APPLE: *Malus domestica* Borkhausen, 'MacIntosh' and 'Delicious'

COMPARISON OF INSECTICIDES AGAINST WOOLLY APPLE APHID, 2015

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Woolly apple aphid (WAA): *Eriosoma lanigerum* (Hausmann**)**

A field trial was conducted in the 2015 growing season to test the efficacy of insecticides with activity against woolly apple aphid (WAA). Treatments were arranged in a RCB design and replicated three times in 'McIntosh' and 'Delicious' cultivars. These plots were sprayed using airblast applications at100 gpa. A full list of treatments including materials used, application timings and rates is listed in Table 1. Three applications of Mesurol 75W (12.0 oz/A) were applied to the test orchard on 29 May, 17 Jun and 14 Jul in an attempt to flare WAA populations in the test orchard. WAA was sampled post-application (approx. every 7 days PT) to determine efficacy of materials used. There are no recommended treatment threshold levels for WAA in NY apple orchards, so treatments were applied when WAA were first observed, or at an approximate first cover application, or a combination of both. While WAA was present on 8 Jun, populations were sporadic and applications were rescheduled until the infestation became more evenly distributed. Plots were sampled by counting the presence or absence of WAA colonies on 100 terminals in each replicate. Data was transformed and subjected to an AOV with JMP. Means were separated with Student's t test.

WAA numbers were slow to rise following the first two Measurol applications. Similar research in this orchard in past seasons has suggested that natural predators were having a significant effect on WAA populations, even in the untreated plots, so a third Measurol application was made to eliminate this factor. This proved to be factual as WAA populations rose quickly after this spray was applied. All treatments seemed to control WAA reasonably well as compared with the untreated control; however, the early season application timings are probably not optimum for a test where the insects are flared. The two treatments where Movento was applied at first cover, and the higher rate of Beleaf had significantly lower WAA colonies 7 weeks post treatment, indicating that if these plots had not been flared, they would likely have had acceptable control. Populations once again started to drop significantly after the effects of the Measurol had dissipated on the last sample date. Phytotoxicity was not observed in any of the treated plots. This research was supported in part by industry gift(s) of pesticides and research funding.

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Table 1

Treatment/formulation	Rate amt/acre	Timing	Application Date
Beleaf WG	2.28 oz	First appearance of WAA	24 Jun
Beleaf WG	2.85 oz	First appearance of WAA	24 Jun
Sivanto LI-700	14.0 oz 32.0 oz	First appearance of WAA	24 Jun
Movento 240 SC+ LI-700	9.0 oz 32.0 oz	Approximately 1st Cover	4 Jun
Movento 240 SC+ LI-700 Sivanto LI-700	9.0 oz 32.0 oz 14.0 oz 32.0 oz	Approximately 1st Cover First appearance of WAA	4 Jun 24 Jun
Diazinon WP	16.0 oz	First appearance of WAA	24 Jun
Untreated Check			

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Table 2

		% WAA Infested Terminals										
Treatment/formulation	**Rate amt/acre**	**8 Jun**	**15 Jun**	**23 Jun**	**29 Jun**	**6 Jul**	**13 Jul**	**20 Jul**	**27 Jul**	**4 Aug**	**11 Aug**	**18 Aug**
Beleaf WG	2.28 oz	0.3a	0.3a	2.3ab	3.0b	4.3abc	1.0a	7.7a	25.0ab	36.0a	41.3ab	10.3a
Beleaf WG	2.85 oz	0.0a	0.0a	0.0c	4.3b	2.0c	0.3ab	5.7a	10.3c	26.3a	29.0b	6.3a
Sivanto+ LI-700	14.0 oz 32.0 oz	0.3a	0.7a	2.7ab	6.7ab	8.3ab	0.0b	8.0a	13.7bc	24.0a	36.0ab	6.0a
Movento 240 SC+ LI-700	9.0 oz 32.0 oz	0.3a	0.3a	0.3bc	2.7b	6.3ab	0.7ab	2.7a	13.0bc	25.7a	25.7b	3.7a
Movento 240 SC+ LI-700 Sivanto+ LI-700	9.0 oz 32.0 oz 14.0 oz 32.0 oz	0.0a	0.0a	0.7bc	0.0c	1.0c	0.0b	2.7a	10.7c	27.0a	30.7b	8.7a
Diazinon 50W	16.0 oz	0.3a	0.0a	5.7a	3.0b	3.3bc	0.3ab	5.7a	14.0bc	34.7a	39.3ab	9.0a
Untreated Check		0.0a	1.0a	30.a	12.0a	9.7a	2.0a	8.3a	29.0a	44.7a	66.3a	9.0a

Means within a column followed by the same letter are not significantly different (Student's t Test, $P \leq 0.05$).
Data was transformed arcsine (Sqrt x) prior to analysis.

Part II. Materials Tested for Arthropod Management

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Brand Name	Formulation	Common Name	Composition	Manufacturer
Movento	240EC	spirotetramat	*cis*-3-(2,5-dimethlyphenyl)-8-methoxy-2-oxo-1- azaspiro[4.5]dec-3-en -4-yl-ethyl carbonate	Bayer CropScience Research Triangle Park, North Carolina 27709
Sivanto	EC	N/A	N/A	Dow AgroSciences 9330 Zionsville Road Indianapolis, IN 46268
Beleaf	SG	flonicamid	N-(cyanomethyl)-4-(trifluoromethyl)-3-pyridinecarboxamide	FMC Corporation 1735 Market Street Philadelphia, PA 19103
Diazinon	50W	diazinon	[0,0-diethyl 0-(2-isopropyl- 6-methyl-4-pyrimidinyl)]phosphorothioate	Makhteshim Agan 4515 Falls of Neuse Rd Raleigh, NC 27609