

Chemical Control/New Products

True Bug Control in Pears

R. A. Van Steenwyk and R. M. Nomoto

University of California Department of Environmental Science, Policy and Management,  
Berkeley, CA

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**Methods and Materials**

Two trials were conducted on mature 'Bartlett' pear trees in a commercial orchard near Hood, CA. Trial A consisted of five treatments and trial B consisted of eight treatments. Each treatment was replicated four times in a randomized complete block design. Each replicate consisted of an individual tree. Treatments were applied between 6:00 a.m. to 9:00 a.m. on 7 Jun for trial A and 12 Jul for trial B with a hand-held orchard sprayer operating at 200 psi and delivering 400 gal/acre of finished spray (1.33 gal/tree). Control in trial A was evaluated by caging 20 adult lygus bugs (LB), *Lygus hesperus* Knight, on the foliage for 12 h (6:00 p.m. to 6:00 a.m.) at 0, 3, 7 and 14 days after treatment (DAT). Control in trial B was evaluated by caging 20 adult LB and 20 adult green stink bugs (GSB), *Acrosternum hilare* (Say), in separate cages for selected treatments on the foliage for 12 h (6:00 p.m. to 6:00 a.m.) at 0, 3, 7 and 14 DAT.

An additional trial was conducted on mature 'Bartlett' pear trees in a commercial orchard near Fairfield, CA. Three treatments were replicated four times in a randomized complete block design. Each replicate consisted of an individual tree. Treatments were applied on 8 Aug between 6:00 a.m. to 9:00 a.m. with a hand-held orchard sprayer operating at 250 psi and delivering 200 gal/acre of finished spray (2.87 gal/tree). Control was evaluated by caging 20 adult LB on the foliage for 12 h, 24 h and 48 h starting at 6:00 p.m. on the day of treatment.

**Results and Discussion**

The first two trials were rigorous evaluations of the insecticide treatments since the LB and GSB were confined on the foliage for only 12 h during the night. All experimental treatments in both trials provided significantly higher mortality than the untreated control at 0 DAT (Table 1). However, Alert and the lower two rates of Provado 1.6F were not significantly different than the untreated control at 3 DAT in trial B. The low mortality at 7 DAT in trial B is attributed to a low maximum air temp of 75°F while the maximum air temperature at 14 DAT increased to 85°F with a corresponding increase in mortality. Danitol and the high rate of Asana XL were the only treatments with significantly greater mortality as compared to the untreated check at every evaluation period and their effectiveness appears to be temperature dependent.

When LB were confined on the foliage for 12 hours, control was poor with either Dimethoate or Provado (Table 2). When LB were confined on the foliage for 24 hours, mortality of both Dimethoate and Provado increased without corresponding increase in the mortality in the

untreated control. When the LB were confined on the foliage for 48 hours, control increased to an acceptable level with either Dimethoate or Provado. However, the mortality in the untreated control was approaching 25%, which is unacceptable. When corrected for untreated control mortality, the Dimethoate mortality increased substantially from 12 to 24 hours of confinement and then remained about the same for 48 hours of confinement while Provado mortality increased with length of time of LB confinement. Unfortunately, this study was conducted with moderate maximum air temperatures and control mortality could not be determined at high (90°F.) maximum air temperatures.

**Table 1.** Mean percent mortality of caged lygus and green stink bugs at Hood, CA, 1999.

Treatment	Rate lbs. (AI)/ac	Mean* percent mortality of 20 LB and GSB caged on treated foliage for 12 h at DAT							
		0		3		7		14	
		LB	GSB	LB	GSB	LB	GSB	LB	GSB
				Test A					
Dimethoate E267	2.000	59c	---	50b	---	19b	---	16a	---
Asana XL	0.072	80d	---	89c	---	45c	---	76b	---
Provado 1.6F	0.250	74d	---	54b	---	40c	---	23a	---
Actara 25WG	0.063	40b	---	46b	---	23bc	---	18a	---
Untreated	---	17a	---	17a	---	5a	---	15a	---
				Test B					
Alert 2SC	0.313	59c	---	23ab	---	13a	---	43ab	---
Asana XL	0.041	97e	---	35bc	---	19ab	---	87cd	---
Asana XL	0.072	100e	97c	91e	29b	31bc	39bc	90d	51b
Danitrol 2.4EC	0.394	96e	98c	61d	38b	43c	59c	59bc	83b
Provado 1.6F	0.063	48b	---	9a	---	8a	---	34ab	---
Provado 1.6F	0.125	80d	---	22ab	---	17ab	---	28a	---
Provado 1.6F	0.250	81d	52b	45cd	13a	8a	15ab	37ab	20a
Untreated	---	17a	6a	9a	5a	7a	9a	16a	1a

\*Means followed by the same letter in a column were not significantly different ( $P \leq 0.05$ ; Fisher's LSD). Data analyzed using an arcsin transformation.

**Table 2.** Mean percent mortality of caged lygus bugs for various periods after treatment at Fairfield, CA, 1999.

Treatment	Rate lbs (AI)/ac	Mean* percent (corrected) mortality of 20 LB caged on treated foliage for various times at 0 DAT		
		12	24	48
Provado 1.6F	0.075	44ab (32)	61b (52)	88b (85)
Dimethoate E267	1.340	53b (40)	79b (74)	81b (75)
Untreated	---	17a ---	19a ---	23a ---

\*Means followed by the same letter in a column were not significantly different ( $P \leq 0.05$ ; Fisher's LSD). Data analyzed using an arcsin transformation.