

Section 4 Chemical Control/New Products

EVALUATION OF NEW INSECTICIDES FOR CONTROL OF GRAPE MEALYBUG

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*Keywords:* Acetamiprid (Assail.), azinphos-methyl (Guthion), CGA-293343 (Actara), imidacloprid (Provado), phosmet (Thiodan), and YRC-2894 (Calypso); Grape mealybug (*Psuedococcus maritimus*); Pears (*Pyrus communis*)

Acetamiprid (Assail 70WP, Rhone-Poulenc Co.), azinphos-methyl (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. The results of all of the counts are given in the table.

This study showed an apparently 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.

Repeated Measures for hi 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			

Repeated Measures for lo 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	6/1	6/26	7/10	7/27	7/31	8/9	8/29	9/7	9/14	Seasonal Means
Control			9.5a	2.8a	0.5b	1.5a	0.5a	1.3a	0.5a	1a	1.3a	13.3a	8a	5a	0.5a	40a	18.5a	7a	34.8a	27a	31.5a	a <sup>a</sup>
Actarra	4.5	OZ/A	8.5a	3.8a	11.3a	1.3a	0.5a	5a	0.3a	1. a	0a	12.3a	6.3a	6.3a	0.3a	35.8a	34a	29. b	12.5a	11.5a	4.8b	bc
Actarra	5.5	OZ/A	11a	3.5a	1b	3.5a	0.3a	6a	0.3a	1. a	0.5a	25.5a	13.5a	8a	0.5a	55.3a	11.5a	3 b	34a	16.5a	17.8b	a
Actarra+	5.5	OZ/A	16.5a	5a	0.3b	1.8a	0a	1a	0a	0. a	1a	12.8a	11.8a	5a	0a	56.8a	24.5a	1 b	9.8a	8.3a	6.5b	bc
Saf-T-side 0.25% V/V																						
Calypso	4	FL OZ/A	6.5a	3.3a	2b	1a	0a	2a	0a	0a	1.8a	13a	7.5a	8.5a	0.5a	19.8a	8.5a	25. b	15.5a	7a	8.5b	bc
Calypso	8	FL OZ/A	13.5a	0.5a	1.3b	3.8a	0.3a	7.3a	0a	0. a	1.8a	20.5a	7.5a	8a	0.3a	15.8a	5.5a	12. b	25.5a	4a	5.3b	cd
Calypso +	4	FL OZ/A	10a	1a	0b	2a	1a	0.8a	0a	1. a	1.5a	8.8a	8.8a	7.8a	0.8a	11.8a	13.3a	27. b	22a	15.3a	3.8b	cd
Saf-T-side 0.25% V/V																						
Calypso+	8	FL OZ/A	11.8a	3.5a	0.3b	1.3a	0a	1.5a	1.3a	0. a	1a	5a	3.5a	3.5a	0a	9a	5.5a	17. b	7.5a	12a	10.5b	de
Saf-T-side 0.25% V/V																						
Provado	20	FL OZ/A	7.3a	2.3a	4b	0.5a	0a	1.5a	0.3a	1. a	1.8a	13.3a	4a	8a	0a	35.5a	20.5a	46. b	21.5a	19.8a	5.5b	ab
Guthion	3	LB/A	8.5a	2.3a	1.8b	1.5a	0a	2.5a	1a	0. a	1.5a	12a	4.5a	2.5a	0a	4.3a	6.8a	1 b	5.5a	4a	6.8b	de
Imidan	7	LB/A	12.3a	1a	2.3b	1.3a	0.5a	0.8a	0a	0. a	1.3a	10.5a	8.5a	3.8a	0.3a	4.3a	0.3a	2. b	5.5a	3a	0.3b	ef
Assail	0.07	LB A/A	6.3a	1.5a	1.3b	5.5a	0a	1.3a	0.3a	2a	3.8a	8.3a	7.8a	2.8a	0a	14.5a	1.5a	13. b	2.3a	3.3a	3.8b	ef
Assail	0.15	LB A/A	3.8a	1.3a	2.3b	1a	0.3a	0.5a	1.5a	0a	1.5a	5.3a	2.3a	5.3a	0a	5.3a	1.5a	7. b	3.5a	2.8a	0.5b	f

Means followed by the same letter are not significantly different. <sup>a</sup>= Post Hoc LSD

Seasonal Means GMB High

Treatment	Rate	Units	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	335 a	32.3 a	98.5 a	27	ab	36.5 ab	21.8 a	a <sup>a</sup>
Actarra	4.5	OZ/A	16.3 ab	12.3 a	8.5 a	1.3 a	110 a	10.5 a	25 bc	11.8 b	17.8 ab	7 b	b	
Actarra	5.5	OZ/A	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	
Actarra+	5.5	OZ/A	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/A	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/A	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/A	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/A	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/A	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/A	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/A	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 A/A	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 A/A	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