreated check with 9.7% damage was statistically equivalent to all but the best two treatments. Plots treated with the anthranilic diamides as solo products had 3.5% for Turismo, 5.2% for HGW86, 6.7% for Belt, 8.7% for Altacor and 10.1% for Belt. Percentage infestation in trees treated with the pyrethroids Danitol, Mustang, Baythroid, Hero, and Brigade had damage ranging from 5.7 to 7.9%. The two treatments that contained a combination of anthranilic diamides and pyrethroids (Voliam Xpress; Belt + Baythroid) resulted in two of the top three treatments. Intrepid and Imidan are generally considered grower standards in navel orangeworm trials in pistachios. However, both performed poorly (10.1 and 9.7% damage, respectively), with damage comparable to the untreated checks. Delegate, Clutch, Proclaim, Alverde, Assail, and NAI2302 had damage ranging from 6.5 to 13.2%.

Table 1. The effects of insecticide treatments on the percentage of early split pistachios that were infested with navel orangeworm, 2009.

Treatment/Formulation	Rate Form. Prod./Acre	Surfactant <sup>1</sup>	NOW damage (%)
Voliam Xpress 1.25ZC	8 fl oz	Dyne-Amic	3.0a
Tourismo SC	14 fl oz	Dyne-Amic	3.5ab
Belt 480SC + Baythroid XL	4 fl oz + 2.4 fl oz	Dyne-Amic	4.6abc
HGW86 10SE	27 fl oz	Dyne-Amic	5.2abcd
Danitol 2.4EC	21.3 fl oz	Dyne-Amic	5.7abcd
Mustang 1.5EW	11.2 fl oz	Dyne-Amic	5.9abcd
Baythroid XL	2.8 fl oz	Dyne-Amic	6.0abcd
Delegate 25WG	6.4 oz	Dyne-Amic	6.5abcd
Belt 480 SC	4 fl oz	none	6.7abcd
Hero EW	11.2 fl oz	Dyne-Amic	7.1abcd
Clutch 2.13SC	6 fl oz	Dyne-Amic	7.5abcd
Proclaim 5SG	3.2 oz	Dyne-Amic	7.6abcd
Brigade 10WSB	1 lb	Dyne-Amic	7.9abcde
Untreated Check 2	n/a	n/a	7.9abcde
Altacor 35WG	4 oz	Dyne-Amic	8.7bcde
Untreated Check 1	n/a	n/a	9.7cde
Imidan 70W	5 lb	Dyne-Amic	9.7cde
Alverde SC	16 fl oz	Dyne-Amic	10.0cde
Intrepid 2F	16 fl oz	Dyne-Amic	10.1de
Proclaim 5SG	4.8 oz	Dyne-Amic	10.1de
Belt 480 SC	4 fl oz	Dyne-Amic	10.3de
Assail 30SG	6.4 oz	Sylgard 309	10.4de
NAI2302	24 fl oz	Dyne-Amic	13.2e

Means in a column followed by the same letter are not significantly different ( $P > 0.05$ , Fisher's protected LSD)

<sup>1</sup>Dyne-Amic was used at a rate of 0.25% v/v. Sylgard was used at a rate of 8 fl oz/100 gallons.