

Section VII
Forage & Seed Insects

COLORADO POTATO BEETLE CONTROL WITH FOLIAR SPRAYS, 2000

R. L. Stoltz and N. A. Matteson
University of Idaho, Twin Falls R & E Center
P. O. Box 1827, Twin Falls, ID 83303-1827
208/736-3600
bstoltz@uidaho.edu, nmatteson@uidaho.edu

Experimental plots were established on the UI Research and Extension Center, Kimberly, Idaho. Potatoes were planted on 26 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 treatment plots were 4 rows (36 inch row spacing) wide by 25 ft long with 5 ft alleyways separating the plots. Treatment sprays were broadcast applied on 26 Jun using a CO₂ pressurized backpack sprayer (30 psi) and delivering 20 gal finished S per acre (four, 10X hollow cone nozzles). On a weekly basis egg masses, small larvae (1-2 instar), large larvae (3-4 instar) and adult beetles were counted, and percent defoliation estimates were made from whole plant inspections of the center 5 hills of the middle 2 plot rows. On 22 Jun a pre-count of all Colorado potato beetle (CPB) life stages was taken and all treatment applications were made 26 Jun. Data were analyzed using ANOVA and Newman-Keuls multiple means comparison.

There was no significant reduction of adults from the untreated check by any treatment except on 18 Jul (7 days post-application) when emerging second generation adults in untreated check plots increased significantly from the treatment plots. There was significant reduction in large larvae numbers from the untreated check on 27 Jun, 3, 11 and 18 Jul (1, 7, 15 and 22 days post-application) with most chemical treatments although no significant reduction was observed with Provado on 18 Jul. Similar results were obtained for the control of small CPB larvae with a general reduction in the population occurring around 18 Jul. Defoliation remained below 30 percent through 11 Jul in all treatment plots and was significantly reduced from the untreated check in all treatment plots 11 and 18 Jul (study termination date).

Treatment/ formulation	Rate	Application method	No. CPB adults/10 plants				
			22 Jun	27 Jun	3 Jul	11 Jul	18 Jul
Untreated Check	---	---	1.50 a	0.25 a	0.00a	0.50 a	44.00 a
Calypso 4SC	0.032 lb AI/acre	FPE	1.70 a	0.00 a	0.00 a	0.00 a	1.00 a
Calypso 4SC	0.048 lb AI/acre	FPE	1.00 a	0.00 a	0.00 a	0.75 a	2.00 a
Calypso 4SC	0.064 lb AI/acre	FPE	2.00 a	0.00 a	0.00 a	0.75 a	0.75 a
Provado	0.05 lb AI/acre	FPE	2.75 a	0.25 a	0.00 a	0.00 a	1.25 a
Leverage	0.074 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.50 a	2.00 a
Raven	3 qt/acre	FPE	0.75 a	0.50 a	0.50 a	0.00 a	0.00 a
Spinosad	0.67 lb AI/acre	FPE	1.00 a	0.00 a	0.25 a	0.00 a	2.25 a
Monitor	0.63 lb AI/acre	FPE	0.50 a	0.00 a	0.00 a	0.25 a	4.50 a
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	1.50 a	0.25 a	0.25 a	1.25 a	5.25 a
	20 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	3.25 a	0.00 a	0.75 a	0.50 a	2.75 a
	60 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.11 lb AI/acre	FPE	0.25 a	0.00 a	0.00 a	0.25 a	6.75 a
	20 gal H ₂ O/acre						

Means within a column with the same letter are not significantly different (P = 0.05; Newman-Keuls).

FPE = Foliar post-emergence.

Treatment/ formulation	Rate	Application method	No. CPB large larvae/10 plants				
			22-Jun	27-Jun	3-Jul	11-Jul	18-Jul
Untreated Check	---	---	15.25 a	43.5 b	41.50 b	44.25 b	29.50 bc
Calypso 4SC	0.032 lb AI/acre	FPE	4.50 a	0.00 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.048 lb AI/acre	FPE	18.50 a	0.00 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.064 lb AI/acre	FPE	3.75 a	0.00 a	0.00 a	0.00 a	0.00 a
Provado	0.05 lb AI/acre	FPE	19.50 a	0.00 a	2.75 a	12.75 a	41.00 c
Leverage	0.074 lb AI/acre	FPE	4.50 a	0.00 a	0.00 a	0.75 a	4.25 a
Raven	3 qt/acre	FPE	0.50 a	3.00 a	12.25 a	18.75 a	22.50 ab
Spinosad	0.67 lb AI/acre	FPE	8.25 a	0.00 a	0.00 a	0.00 a	0.25 a
Monitor	0.63 lb AI/acre	FPE	1.50 a	1.50 a	3.75 a	12.75 a	11.50 a
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	13.00 a	2.50 a	6.00 a	6.00 a	8.25 a
	20 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	13.25 a	0.75 a	1.75 a	8.50 a	9.50 a
	60 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.11 lb AI/acre	FPE	9.50 a	1.50 a	0.25 a	1.75 a	5.75 a
	20 gal H ₂ O/acre						

Means within a column with the same letter are not significantly different (P = 0.05; Newman-Keuls).

FPE = Foliar post-emergence.

Treatment/ formulation	Rate	Application method	No. CPB small larvae/10 plants				
			22 Jun	27 Jun	3 Jul	11 Jul	18 Jul
Untreated Check	---	---	36.50	23.75 b	33.50 c	37.50 b	15.25 b
Calypso 4SC	0.032 lb AI/acre	FPE	5.00	1.50 a	0.25 a	0.00 a	0.00 a
Calypso 4SC	0.048 lb AI/acre	FPE	48.75	0.25 a	1.75 a	0.00 a	0.00 a
Calypso 4SC	0.064 lb AI/acre	FPE	38.50	2.00 a	0.00 a	0.00 a	0.00 a
Provado	0.05 lb AI/are	FPE	25.25	1.25 a	9.50 ab	38.75 b	5.25 a
Leverage	0.074 lb AI/acre	FPE	39.00	1.25 a	0.00 a	3.00 a	0.50 a
Raven	3 qt/acre	FPE	33.50	8.50 a	11.75 ab	18.50 ab	4.50 a
Spinosad	0.67 lb AI/acre	FPE	51.25	0.75 a	0.00 a	0.00 a	0.75 a
Monitor	0.63 lb AI/acre	FPE	28.75	4.00 a	4.50 a	6.00 a	1.75 a
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	47.00	5.25 a	5.25 a	3.25 a	1.00 a
	20 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	45.25	4.00 a	26.00 bc	18.25 ab	2.75 a
	60 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.11 lb AI/acre	FPE	32.50	5.25 a	0.25 a	4.25 a	0.25 a
	20 gal H ₂ O/acre						

Means within a column with the same letter are not significantly different (P = 0.05; Newman-Keuls).

FPE = Foliar post-emergence.

Treatment/ formulation	Rate	Application method	No. CPB egg masses/10 plants				
			22 Jun	27 Jun	3 Jul	11 Jul	18 Jul
Untreated Check	---	---	2.25 a	0.75 a	0.25 a	0.00 a	0.00 a
Calypso 4SC	0.032 lb AI/acre	FPE	2.00 a	0.75 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.048 lb AI/acre	FPE	1.50 a	1.50 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.064 lb AI/acre	FPE	2.25 a	3.00 a	0.00 a	0.00 a	0.00 a
Provado	0.05 lb AI/are	FPE	0.50 a	4.75 a	0.00 a	0.00 a	0.00 a
Leverage	0.074 lb AI/acre	FPE	2.75 a	2.75 a	0.00 a	0.00 a	0.00 a
Raven	3 qt/acre	FPE	0.50 a	1.75 a	0.00 a	0.00 a	0.00 a
Spinosad	0.67 lb AI/acre	FPE	2.00 a	0.25 a	0.00 a	0.00 a	0.00 a
Monitor	0.63 lb AI/acre	FPE	1.25 a	0.50 a	0.00 a	0.00 a	0.00 a
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	2.00 a	0.00 a	0.00 a	0.00 a	0.00 a
	20 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	2.50 a	4.75 a	0.25 a	0.00 a	0.00 a
	60 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.11 lb AI/acre	FPE	1.75 a	0.75 a	0.50 a	0.00 a	0.00 a
	20 gal H ₂ O/acre						

Means within a column with the same letter are not significantly different (P = 0.05; Newman-Keuls).

FPE = Foliar post-emergence.

Treatment/ formulation	Rate	Application method	CPB % defoliation				
			22 Jun	27 Jun	3 Jul	11 Jul	18 Jul
Untreated Check	---	---	5.00 a	5.00 a	15.00 a	25.00 b	30.00 b
Calypso 4SC	0.032 lb AI/acre	FPE	0.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.048 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Calypso 4SC	0.064 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Provado	0.05 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	3.00 a	3.00 a
Leverage	0.074 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Raven	3 qt/acre	FPE	3.00 a	3.00 a	5.00 a	10.00 a	5.00 a
Spinosad	0.67 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Monitor	0.63 lb AI/acre	FPE	3.00 a	0.00 a	0.00 a	0.00 a	0.00 a
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	3.00 a	0.00 a	3.00 a	3.00 a	5.00 a
	20 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.09 lb AI/acre	FPE	3.00 a	0.00 a a	5.00 a	5.00 a	10.00 a
	60 gal H ₂ O/acre						
Avaunt+NIS+PBO	0.11 lb AI/acre	FPE	3.00 a	0.00 a	3.00 a	3.00 a	5.00 a
	20 gal H ₂ O/acre						

Means within a column with the same letter are not significantly different (P = 0.05; Newman-Keuls).

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