

Control of Lepidopterous Larvae in Fall Cabbage - 2010: Labeled insecticides were evaluated for control of the cabbage insect complex. The cabbage variety “Artos” was transplanted on July 26 at Papen Farms, Inc., Dover, DE. The same variety was transplanted on July 28 at the University of Delaware’s Research and Education Center located near Georgetown, DE. Plots consisted of one 20-ft-long row on 3-ft centers. Each treatment was replicated four times and arranged in a RCB design. The evaluated materials and treatment dates are listed in the tables. At planting materials were applied immediately after transplanting on July 28 at the Research Station and on July 30 at the Dover location simulating a drench application over each plant using a CO₂ backpack sprayer with a one-nozzle boom delivering 120 ml solution per plant at 32 psi. The first foliar application at both locations was applied with a single nozzle boom delivering 43 gpa at 42 psi. Subsequent applications were made with a CO₂ backpack sprayer with a one-row boom, having 3 hollow-cone nozzles per row (one over the top and one drop nozzle on each side) delivering 51 gpa at 35 psi. The number of Lepidopterous larvae on each of 5 randomly selected plants per plot was recorded on a weekly basis from the first week in August through mid September. The number of marketable heads was determined by examining feeding damage on the head and two wrapper leaves on September 16 at the Dover location and on September 20 at the Georgetown location. Data were analyzed using Proc GLM and means were separated by Tukey’s mean separation test (P=0.05).

Overall, insect pressure was moderate at both locations. The predominant insect species present at the Dover location was the diamond back moth larvae. At the Georgetown location, the populations was comprised of a mixture of worm species: (a) 90% of the population – cabbage looper, (b) 5% of the population – beet armyworm, and (c) remaining 5% - soybean looper, cabbage webworm, and imported cabbageworm. At the Dover location, all treatments provided: (1) significantly better DBM control 4 days after the first foliar treatment compared to the untreated control, and (2) a significantly higher percentage of marketable heads compared to the untreated control except the Avaunt and Xentari treatments. At the Georgetown locations, all treatments provided a significantly higher percentage of marketable heads compared to the untreated control. At this location, the foliar treatments of Vetica switch to Xentari, Synapse switch to Xentari and Coragen provided the best cabbage looper control. No phytotoxicity was observed.

Table 1 – Diamondback Moth (DBM) and Cabbage Looper (CL) Counts and Marketable Heads – Dover Location

Treatment ¹	Rate/A	Treatment Dates/ Method	% Marketable Heads ¹ September 16	Mean Number DBM Larvae per 5 plants ¹			Mean Number CL per 5 plants ¹
				August 9- Pre-trt – foliars	August 14 4 DAT #1 – foliars 15 DAT - Drench	Aug 24 5 DAT #2 - foliar	September 7
Coragen 1.67 SC	5.13 oz	Drench – July 30	86.24ab	1.25b	4.00b	4.00a	0.50bc
Coragen 1.67 SC	7 oz	Drench – July 30	88.56ab	1.50b	1.25bc	1.25a	0.00c
Vetica + LI-700	13 oz + 0.25 % v/v	Foliar: Aug 10,19	95.90a	3.50ab	0.50c	0.50a	0.00c
Avaunt 30 WDG+ LI-700	3.5 oz + 0.25 %v/v	Foliar: Aug 10,19	81.95abc	4.25ab	0.75c	0.50a	1.50a
Xentari + LI-700	1 lb + 0.25 % v/v	Foliar: Aug10,19,25	78.10bc	4.25ab	0.00c	2.00a	0.00c
Synapse 24WG + LI-700	2 oz + 0.25% v/v	Foliar: Aug 10,19	89.32ab	4.00ab	1.00bc	0.00a	0.00c
Coragen 1.67 SC	5.0 oz/a	Foliar: Aug 10, 19	94.59ab	4.50ab	0.75c	0.00a	0.00c
Untreated Control	----		66.96c	5.50a	7.50a	4.25a	1.25ab

¹ Means within a column followed by the same letter are not significantly different (Tukey's, P=0.05).

Table 2 – Cabbage Looper (CL) Counts and Marketable Heads – Georgetown Location

Treatment ¹	Rate/acre	Treatment Dates/ Method	% Marketable Heads Sept 20	Mean Number CL per 5 plants ¹				
				August 23	August 30	Sept 10	Sept 13	Sept 17
Coragen 1.67 SC	5.13 oz	Drench – July 28	82.00ab	1.25b	2.50ab	1.00b	1.75b	0.50b
Coragen 1.67 SC	7 oz	Drench – July 28	84.44ab	3.00ab	1.75ab	0.50b	1.75b	0.50b
Vetica + LI-700	13 oz + 0.25 v/v	Foliar: Aug 4, 19	75.38ab	0.00b	0.25b	1.75b	0.25b	0.75b
Xentari + LI-700	1 lb+ 0.25% v/v	Foliar: Sept 7, 14						
Avaunt 30WDG + LI-700	3.5 oz + 0.25 %v/v	Foliar: Aug 4, 19	81.20ab	0.00b	1.75ab	0.00b	0.00b	0.50b
Xentari + Li-700	1 lb + 0.25 % v/v	Foliar: Aug 4, 19, 25 Sept 7, 14	70.05b	3.25ab	2.25ab	2.75ab	1.50b	1.50b
Synapse 24WG + LI-700	2 oz + 0.25% v/v	Foliar: Aug 4, 19	83.08ab	0.25b	0.50b	0.50b	0.75b	1.25b
Xentari + Li-700	1 lb+ 0.25% v/v	Foliar: Sept 7, 14						
Coragen 1.67 SC	5.0 oz/a	Foliar: Aug 4, 19	97.80a	0.00b	1.25b	0.00b	0.00b	0.00b
Untreated Control	----	----	0.00c	6.75a	9.25a	5.75a	12.00a	8.75a

¹ Means within a column followed by the same letter are not significantly different (Tukey's, P=0.05).

Table 3 – Worm Complex ¹ – Georgetown Location

Treatment ²	Rate/acre	Treatment Dates/ Method	Mean Number Worms per 5 plants ²				
			August 23	August 30	Sept 10	Sept 13	Sept 17
Coragen 1.67 SC	5.13 oz	Drench – July 28	2.75b	3.75ab	1.75b	2.50b	2.00ab
Coragen 1.67 SC	7 oz	Drench – July 28	4.00ab	2.00b	0.75b	2.75b	1.00ab
Vetica + LI-700	13 oz + 0.25 v/v	Foliar: Aug 4, 19	0.00b	0.75b	2.75ab	1.25b	2.50ab
Xentari + LI-700	1 lb+ 0.25% v/v	Foliar: Sept 7, 14					
Avaunt 30WDG + LI-700	3.5 oz + 0.25 %v/v	Foliar: Aug 4, 19	0.00b	2.50ab	0.25b	0.00b	0.50b
Xentari + Li-700	1 lb + 0.25 % v/v	Foliar: Aug 4, 19, 25 Sept 7, 14	5.75ab	2.50ab	5.50ab	3.25b	2.75ab
Synapse 24WG + LI-700	2 oz + 0.25% v/v	Foliar: Aug 4, 19	0.50b	0.50b	1.25b	3.25b	2.00ab
Xentari + Li-700	1 lb+ 0.25% v/v	Foliar: Sept 7, 14					
Coragen 1.67 SC	5.0 oz/a	Foliar: Aug 4, 19	0.50b	1.25b	0.00b	0.00b	0.00b
Untreated Control	----	----	10.00a	11.00a	8.25a	16.50a	14.50a

¹ Worm Complex:: 90% CL, 5% Beet Armyworm, 5% -- soybean looper, cabbage webworm and imported cabbageworm

² Means within a column followed by the same letter are not significantly different (Tukey's, P=0.05).