(E20)
CABBAGE: Brassica oleracea (L.) 'Solid Blue'

Diamondback moth (DBM); Plutella xylostella (L.)
Cabbage looper (CL); Trichoplusia ni (Hbn.)

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CONTROL OF LEPIDOPTERAN PESTS ON CABBAGE WITH BACILLUS THURINGIENSIS (Bt), 1998: The present trial was conducted to compare four Bt products and a standard broad spectrum insecticide under several application regimes for control of lepidopterous cabbage pests in southwest Florida. Two sets of three beds each, 240 ft long on 6-ft centers and separated by a 15-ft drive were used. The middle bed in each set was planted 18 Dec 97 with seedlings at collard var 'Georgia' seeded 10 Nov 97 to serve as an untreated inoculum source of the target pests. Each bed was prepared by fertilizing with a bottom mix of 800 lb/acre 5-16-8 NPK, fumigating with 300 lb/acre of 67/33% methyl bromide/chloropicrin, laying a single drip-tape irrigation line with 12-inch emitter spacing and covering with a black polyethylene mulch. Greenhouse-grown cabbage seedlings planted in flats on 9 Jan were transplanted the remaining 4 rows on 27 Feb at 18-inch spacing and watered by a drip irrigation system that injected 8-0-8 liquid fertilizer to provide a total of 150 lb N and K/acre for the growing season. Plants were sprayed with Bravo 720 at 1.5 pt/acre after transplanting for disease control. Each row of cabbage was considered one of four replicates and divided into 8 plots 30 ft long to which treatments were assigned in a RCB. Twenty-five plants/row were checked for the presence of target pests on 6 Apr and treatments were initiated after an average of 2.8 DBM larva/plant was observed. All treatments were sprayed on 7 Apr, 17 Apr, 24 Apr and 4 May at a rate of 32 gpa using a high clearance sprayer equipped with 3 yellow hollow cone Albuz® ceramic nozzles/row, 1 overhead and 1 on each side, operating at 200 psi of pressure. Evaluations were done on 10, 20, 27 Apr, and 8 May of 10 randomly selected plants/plot for counts of live DBM and CL larvae. DBM and CL larvae were divided into three categories based on size; £ 1/4 inch long was considered small, 1/2 inch long medium, and >= 1/2 inch long large. Foliar damage was rated on 0-5 scale: 0 = no damage, 1 £ 10 holes, 2 = 11-30 holes, 3 = 31-50 holes, 4 = 51-90 holes and 5 >= 91 holes/plant. On 11 May, the 12 largest heads/treatment were harvested and graded for marketability based on amount of insect damage. The "Fancy" category had no insect damage to the head when harvested, whereas "Standard" heads were damaged but could be salvaged for market by peeling the damaged outer leaves. "Unmarketable" heads were those that were not salvageable due to extensive insect damage. Data was analyzed using a GLM and means were separated by LSD.

Most (87%) larvae observed throughout the trial were DBM. Numbers of larvae of both species in all treated plots were less than in untreated plots with no significant differences among treatments. The same pattern was observed with damage ratings. No heads in the "Fancy" category were harvested in untreated plots. The largest number of Fancy heads and marketable heads were harvested from plants treated with a tank mix of 1 qt MYX-833 + 1 pt MVPII, although differences among treatments were not significant. The maximum weight of marketable heads was also harvested from plants treated with the tank mix although not significantly more than other treatments except for MYX-833 alone and the untreated check. Fewest unmarketable heads were harvested from plots treated with the tank mix although not significantly different from other treatments except for MYX-833 alone. Thus, the efficacy of the B. thuringiensis insecitices tested for control of DBM was equal to the chemical standard. Furthermore, there seemed to be some advantage in mixing two of the B. thuringiensis products MYX-833 and MPVII compared with MYX-833 alone.

Treatment/ formulation	Rate product/ area	No. larvae/head									Other larvae	All larvae total	Damage rating
		DBM					CL						
		Small	Medium	Large	Pupae	Total	Small	Medium	Large	Total			
Mattch	2 qt	0.28b	0.10b	0.12b	0.35ab	0.60b	0.04a	0.05b	0.04b	0.11b	0.00b	0.68b	1.63b
MYX-833	2 qt	0.09b	0.15b	0.10b	0.32ab	0.43b	0.05ab	0.09b	0.16b	0.30b	0.10b	0.66b	1.72b
MVP II	1 qt	0.04b	0.08b	0.07b	0.23b	0.25b	0.06ab	0.16b	0.13b	0.36b	0.00b	0.50b	1.42b
MYX-833 in rotation w/MVP II	2 qt 1 qt	0.06b	0.16b	0.09b	0.50ab	0.45b	0.03ab	0.08b	0.16b	0.27b	0.00b	0.64b	1.43b
MYX-833 + MVP II	1 qt 1 pt	0.06b	0.06b	0.08b	0.33ab	0.30b	0.03ab	0.05b	0.08b	0.16b	0.03b	0.41b	1.93b
Xentari	1 lb	0.05b	0.18b	0.12b	0.45ab	0.48b	0.02b	0.11b	0.05b	0.18b	0.03b	0.61b	1.92b
Lannate LV	2 pt	0.16b	0.17b	0.21b	0.35ab	0.64b	0.02b	0.07b	0.09b	0.18b	0.00b	0.76b	1.72b
Untreated check		1.58a	2.21a	2.36a	0.78a	6.38a	0.10a	0.40a	0.61a	0.93a	0.93a	7.34a	2.98a

Means in a column followed by the same letter are not significantly different (LSD, P < 0.05).
Other larvae include crosstripe caterpillars and gulf whites.

Treatment/formulation	Rate amt product/acre	Means of 12 heads harvested/plot on 11 May							
		Marketable						Unmarketable	
		Fancy		Standard		Total			
		No	Wt (lb)	No	Wt (lb)	No	Wt (lb)	No	Wt (lb)
Mattch	2 qt	4.50ab	25.57ab	6.00a	28.30b	10.50ab	47.48a	1.50bc	8.47b
MYX-833	2 qt	4.00ab	36.15a	5.75a	26.88b	9.75b	44.95a	2.25b	15.13b
MVP II	1 qt	5.00ab	22.85bc	6.25a	29.33b	11.25ab	52.18a	0.75bc	4.27b
MYX-833 in rotation w/MVP II	2 qt, 1 qt	4.50ab	18.95bc	7.00a	31.80ab	11.50a	50.75a	0.50c	4.30b
MYX-833 + MVP II	1 qt, 1 pt	6.50a	26.90ab	5.25a	26.13b	11.75a	53.03a	0.25c	4.90b
Xentari	1 lb	3.00b	13.60c	7.50a	38.60a	10.50ab	52.20a	1.50c	9.00b
Lannate LV	2 pt	3.75b	17.20bc	7.50a	32.50ab	11.25ab	49.70a	0.75c	7.25b
Untreated check		—	—	0.25b	5.80c	0.25c	5.80b	11.75a	48.95a

Means in a column followed by the same letter are not significantly different (LSD, P < 0.05).
Fancy = no apparent damage up to 1% damage to outer leaves, Standard = 2 - 10% damage to outer leaves and no damage or minor damage to head, Unmarketable = 11% or greater damage to outer leaves and moderate damage to head up to numerous scars on head.