Section VII Forage & Seed Insects

COLORADO POTATO BEETLE AND GREEN PEACH APHID CONTROL WITH SOIL APPLIED INSECTICIDES AND FOLIAR SPRAYS IN POTATOES, 1999

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Experimental plots were established on the UI Research and Extension Center, Kimberly, Idaho. Potatoes were planted on 22 Apr and irrigated by solid set sprinkler. The soil type was Portneuf silt loam. Five treatments and one untreated check plot were replicated four times in a RCB design. Individual plots were 4 rows (36 inch row spacing) wide by 25 ft long with 5 ft alleyways separating the plots. Green peach aphids were mass reared on greenhouse mustard plants ('Chinese Cabbage') for release into individual plots. Aphid releases were made into test plots on 17 Jun and 26 Jun. A total of four heavily infested leaves were placed in each plot. On a weekly basis, adults, large larvae (3-4 instar), small larvae (1-2 instar), and egg masses of Colorado potato beetle were counted and percent defoliation estimates were made from whole plant inspections of the center 5 hills of the middle 2 plot rows. Green peach aphid counts were made from non-destructively sampling 20 leaves at random from the top, middle and bottom sections of plants in the center two rows of each plot. The data collected and presented is the total no. of aphids per 20 leaves sampled.

One Admire treatment and one Platinum treatment were applied at planting in-furrow as a banded spray over the seed piece prior to row closing using a modified backpack CO₂ sprayer. Temik, and Thimet were applied in-furrow with the seed piece also at planting. Furadan was applied as a 6 inch banded S over the row at cracking, prior to emergence of the potato sprouts on 1 Jun using the backpack CO₂ sprayer at a rate of 20 gpa (30 psi, with 1, 10X hollow cone nozzle). To facilitate green peach aphid counts, check plots were treated with Seven 80S on 9 Jul (1 lb ai/A rate) and 23 Jul (1 lb ai/A rate + PBO) to limit defoliation from Colorado potato beetle feeding. Data were analyzed using ANOVA and Neuman-Keuls multiple means comparison.

There was significant impact on adult CPB by all treatments until 28 Jun when all treatments showed no significant reduction in numbers from the untreated check. There was significant reduction of large larvae numbers with all treatments until 26 Jul with a natural decline in number of large larvae occurred in all plots, including the check plots. Similar results were obtained for the reduction of small larvae until 13 Jul when small larvae numbers declined in all plots, including the check plots. There was a significant reduction in egg masses from the untreated check until 6 Jul when oviposition activity ceased in all plots. There was a significant reduction in the amount of defoliation by all treatments from the untreated check during the entire study period. Green peach aphid numbers remained low in all treatment plots throughout the study period except for the Thimet treatment plots. There was no significant difference in total yield weights at harvest with any treatment although the Platinum, Admire, Temik and Thimet treatments resulted in greater total yield than Furadan and the untreated check. There was a greater percentage of total yield weight in Small #1 potatoes (47.1%), with Large #1 and

Cull potatoes second in percentage of the total yield weight (18.2% and 19.1% respectively) Large #2 and Small #2 were third in percentage of total yield weight (each, 7.8%).

Treatment/	Rate	No. adults/10 plants									
formulation	(lb (AI)/acre)	8 Jun	17 Jun	21 Jun	28 Jun	6 Jul	13 Jul	19 Jul	26 Jul	2 Aug	
Check		2.50b	8.00b	11.75b	1.75a	1.25a	0.00a	0.75a	7.50a	69.50a	
Platinum + Maxim	0.1 + + 8 oz/cwt	0.00a	0.75a	1.25a	1.25a	0.25a	1.25a	0.25a	1.00a	14.75a	
Admire + Maxim	0.25 + 8 oz/cwt	0.00a	0.50a	0.75a	0.00a	0.00a	0.25a	0.75a	1.50a	10.00a	
Temik 15G	3.0	0.00a	0.25a	0.25a	0.50a	0.25a	0.25a	0.25a	3.50a	36.00a	
Thimet 15GR	3.0	0.00a	0.75a	0.25a	1.00a	0.00a	0.00a	0.75a	3.00a	34.00a	
Furadan 4SC	3.0	0.00a	0.50a	0.00a	0.50a	0.50a	0.75a	0.25a	2.00a	12.75a	

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/ Rate No. small larvae/10 plants Formulation (lb (AI)/acre) 13 Jul 8 Jun 17 Jun 21 Jun 28 Jun 6 Jul 19 Jul 26 Jul 2 Aug Check 3.00b 0.50a 9.50b 105.80b 148.50b 14.25a 10.75a 0.00a 2.75a Platinum + 0.1 +0.00a 0.00a 0.00a 0.00a 0.00a 0.00a 2.25a 0.00a 0.25a Maxim + 8 oz/cwt Admire + 0.25 +0.00a 0.00a 0.00a 0.00a 0.00a 0.00a 0.00a 0.25a 1.00a Maxim 8 oz/cwt Temik 15G 3.0 0.00a 0.00a 0.00a 0.00a 0.00a 0.00a 1.50a 0.00a 12.75a Thimet 15GR 3.0 0.00a 0.00a 0.00a 0.00a 7.75a 1.50a 0.50a 3.25a 6.25a Furadan 4SC 3.0 0.00a 0.00a 0.00a 0.00a 0.00a 0.00a 4.00a 9.75a 19.00a

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/	Rate	No. large larvae/10 plants									
formulation	(lb (AI)/acre)	8 Jun	17 Jun	21 Jun	28 Jun	6 Jul	13 Jul	19 Jul	26 Jul	2 Aug	
Check		- Come	in me	He of	15.25b	83.25b	11.75b	17.50b	0.00a	5.50a	
Platinum + Maxim	0.1 + + 8 oz/cwt			li most intrinost	0.00a	0.00a	0.00a	0.00a	0.25a	1.50a	
Admire + Maxim	0.25 + 8 oz/cwt				0.00a	0.00a	0.00a	0.00a	0.00a	1.75a	
Temik 15G	3.0				0.00a	0.00a	0.00a	0.00a	2.25a	7.00a	
Thimet 15GR	3.0				0.00a	0.00a	0.25a	3.25a	2.00a	18.00a	
Furadan 4SC	3.0				0.00a	0.00a	0.00a	0.25a	12.25a	16.00a	

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/	Rate	No. egg masses/10 plants									
formulation	(lb (AI)/acre)	8 Jun	17 Jun	21 Jun	28 Jun	6 Jul	13 Jul	19 Jul	26 Jul	3 Aug	
Check	shur tea thuis	a me i n	16.75b	28.25b	6.25b	4.25a	0.00a	0.00a	0.00a	0.75a	
Platinum +	0.1 +		0.00a	0.00a	0.00a	0.00a	0.00a	0.00a	0.00a	0.50a	
Maxim	+ 8 oz/cwt		Sec.			8.63					
Admire + Maxim	0.25 + 8 oz/cwt		0.00a	0.00a	0.00a	0.00a	0.25a	1.00a	0.00a	0.00a	
Temik 15G	3.0		0.00a	0.00a	0.00a	0.00a	0.00a	0.00a	0.00a	0.00a	
Thimet 15GR	3.0		0.00a	0.25a	0.25a	0.00a	0.00a	0.00a	0.50a	0.25a	
Furadan 4SC	3.0		0.50a	0.00a	0.25a	1.50	0.50a	1.00a	1.00a	0.00a	

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/	Rate	% Defoliation									
formulation	(lb (AI)/acre)	8 Jun	17 Jun	21 Jun	28 Jun	8 Jul	13 Jul	19 Jul	26 Jul	2 Aug	
Check					13.75b	27.50b		23.75b		23.75b	
Platinum + Maxim	0.1 + + 8 oz/cwt				0.00a	0.00a		0.00a		1.25a	
Admire + Maxim	0.25 + 8 oz/cwt				0.00a	0.00a		0.00a		5.00a	
Temik 15G	3.0				0.00a	0.00a		0.00a		6.50a	
Thimet 15GR	3.0				0.00a	0.00a		0.00a		2.25a	
Furadan 4SC	3.0		a Sector	No. And	0.00a	0.00a		0.00a		6.50a	

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/	Rate	No. GPA/20 leaves									
formulation	(lb (AI)/acre)	28 Jun	6 Jul	13 Jul	16 Jul	19 Jul	26 Jul	2 Aug	4 Aug		
Check	-		4.75a	41.75a	20.25a	60.75a	62.25c	12.75a	2.50a		
Platinum + Maxim	0.1 + + 8 oz/cwt		3.50a	11.0a	3.75a	4.25a	2.00a	1.50a	0.25a		
Admire + Maxim	0.25 + 8 oz/cwt		4.25a	12.50a	3.25a	8.25a	4.50ab	1.25a	0.75a		
Temik 15G	3.0		0.75a	13.75a	5.00a	8.50a	11.00ab	4.00a	0.50a		
Thimet 15GR	3.0		14.50a	23.00a	19.75a	52.50a	30.00abc	4.75a	0.25a		
Furadan 4SC	3.0		3.50a	45.75a	32.50a	90.25a	49.25bc	11.75a	1.75a		

Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

Treatment/	Rate	CPB and GPA yield in mean pounds per grade										
formulation	(lb (AI)/acre)	Large 1**	Small 1**	Large 2**	Small 2**	Culls*	Total					
Check		8.6 a	29.1 a	2.5 a	5.5 a	11.6 a	57.2 a					
Platinum + Maxim	0.1 + + 8 oz/cwt	13.3 a	34.7 a	5.7 a	4.9 a	15.3 a	73.9 a					
Admire + Maxim	0.25 + 8 oz/cwt	14.3 a	36.1 a	6.9 a	6.8 a	13.4 a	77.5 a					
Temik 15G	3.0	12.9 a	34.5 a	4.2 a	5.4 a	11.8 a	68.7 a					
Thimet 15GR	3.0	16.7 a	30.9 a	6.4 a	5.1 a	9.6 a	68.7 a					
Furadan 4SC	3.0	6.7 a	23.0 a	5.5 a	3.7 a	14.3 a	53.0 a					
Mean Total*		12.1 b	31.4 c	5.2 a	5.2 a	12.7 b	San and Barrison					

* Means within a column followed by the same letter are not significantly different (P = 0.05; Student-Newman-Keuls). Data were analyzed using ANOVA and Newman-Keuls multiple means comparison (P = 0.05).

** Means in this row with the same letter are not significantly different (P = 0.05; Student-Newman-Keuls).

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