

Section VII
Forage & Seed Insects

**COLORADO POTATO BEETLE AND GREEN PEACH APHID CONTROL WITH
SOIL APPLIED INSECTICIDES AND FOLIAR SPRAYS, 1998**

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Experimental plots were established on the UI Research and Extension Center, Kimberly, Idaho. Potatoes were planted on 30 Apr and irrigated by solid set sprinkler. The soil type was Portneuf silt loam. Eleven 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 released per 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. Two Admire treatments were applied at planting in-furrow over the seed piece on 30 Apr. Temik, Furadan and Thimet were applied in furrow with the seed piece also at planting. The post-emergence Admire treatments were side-dress, shank applied on 1 Jun. Furadan was applied as a 6 in banded S over the plants at 3 inch rosette stage of plant growth on 5 Jun and Provado was applied in a broadcast S over the plants on 1, 8, and 15 Jun within a day of Bravo fungicide applications. Alert was applied as a broadcast over the plants on 22 Jun. Monitor® was applied (1 lb AI/acre) on 15 Jul as a S to the Temik, Furadan, and Thimet plots. All foliar treatment sprays were applied using the backpack CO₂ sprayer at a rate of 20 gpa (30 psi, with 4, 10X hollow cone nozzles). Data were analyzed using ANOVA and Studentized-Tukeys multiple means comparison.

There was no significant impact on adult CPB by any insecticide until 27 Jul when all treatments showed reduced larval numbers from the untreated check. There was significant reduction of large larvae numbers with all treatments except with Thimet + Alert on 27 Jul. Similar results were obtained for the reduction of small larvae, except with Furadan and Thimet on 13 Jul and Thimet on 27 Jul. There was no significant effect of any treatment on the number of egg masses observed. 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 Admire and Provado treatment plots throughout the study period. There were significantly higher numbers of aphids than the other insecticide treatments in the New Leaf and Thimet + Alert treatment plots on 27 Jul. There was no significant difference in total yield weights at harvest. There was a significant increase in the yield weight of Large #1 potatoes by multiple Provado sprays. There was a greater percentage of total yield weight in Small #1 potatoes (36.4%), with Large #1 potatoes second in percentage of the total yield weight (20.9%). Large

#2, Small #2 and Culls were third, fifth and fourth, respectively, in percentage of total yield weight (15.3%, 13.4% and 14.0%).

Treatment/ formulation	Rate (lb AI/acre)	Application Method	CPB Adults				
			Jun 30	Jul 6	Jul 13	Jul 20	Jul 27
Check	-----	-----	5.8 c	3.5 ab	1.5 ab	0.3 a	192.3 b
Temik	3.00	IFAP	4.3 abc	5.5 ab	3.0 b	0.0 a	18.5 a
Admire	0.24	IFAP	1.3 ab	1.5 ab	0.0 a	0.0 a	0.5 a
Admire	0.30	IFAP	1.3 ab	1.3 ab	0.8 ab	0.3 a	0.3 a
Admire	0.24	PESD	2.0 abc	1.5 ab	0.8 ab	0.0 a	0.3 a
Admire	0.30	PESD	1.8 abc	1.0 a	0.3 a	0.5 a	0.0 a
Furadan	3.00	IFAP	5.5 bc	6.8 b	1.5 ab	0.0 a	19.5 a
Furadan	3.00	PES	0.3 a	1.5 ab	0.8 ab	0.0 a	0.5 a
Thimet	3.00	IFAP	1.5 abc	1.3 ab	0.3 a	0.0 a	15.8 a
New Leaf	-----	-----	3.0 abc	2.5 ab	1.8 ab	0.0 a	1.0 a
Provado	0.05	PES	0.3 a	0.0 a	0.3 a	0.0 a	1.5 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	0.8 a	0.8 a	0.3 a	0.0 a	8.8 a

Means within a column with the same letter are not significantly different (P = 0.05, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ formulation	Rate (lb AI/acre)	Application Method	CPB Large Larvae				
			Jun 30	Jul 6	Jul 13	Jul 20	Jul 27
Check	-----	-----	0	85.0 b	182.3 b	4.8 a	25.0 b
Temik	3.00	IFAP	0	21.8 a	35.0 a	0.8 a	0.5 a
Admire	0.24	IFAP	0	0.0 a	0.0 a	0.0 a	0.3 a
Admire	0.30	IFAP	0	0.0 a	0.0 a	0.0 a	0.0 a
Admire	0.24	PESD	0	1.3 a	0.0 a	0.0 a	0.0 a
Admire	0.30	PESD	0	0.3 a	0.5 a	0.0 a	0.0 a
Furadan	3.00	IFAP	0	21.5 a	32.8 a	0.0 a	0.8 a
Furadan	3.00	PES	0	0.0 a	0.0 a	0.0 a	0.0 a
Thimet	3.00	IFAP	0	4.8 a	11.8 a	0.0 a	2.5 ab
New Leaf	-----	-----	0	0.0 a	0.0 a	0.0 a	0.0 a
Provado	0.05	PES	0	0.0 a	0.0 a	0.0 a	0.0 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	0	3.0 a	1.3 a	0.0 a	23.5 b

Means within a column with the same letter are not significantly different (P = 0.05, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ formulation	Rate (lb AI/acre)	Application Method	CPB Small Larvae				
			Jun 30	Jul 6	Jul 13	Jul 20	Jul 27
Check	-----	-----	109.3 b	135.8 b	91.0 c	1.8 b	10.0 b
Temik	3.00	IFAP	11.0 a	34.5 a	24.0 ab	0.3 a	1.0 a
Admire	0.24	IFAP	0.0 a	1.0 a	0.5 a	0.0 a	1.0 a
Admire	0.30	IFAP	0.3 a	0.0 a	0.0 a	0.0 a	0.0 a
Admire	0.24	PESD	12.8 a	3.0 a	1.0 a	0.0 a	0.0 a
Admire	0.30	PESD	0.3 a	0.8 a	0.0 a	0.0 a	0.0 a
Furadan	3.00	IFAP	12.3 a	25.5 a	61.3 bc	0.0 a	1.3 a
Furadan	3.00	PES	4.5 a	0.0 a	1.5 a	0.0 a	0.5 a
Thimet	3.00	IFAP	2.8 a	8.0 a	24.3 ab	0.5 a	3.0 ab
New Leaf	-----	-----	0.3 a	0.0 a	0.8 a	0.0 a	0.0 a
Provado	0.05	PES	16.0 a	3.3 a	0.0 a	0.0 a	0.0 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	5.0 a	10.8 a	4.8 a	0.0 a	0.0 a

Means within a column with the same letter are not significantly different ($P = 0.05$, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ formulation	Rate (lb AI/acre)	Application Method	CPB Egg Masses				
			Jun 30	Jul 6	Jul 13	Jul 20	Jul 27
Check	-----	-----	7.5 a	5.3 a	3.0 ab	0.0 a	0
Temik	3.00	IFAP	4.0 a	7.0 a	3.5 ab	0.3 a	0
Admire	0.24	IFAP	0.8 a	0.5 a	0.0 a	0.0 a	0
Admire	0.30	IFAP	0.5 a	0.5 a	0.0 a	0.0 a	0
Admire	0.24	PESD	0.5 a	0.0 a	0.0 a	0.0 a	0
Admire	0.30	PESD	1.5 a	1.8 a	0.0 a	0.0 a	0
Furadan	3.00	IFAP	7.0 a	5.3 a	5.0 b	0.3 a	0
Furadan	3.00	PES	0.0 a	0.5 a	0.0 a	0.5 a	0
Thimet	3.00	IFAP	2.8 a	4.0 a	1.3 ab	0.0 a	0
New Leaf	-----	-----	0.0 a	0.3 a	0.3 a	0.0 a	0
Provado	0.05	PES	5.3 a	0.5 a	0.0 a	0.0 a	0
Thimet + Alert	3.00 + 0.15	IFAP + PES	3.5 a	0.8 a	0.8 a	0.0 a	0

Means within a column with the same letter are not significantly different ($P = 0.05$, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ formulation	Rate (lb AI/acre)	Application Method	% Defoliation				
			Jun 30	Jul 6	Jul 13	Jul 20	Jul 27
Check	----	-----	0	16.3 c	38.8 b	10.3 b	60.0 b
Temik	3.00	IFAP	0	3.8 b	3.8 a	3.0 a	16.3 a
Admire	0.24	IFAP	0	0.0 a	0.0 a	0.0 a	0.0 a
Admire	0.30	IFAP	0	0.0 a	0.0 a	0.0 a	0.0 a
Admire	0.24	PESD	0	0.5 ab	0.0 a	0.0 a	0.0 a
Admire	0.30	PESD	0	0.0 a	0.0 a	0.0 a	0.0 a
Furadan	3.00	IFAP	0	3.5 ab	9.0 a	4.0 a	13.5 a
Furadan	3.00	PES	0	0.0 a	0.0 a	0.0 a	1.3 a
Thimet	3.00	IFAP	0	1.5 ab	1.0 a	0.3 a	7.5 a
New Leaf	----	-----	0	0.0 a	0.0 a	0.0 a	0.0 a
Provado	0.05	PES	0	0.0 a	0.0 a	0.0 a	0.0 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	0	1.0 ab	0.5 a	0.0 a	2.5 a

Means within a column with the same letter are not significantly different (P = 0.05, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ Formulation	Rate (lb AI/acre)	Application Method	No. GPA per 20 leaves						
			Jun 22	Jun 30	Jul 6	Jul 13	Jul 20	Jul 27	Aug 3
Check	----	-----	14.0 ab	8.0 a	26.5 ab	27.5 a	38.5 a	25.3 ab	3.0 a
Temik	3.00	IFAP	6.0 ab	9.5 a	21.5 ab	37.3 a	0.8 a	0.0 a	0.5 a
Admire	0.24	IFAP	2.3 a	7.0 a	0.5 a	0.0 a	0.0 a	0.0 a	0.5 a
Admire	0.30	IFAP	4.3 ab	2.8 a	0.0 a	0.0 a	0.3 a	0.3 a	0.0 a
Admire	0.24	PESD	17.0 ab	10.3 a	7.3 ab	3.0 a	0.5 a	0.0 a	0.0 a
Admire	0.30	PESD	5.0 ab	4.3 a	6.8 ab	0.0 a	5.0 a	0.0 a	0.0 a
Furadan	3.00	IFAP	24.0 b	13.5 a	34.8 ab	68.0 a	0.0 a	0.0 a	0.0 a
Furadan	3.00	PES	15.3 ab	11.3 a	40.5 ab	146.0 b	11.0 a	0.3 a	0.3 a
Thimet	3.00	IFAP	12.8 ab	11.3 a	45.5 b	47.0 a	1.3 a	0.0 a	0.0 a
New Leaf	----	-----	14.5 ab	7.8 a	20.0 ab	40.0 a	45.5 a	35.8 b	11.3 a
Provado	0.05	PES	14.5 ab	3.0 a	0.0 a	0.0 a	0.8 a	0.0 a	0.3 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	9.0 ab	7.0 a	24.5 ab	31.5 a	36.8 a	34.3 b	5.0 a

Means within a column with the same letter are not significantly different (P = 0.05, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.

Treatment/ formulation	Rate (lb AI/acre)	Application Method	Yield weights (lb per 25 row ft)					Total
			Large #1	Small #1	Large #2	Small #2	Culls	
Check	-----	-----	6.1 a	21.9a	4.0 a	7.1 a	12.1 a	51.2 a
Temik	3.00	IFAP	13.2 ab	22.3 a	10.0 a	12.6 a	10.0 a	68.2 a
Admire	0.24	IFAP	13.8 ab	21.4 a	10.5 a	7.2 a	8.6 a	61.5 a
Admire	0.30	IFAP	17.5 ab	29.1 a	10.9 a	8.2 a	9.3 a	74.9 a
Admire	0.24	PESD	17.0 ab	26.5 a	11.4 a	12.2 a	11.9 a	79.0 a
Admire	0.30	PESD	14.5 ab	21.0 a	9.7 a	10.0 a	7.6 a	62.7 a
Furadan	3.00	IFAP	11.2 ab	23.4 a	15.0 a	10.3 a	9.7 a	69.5 a
Furadan	3.00	PES	13.1 ab	26.9 a	10.9 a	9.7 a	9.6 a	70.2 a
Thimet	3.00	IFAP	14.6 ab	22.2 a	11.3 a	8.8 a	9.6 a	66.5 a
New Leaf	----		15.5 ab	28.4 a	12.6 a	10.1 a	8.6 a	75.2 a
Provado	0.05	PES	18.6 b	26.2 a	10.4 a	6.2 a	9.1 a	70.4 a
Thimet + Alert	3.00 + 0.15	IFAP + PES	15.6 ab	27.3 a	8.1 a	7.1 a	8.0 a	66.1 a
Percent of Total Yield			20.9	36.4	15.3	13.4	14.0	

Means within a column with the same letter are not significantly different (P = 0.05, Studentized-Tukeys).
IFAP = in furrow at planting; PESD = post emergence side dress; PES = post emergence spray.