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E30

CUCUMBER: *Cucumis sativus* L., 'Dasher II'

CONTROL OF PICKLEWORM AND MELON WORM ON CUCUMBER, 2009

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Pickleworm: *Diaphania nitidalis* (Stoll)
Melonworm: *Diaphania hyalinata* (Linnaeus)

Pickleworm is a destructive pest of cucurbits in south Florida feeding on flowers and boring into fruit with resulting yield loss. Melonworm may defoliate plants, destroy flowers and may also cause significant fruit damage. Seeds were sown in 128 cell trays on 28 Aug 2009 and maintained in a screened greenhouse until transplanted on 10 Sep 2009 into raised beds covered with whiteface polyethylene mulch at the Southwest Florida Research and Education Center in Immokalee FL. For this trial, four pairs of beds 220 ft long and spaced 12 ft apart with 18-inch within row spacing were used into which a 12-3-12 fertilizer at 50 lbs N had been incorporated as a bottom mix at bedding on 26 Aug. An 8-0-8 liquid fertilizer was applied five times a week through the drip tape providing an additional 150 lbs of N during the growing cycle. Each bed pair was considered a replicate in a RCB design with 6 treatments that included an untreated control and a grower standard consisting of two applications of Radiant at 5.0 oz/acre followed by two applications of Avaunt at 6.0 oz/acre. Plots ran across both beds of each pair, 16 plants to a row for a total of 32 plants per plot. Ten feet was left unplanted between plots in each row as a buffer. Treatments were applied on 6 Oct (20 gpa), 19 Oct (34 gpa), 9 Nov and 23 Nov (51 gpa) with a high clearance sprayer operating at 180 psi and 2.3 mph with delivery through one horizontally mounted side boom with brown Albuz® hollow cone nozzles that applied 6.75 gpa each, situated every 12 inches across the boom.

Weekly evaluations starting 7 Oct and finishing 4 Nov were conducted by examining four growing tips on each of four plants in each of the two rows and recording the number of melonworm larvae that were present. Weekly harvests from 22 Oct until 30 Nov were conducted by removing all fruit of marketable size from 16 plants in the north row of each two-row plot. Cucumbers were evaluated and separated based on the presence/absence of surface feeding damage caused by melonworm and internal damage caused mostly by pickleworm. Data were subjected to ANOVA and means separated using LSD ($P = 0.05$) are presented.

Pest pressure was light throughout the trial and all treatments except Proclaim 5 G on 15 Oct significantly reduced the number of melonworm larvae present on growing tips when compared to the untreated control (Table 1). There were never any significant differences among the remaining treatments, all 4 of which resulted in fewer larvae than Proclaim 5 SG on 22 Oct. There were significantly fewer larvae on all treated plants compared to the untreated control on 28 Oct and 4 Nov. No significant differences among sprayed treatments were observed in the total number of marketable fruit over 6 harvest dates (Table 2). All sprayed treatments had significantly lower numbers of pickleworm and melonworm damaged fruit than the untreated controls with the only significant differences being more melonworm damaged fruit from Proclaim treated plants compared to the other 4 sprayed treatments. Thus, all treatments provided significant levels of protection, albeit to a lesser degree with Proclaim 5 SG than the other 4 treatments. No phytotoxicity was observed in any of the treatments.

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Table 1.

Treatment/ formulation	Rate amt product/acre	No. melonworm larvae per growing tip 7 Oct	15 Oct	22 Oct	28 Oct	4 Nov
Untreated	Na	0.22a	0.28a	0.28a	0.18a	0.20a
Standard[a]	Variable	0.05b	0.12bc	0.03c	0.03bc	0.10b
Proclaim 5 SG	3.2 oz	0.05b	0.20ab	0.13b	0.08b	0.10b
Voliam Flexi	5.0 oz	0.08b	0.07c	0.01c	0.02c	0.08b
Voliam Express	10.0 oz	0.09b	0.10c	0.03c	0.03bc	0.03b
Synapse 24 WG	3.0 oz	0.03b	0.05c	0.02c	0.03bc	0.07b

Means followed by same letter are not statistically significant (LSD, P>0.05)
[a]Two applications of Radiant (5.0 oz/acre) followed by two applications of Avaunt (6.0 oz/acre).

Table 2.

Treatment/ formulation	Rate amt product/acre	Number of fruit collected from total of 6 harvests Total Marketable	pickleworm damage	melonworm damage
Untreated		280.0	13.5a	11.25a
Standard[a]	variable	303.0	1.00b	2.25c
Proclaim 5 SG	3.2 oz	329.3	3.25b	7.25b
Voliam Flexi	5.0 oz	305.8	0.25b	2.25c
Voliam Express	10.0 oz	306.0	0.50b	3.00c
Synapse 24 WG	3.0 oz	313.3	0.25b	3.00c

Means followed by same letter are not statistically significant (LSD, P>0.05).
[a]Two applications of Radiant (5.0 oz/acre) followed by two applications of Avaunt (6.0 oz/acre).