(E103)

TOMATO: Lycopersicon esculentum Mill, 'Neptune'

Southern armyworm (SAW): Spodoptera eridania (Stoll)
Beet armyworm (BAW): Spodoptera exigua (Hübner)

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IMPACT OF SELECTIVE AND BROAD-SPECTRUM INSECTICIDES ON SOUTHERN ARMYWORM AND BEET ARMYWORM ON STAKED TOMATO, 1998: Southern armyworm is the worst noctuid pest of tomatoes in southwest Florida, whereas beet armyworm is sporadic in this crop. Our study evaluated the efficacy of three selective and two broad-spectrum insecticides for providing growers with a number of control options for these pests. Greenhouse-raised seedlings were planted 10 Sep at 18-inch spacing on two sets of three beds. The beds were 32 inches wide, 240 ft long on 6-ft centers, covered with white-face polyethylene film and irrigated through Netafim7 streamline drip-tape with emitters at 12-inch intervals. The beds had been fertilized with 800 lb/acre of 5-16-8 dry bottom mix and fumigated with 300 lb/acre of 67/33% mixture of methyl bromide/chloropicrin. Fertigation provided an additional 175 lb N and 225 lb of K_2O during the growing season. Plants were staked and tied according to standard practices and sprayed with a combination of Maneb 80 WP at 1 lb/acre plus Kocide 101 at 3 lb/acre for disease control. The middle row of each 3-bed set was divided into two 120 ft long check plots left untreated. The four remaining beds were each divided into eight, 30-ft plots and assigned treatments in a RCB design with four replications. Treatments were initiated 14 Oct and repeated 21 and 28 Oct, 9 and 16 Nov after a mean of 0.8 armyworms per plant were observed on 20 plants per replicate on 12 Oct. Treatments were applied with a high clearance sprayer utilizing a hydraulic pump operating at 200 psi and delivering the spray from the side though drop booms carrying hollow cone "yellow" Albuz® nozzles. Two nozzles per boom for the first 3 applications and 3 nozzles for the last 2 applied 44 and 66 gpa respectively. A-tank mixed no-foam nonionic spray adjuvant, Latron AG-98 was used for all treatments. Six weekly evaluations were made starting 19 Oct to rate the damage and count the larvae on six plants per plot. Damage was rated as 0 = no damage, 1 = 1% leaflets with damage, 2 = 2 to 5%, 3 = 6 to15%, 4 = 16 to 30% and 5 > 30%. Three harvests were made from 12 plants per plot on 25 Nov and 4 and 18 Dec. Fruit was evaluated for quality and size on a commercial grading table.

SAW predominated through the trial with BAW found only on untreated plants during the first evaluation. SAW numbers increased rapidly in the control plots during late Oct, peaking at a mean 6.6 per plant on 26 Oct, then decreasing to 1.3 by the first harvest in late Nov. Significant differences in number of larvae were seen between all sprayed treatments and the untreated check, with no differences between treatments. No larvae at all were observed on plants treated with Avaunt at either rate, RH-2485 at the 0.1 lb (AI) rate or Lannate. Damage rating was lowest for plants treated with Avaunt at the 0.045 lb (AI) rate, but not less than other sprayed treatments except for Warrior at 0.02 lb (AI) and Mattch. Number and weight of extra-large and total marketable fruit was significantly higher for all treatments compared with the check, with no differences between treatments. Least unmarketable fruit was harvested from plants treated with RH-2485 at 0.1 lb (AI), but not significantly less than other treatments except for Warrior at 0.02 lb (AI), Match and Lannate. Thus, all treatments provided good control of the target pest, resulting in 5-6.6 times more production of marketable fruit than untreated plants.

Treatment/ formulation	Rate/acre	No. larvae[a]/ 6 plants	Damage rating	Marketable[b]				Unmarketable[b]	
				X-large		Total		Total	
				No	Wt (lb)	No	Wt (lb)	No	Wt (lb)
Avaunt 30 WG	0.045 lb ai	0.00b	0.12d	26.25a	9.67a	167.8a	44.6a	17.3bcd	4.0bcde
Avaunt 30WG	0.065 lb ai	0.00b	0.21cd	28.00a	10.47a	169.0a	45.7a	11.7cd	2.9de
Warrior T 1 CS	0.020 lb ai	0.02b	0.32bc	23.83a	8.62a	159.6a	42.0a	20.2bc	5.0bcd
Warrior T 1 CS	0.025 lb ai	0.02b	0.16cd	23.00a	8.28a	171.8a	42.8a	14.8bcd	3.8bcde
RH-2485 80 WP	0.050 lb ai	0.17b	0.25cd	25.58a	9.65a	157.8a	42.7a	12.5cd	3.1cde
RH-2485 80 wp	0.100 lb ai	0.00b	0.19cd	28.83a	10.77a	176.9a	47.1a	9.5d	2.3e
Mattch1 SC	2 qt	0.54b	0.49b	20.92a	7.79a	132.5a	35.5a	24.9b	6.4ab
Lannate 2.4 LV	0.75 lb ai	0.00b	0.26cd	20.83a	7.62a	149.9a	39.2a	23.7b	5.7bc
Untreated check		2.72a	3.28a	3.75b	1.35b	26.1b	7.9b	37.7a	8.4a

Means followed by the same letters in a column are not significantly different (LSD, P<0.05).
[a]Total of all larval and foliar damage evaluations of 6 plants/plot over all dates.
[b]Mean number includes X-large and all other marketable fruit from 12 plants for 3 harvests.