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APPLE: *Malus domestica* Borkhausen, 'Delicious'

MULLEIN PLANT BUG CONTROL WITH ASSAIL, 2005

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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 ca. weekly until mid-June, 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 $CID = \Sigma 0.5(P_a + P_b)D_{a-b}$, 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 analysis of variance and mean separation used the Waller-Duncan *k*-ratio *t*-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	Rate/acre	Timing	MPB/tap									Cum
			20-Apr	26-Apr ^x	4-May ^x	11-May ^x	17-May	24-May ^x	31-May	7-Jun	13-Jun	13-Jun ^x
Assail 30SG	4 oz	E. Bloom	0.58a	0.08b	0.25b	0.00b	0.00a	0.08a	0.00b	0a	0a	6.8b
Assail 30SG	8 oz	E. Bloom	0.58a	0.00b	0.08b	0.00b	0.17a	0.17a	0.25ab	0a	0a	8.4b
Assail 30SG	4 oz	E. Bloom	0.33a	0.08b	0.08b	0.08b	0.00a	0.00a	0.00b	0a	0a	3.9b
		+ L. Bloom										
Carzol 92SP	1 lb	E. Bloom	0.50a	0.00b	0.08b	0.00b	0.08a	0.08a	0.00b	0a	0a	5.0b
Check		---	0.42a	1.25a	2.25a	1.83a	1.50a	0.42a	0.58a	0a	0a	57.0a

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

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

^xData transformed due to unequal variances (log ($x+0.5$)).

Table 2

Treatment	Rate/acre	Timing	% Fruit damage (MPB) ^x
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
Check	---	---	5.9a

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

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

^xData (as proportions) transformed arcsine(sqrt(*x*)) prior to analysis.

Part II. Materials Tested for Arthropod Management

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APPLE: *Malus domestica* Borkhausen, 'Delicious'

MULLEIN PLANT BUG CONTROL WITH ACETAMIPRID, 2005

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Brand Name	Formulation	Common Name	Composition	Manufacturer
Assail	30SG	acetamiprid	(E)-N ¹ -[(6-chloro-3-pyridyl)methyl]-N ² -cyano-N ¹ -methyl acetamidine	Cerexagri, Inc. King of Prussia, PA
Carzol	92SP	formetanate hydrochloride	N, N-dimethyl-N'[3-[(methylamino) carbonyl]oxy]phenyl]methanimidamide monohydrochloride	Gowan Co., Yuma, AZ