

(A1)

APPLE: *Malus domestica* Borkhausen, 'Delicious'

MULLEIN PLANT BUG CONTROL WITH ASSAIL, 2005

Elizabeth H. Beers

Tree Fruit Research and Extension Center
Washington State University
1100 N. Western Ave.
Wenatchee, WA 98801
Phone: 509-663-8181 ext 234
Fax: 509-662-8714
E-mail: ebeers@wsu.edu

Randy R. Talley

E-mail: rtalley@mail.tfrec.wsu.edu

Stephen Cockfield

E-mail: pest@bossig.com

Mullein plant bug (MPB): *Campylomma verbasci* (Meyer-Dür)

This test is part of an ongoing effort to screen new materials against MPB. It was conducted in a 27-yr-old block of 'Delicious' apples. Plots consisted of three trees in a single row, with untreated buffer rows and staggered plots in the alternate rows. Treatments were applied at early bloom (21 Apr), with one treatment having a second application a week later at late bloom (28 Apr). Applications were made with an airblast sprayer calibrated to deliver 100 gpa. MPB populations were evaluated by jarring insects from the center tree of the plot on a beating tray. Post-treatment counts were taken approximately weekly until mid-Jun, when MPB populations had declined to a low level. Fruit injury was evaluated by counting the number of fruit damaged by MPB. Sixty fruits per plot were examined, stratified evenly between the upper and lower canopy, for total of 240 per treatment. The experimental design was a RCB with four replicates. Cumulative insect days (CID) were calculated to more effectively assess the effect of different timings. CID are the sums of the average density of insects on two dates multiplied by the number of intervening days, or $CID = \sum 0.5(P_a + P_b)D_{a-b}$, where P_a is the population density (mean insects/tap at time a), P_b is the population density at time b, and D_{a-b} is the number of days between time a and time b. Data were analyzed with ANOVA and mean separation used the WD test.

All treatments of Assail and Carzol provided equivalent control of MPB nymphs (Table 1). Only the 4-oz rate of Assail applied at early bloom had a significantly lower level of fruit damage than the check, although this treatment mean was also not different than the other Assail and Carzol treatment means.

Table 1.

Treatment/ formulation	Rate amt product/acre	Timing ^a	MPB/tap									CID 13 Jun ^b
			20 Apr	26 Apr ^b	4 May ^b	11 May ^b	17 May	24 May ^b	31 May	7 Jun	13 Jun	
Assail 30SG	4 oz	E. Bloom	0.58a	0.08b	0.25b	0.00b	0.00a	0.08a	0.00b	0.00a	0.00a	6.8b
Assail 30SG	8 oz	E. Bloom	0.58a	0.00b	0.08b	0.00b	0.17a	0.17a	0.25ab	0.00a	0.00a	8.4b
Assail 30SG	4 oz	E. Bloom	0.33a	0.08b	0.08b	0.08b	0.00a	0.00a	0.00b	0.00a	0.00a	3.9b
		+ L. Bloom										
Carzol 92SP	1 lb	E. Bloom	0.50a	0.00b	0.08b	0.00b	0.08a	0.08a	0.00b	0.00a	0.00a	5.0b
Untreated check	--	--	0.42a	1.25a	2.25a	1.83a	1.50a	0.42a	0.58a	0.00a	0.00a	57.0a

Means within columns not followed by the same letter are significantly different (Waller-Duncan *k*-ratio *t*-test, *k*-ratio = 100).

^a Early bloom application made 21 Apr; late bloom application made 28 Apr 2005; airblast 100 gpa.

^b Data transformed due to unequal variances (log ($x + 0.5$)); non-transformed means presented.

Table 2.

Treatment/ formulation	Rate amt product/acre	Timing ^a	% fruit damage (MPB) ^b
Assail 30SG	4 oz	E. Bloom	0.00b
Assail 30SG	8 oz	E. Bloom	1.25ab
Assail 30SG	4 oz	E. Bloom	1.28ab
		+ L. Bloom	
Carzol 92SP	1 lb	E. Bloom	0.42ab
Untreated check	--	--	5.97a

Means within columns not followed by the same letter are significantly different (WD test, k -ratio = 100).

^a Early bloom application made 21 Apr; late bloom application made 28 Apr 2005; airblast 100 gpa.

^b Data (as proportions) transformed arcsine(sqrt(x)) prior to analysis; non-transformed means presented.