

Chemical Control/New Products

EVALUATION OF NEW INSECTICIDES FOR CONTROL OF GRAPE MEALYBUG

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Acetamiprid (Assail 70WP, Rhone-Poulenc Co.), azinphosmethyl (Guthion 50WP, Bayer Corp.), CGA-293343 (Actara 25WG, Novartis Crop Protection Co.), imidacloprid (Provado 1.6FL, Bayer Corp.), phosmet (Thiodan 70WP, Gowan Co.), and YRC-2894 (Calypso 480SL, Bayer Corp.) were applied to Bartlett pear trees at CRO orchards near Rock Island, WA. Individual plots were single trees replicated four times in a randomized complete block design. The treatments were applied on 5 Apr for the first generation and 19 Jul for the summer generation. Treatments were applied using a handgun sprayer operating at 400 psi. The treatments were applied to drip, simulating a dilute spray of approximately 400 gallons per acre. Mealybugs were evaluated by counting their numbers on 5 spurs per plot up through 7 Jun. Starting on 13 Jun to 10 Jul, 10 spurs from the top half of each tree and 10 from the bottom half of each tree were checked for mealybug crawlers. On 27 and 31 Jul, 20 leaves were taken from both high and low in each tree and examined for mealybug crawlers. Starting again on 9 Aug through 14 Sep, 10 spurs from high and 10 from low in each tree were again examined for mealybug crawlers.

This study showed a significant decrease in GMB population with use of Assail at both the high and low rate when compared to Guthion and Imidan, both in the lower canopy and in the upper canopy.

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Repeated measures for high GMB

Source	df	Sums of Squares	Mean Square	F-ratio	Prob
Const	1	87724.1	87724.1	200.32	0.0001
Rep	3	8860.08	2953.36	6.7442	0.0010
Trt	12	26350.8	2195.9	5.0145	0.0001
Error	324	49830.7	153.799		
Total	519	183592			

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Repeated measures for low GMB

Source	df	Sums of Squares	Mean Square	F-ratio	Prob
Const	1	33876.2	33876.2	119.43	0.0001
Trt	12	8182.27	681.856	2.4038	0.0210
Rep	3	4852.76	1617.59	5.7026	0.0027
Error	612	42596.9	69.6028		
Total	935	144241			

Seasonal means GMB low

Treatment	Rate	Units	3/27	4/10	4/18	4/25	5/1	5/8	5/15	5/22	6/7	6/13
Control			9.5 a	2.8 a	0.5 b	1.5 a	0.5 a	1.3 a	0.5 a	1 a	1.3 a	13.3 a
Actara	4.5 oz/acre		8.5 a	3.8 a	11.3 a	1.3 a	0.5 a	5 a	0.3 a	1.5 a	0 a	12.3 a
Actara	5.5 oz/acre		11 a	3.5 a	1 b	3.5 a	0.3 a	6 a	0.3 a	1.3 a	0.5 a	25.5 a
Actara+	5.5 oz/acre		16.5 a	5 a	0.3 b	1.8 a	0 a	1 a	0 a	0.8 a	1 a	12.8 a
Saf-T-side	0.25% V/V											
Calypso	4 fl oz/acre		6.5 a	3.3 a	2 b	1 a	0 a	2 a	0 a	0 a	1.8 a	13 a
Calypso	8 fl oz/acre		13.5 a	0.5 a	1.3 b	3.8 a	0.3 a	7.3 a	0 a	0.8 a	1.8 a	20.5 a
Calypso +	4 fl oz/acre		10 a	1 a	0 b	2 a	1 a	0.8 a	0 a	1.3 a	1.5 a	8.8 a
Saf-T-side	0.25% V/V											
Calypso+	8 fl oz/acre		11.8 a	3.5 a	0.3 b	1.3 a	0 a	1.5 a	1.3 a	0.5 a	1 a	5 a
Saf-T-side	0.25% V/V											
Provado	20 fl oz/acre		7.3 a	2.3 a	4 b	0.5 a	0 a	1.5 a	0.3 a	1.5 a	1.8 a	13.3 a
Guthion	3 lb/acre		8.5 a	2.3 a	1.8 b	1.5 a	0 a	2.5 a	1 a	0.8 a	1.5 a	12 a
Imidan	7 lb/acre		12.3 a	1 a	2.3 b	1.3 a	0.5 a	0.8 a	0 a	0.5 a	1.3 a	10.5 a
Assail	0.075 lb/acre		6.3 a	1.5 a	1.3 b	5.5 a	0 a	1.3 a	0.3 a	2 a	3.8 a	8.3 a
Assail	0.15 lb/acre		3.8 a	1.3 a	2.3 b	1 a	0.3 a	0.5 a	1.5 a	0 a	1.5 a	5.3 a

Seasonal means GMB low (cont'd)

Treatment	Rate	Units	6/19	6/26	7/10	7/27	7/31	8/9	8/29	9/7	9/14	Seasonal means
Control			8 a	5 a	0.5 a	40 a	18.5 a	78 a	34.8 a	27 a	31.5 a	a <sup>a</sup>
Actara	4.5 oz/acre		6.3 a	6.3 a	0.3 a	35.8 a	34 a	29.3 b	12.5 a	11.5 a	4.8 b	bc
Actara	5.5 oz/acre		13.5 a	8 a	0.5 a	55.3 a	11.5 a	35 b	34 a	16.5 a	17.8 b	a
Actara+	5.5 oz/acre		11.8 a	5 a	0 a	56.8 a	24.5 a	19 b	9.8 a	8.3 a	6.5 b	bc
Saf-T-side	0.25% V/V											
Calypso	4 fl oz/acre		7.5 a	8.5 a	0.5 a	19.8 a	8.5 a	25.8 b	15.5 a	7 a	8.5 b	bc
Calypso	8 fl oz/acre		7.5 a	8 a	0.3 a	15.8 a	5.5 a	12.8 b	25.5 a	4 a	5.3 b	cd
Calypso +	4 fl oz/acre		8.8 a	7.8 a	0.8 a	11.8 a	13.3 a	27.3 b	22 a	15.3 a	3.8 b	cd
Saf-T-side	0.25% V/V											
Calypso+	8 fl oz/acre		3.5 a	3.5 a	0 a	9 a	5.5 a	17.3 b	7.5 a	12 a	10.5 b	de
Saf-T-side	0.25% V/V											
Provado	20 fl oz/acre		4 a	8 a	0 a	35.5 a	20.5 a	46.5 b	21.5 a	19.8 a	5.5 b	ab
Guthion	3 lb/acre		4.5 a	2.5 a	0 a	4.3 a	6.8 a	16 b	5.5 a	4 a	6.8 b	de
Imidan	7 lb/acre		8.5 a	3.8 a	0.3 a	4.3 a	0.3 a	2.8 b	5.5 a	3 a	0.3 b	ef
Assail	0.075 lb/acre		7.8 a	2.8 a	0 a	14.5 a	1.5 a	13.3 b	2.3 a	3.3 a	3.8 b	ef
Assail	0.15 lb/acre		2.3 a	5.3 a	0 a	5.3 a	1.5 a	7.3 b	3.5 a	2.8 a	0.5 b	f

Means followed by the same letter are not significantly different.

<sup>a</sup>= Post Hoc LSD.

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Seasonal Means GMB High

Treatment	Rate	6/13	6/19	6/26	7/10	7/27	7/31	8/9	8/29	9/7	9/14	Seasonal means
Control		16.3 ab	14.3 a	6.5 a	0.3 a	33.5 a	32.3 a	98.5 a	27 ab	36.5 ab	21.8 a	a <sup>a</sup>
Actara	4.5 oz/acre	16.3 ab	12.3 a	8.5 a	1.3 a	11.0 a	10.5 a	25 bc	11.8 b	17.8 ab	7 b	b
Actara	5.5 oz/acre	16 ab	17.8 a	10 a	0 a	72.3 a	13.8 a	65.3 b	45 a	43.5 a	11.5 b	a
Actara+	5.5 oz/acre	16.8 ab	10.3 a	6.5 a	0 a	61 a	16.3 a	17.5 bc	15.5 b	17.5 ab	10.5 b	b
Saf-T-side	0.25 % V/V											
Calypso	4 fl oz/acre	13.5 ab	10.3 a	5.3 a	0 a	25.3 a	3.5 a	26 bc	13.8 b	19.3 ab	11.8 b	bc
Calypso	8 fl oz/acre	20 ab	19.8 a	6.8 a	0.5 a	81 a	8.5 a	9.8 c	18.3 b	11.3 ab	3 b	bc
Calypso +	4 fl oz/acre	8.3 b	8.3 a	4 a	0 a	16.8 a	10.3 a	18.5 bc	11.3 b	14.5 ab	4.5 b	cde
Saf-T-side	0.25 % V/V											
Calypso+	8 fl oz/acre	13 ab	12.5 a	8.3 a	0.5 a	23 a	3 a	9.8 c	10.8 b	8.3 b	6 b	cde
Saf-T-side	0.25 % V/V											
Provado	20 fl oz/acre	20.5 ab	16.8 a	7.5 a	0.5 a	21.3 a	9.3 a	32.5 bc	21.3 b	19 ab	9.5 b	b
Guthion	3 lb/acre	16.3 ab	10 a	3.3 a	1 a	13 a	1.8 a	13.3 bc	2.8 b	16.8 ab	4.3 b	dc
Imidan	7 lb/acre	5.5 b	11 a	3.8 a	0 a	3.8 a	0 a	6 c	3.8 b	5.8 b	0.5 b	e
Assail	0.075 lb/acre	29.5 a	14 a	6.3 a	2.8 a	47.3 a	3.5 a	13.3 bc	11.8 b	7.5 b	4.8 b	bc
Assail	0.15 lb/acre	9.3 b	9 a	2.8 a	0 a	7.5 a	2.8 a	2.5 c	4.5 b	1.3 b	1 b	e

Means followed by the same letter are not significantly different.

<sup>a</sup>=Post Hoc LSD.