

Optimum timing and effectiveness of candidate compounds for grape mealybug control.

a) Delayed-dormant versus in-season insecticide application. We established a spray trial in Paterson, WA in a vineyard with a history of mealybug infestation in late-winter 2002. Chlorpyrifos (Lorsban 4E @ 4 pt./acre) in combination with a petroleum derived spray oil served as the foliar applied commercial standard. Imidacloprid (Admire @ 16 and 32 fluid oz per acre) served as the commercial standard for chemigation treatments Candidate compounds that were applied as foliar sprays included are phosmet (buffered to a pH of 5), buprofezin (Applaud 0.5.lb/acre), fenpyroximate (Fujimite), and acetimidiprid (Assail 0.5 lb./acre). Thiamethoxam (Platinum) served as the candidate compound for chemigation treatment. Each chemical treatment was applied to 5 replicates of 6 vines on 2 separate dates, 11 April and 15 May 2002.

Columbia Crest Spring 2002 Treatment List

Treatment	# ai/Acre	Type	Timing
Admire	0.50	chemigation	4/11/02
Admire	0.25	chemigation	4/11/02
Admire	0.25	chemigation	5/15/02
Lorsban 4E	1.00	foliar	4/11/02
Platinum	0.125	chemigation	4/11/02
Platinum	0.125	chemigation	5/15/02
Imidan	1.75	foliar	4/11/02
Imidan	2.10	foliar	4/11/02
Imidan	1.75	foliar	5/15/02
Applaud	0.50	foliar	4/11/02
Applaud	0.50	foliar	5/15/02
Fujimite	0.15	foliar	4/11/02
Fujimite	0.15	foliar	5/15/02
Assail	0.15	foliar	5/15/02

**Columbia Crest
Mealy bugs per leaf- Foliar**

Treatment	Pr/ ac	Timing	6/27/02	7/15/02
Applaud	0.5 lb	4/11/02	0.9±0.3**	1.6 ±0.3**
Applaud	0.5 lb	5/15/02	8.2 ±3.0**	6.2 ±3.0*
Assail	0.15 lb	5/15/02	9.7 ±3.2**	5.1 ±3.6*
Imidan	1.75 lb	4/11/02	2.7 ±1.6**	3.6 ±0.4**
Imidan	2.10 lb	4/11/02	2.6 ±0.4**	2.7 ±1.6**
Imidan	1.75 lb	5/15/02	12.1 ±2.7**	9.2 ±0.9
Fujimite	0.15 lb	4/11/02	10.1 ±2.7**	11.1 ±2.2
Fujimite	0.15 lb	5/15/02	18.6 ±7.5**	15.1 ±1.6
Lorsban 4E	1.0	4/11/02	5.6 ±3.6**	2.2 ±0.8**
Non-treated control			28.9 ±1.8	16.5± 6.5a

*, **/ population on treated vines is significantly lower (p<0.05 or 0.01) then the non treated control in pairwise t-tests, respectively`

**Columbia Crest
Mealy bugs per leaf- Chemigation**

<u>Treatment</u>	<u>Pr/ ac</u>	<u>Timing</u>	<u>6/27/02</u>	<u>7/15/02</u>
Admire	16 fl oz	4/11/02	2.3 ±0.2a	3.2±0.8a
Admire	32 fl oz	4/11/02	2.3 ±1.4a	2.2±1.0a
Admire	16 fl oz	5/15/02	10.6 ±2.0a	13.1±5.1a
Platinum	8 fl oz	4/11/02	0.9 ±0.3a	2.0±1.4a
Platinum	8 fl oz	5/15/02	0.3±0.2a	0.2±0.1a
<u>Non-treated control</u>			<u>28.9 ±1.8</u>	<u>16.5±16.5</u>

*, **/ population on treated vines is significantly lower ($p < 0.05$ or 0.01) then the non treated control in pairwise t-tests, respectively`

b) In-season applications. We tested several systemic neonicotinyl insecticides via chemigation for their ability to suppress mealybug infestations during the late growing. Imidacloprid (Admire @ 16 and 32 fluid oz per acre) served as the commercial standard for chemigation treatments Thiamethoxam (Platinum) served as the candidate compound for chemigation treatments. Candidate compounds that were applied as foliar sprays included buprofezin (Applaud 0.5.lb/acre), and imidacloprid (Provado). Each chemical treatment was applied to 5 replicates of 6 vines.

**Mealybugs per grape cluster
Merlot Snipes Rd.
Application Date 8/29/02**

<u>Treatment</u>	<u>Prod/ acre</u>	<u>Sept 5</u>	<u>Sept 9</u>
Admire	32 fluid oz	0.8±0.4a	0**
Admire	16 fluid oz	0.8±0.3a	0**
Platinum	8 fluid oz	1.2±0.4a	0**
Applaud 70WP	0.5 Lb	1.9±0.6a	0.3±0.2**
Provado	2 fl oz	5.7±1.1	6.1±0.3ns
<u>Non-treated control</u>		<u>9.7±1.1</u>	<u>14.7±2.0</u>

**/ population on treated vines is significantly lower ($p < 0.01$) then the non treated control in pairwise t-tests

Chemical conclusions.

Admire is registered as a chemigation treatment. It has proven to be effective at controlling mealybugs at both 16 and 32 fluid oz per acre. Applaud and Fujimite are now registered for use on mealybugs. Applaud has been effective at controlling/ suppressing mealybugs with delayed dormant application and with in-season application. Imidan was effective at suppressing mealybugs in a delayed-dormant application.

All of the insecticides tested with the exception of Platinum were more effective when they were applied in mid-April then in mid-May. Platinum was equally effective when it was chemigated in mid-April and mid-May.

The foliar formulation of imidacloprid, Provado is not labeled for control of mealybugs and did not provide good control of mealybugs. We strongly discourage the use of Provado applied as a foliar spray for mealy bug control.