

(E96)

TOMATO: *Lycopersicon esculentum* Mill. 'Neptune'

Southern armyworm; Spodoptera eridania (Stoll)

Beet armyworm; Spodoptera exigua (Hübner)

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PROTECTION OF STAKED TOMATO FROM SOUTHERN ARMYWORM AND BEET ARMYWORM WITH BIOPESTICIDES 1997: Southern armyworm (SAW) is the principal noctuid pest of tomato in southwest Florida, followed by beet armyworm (BAW). Future usefulness and longevity of selective biopesticides to control these pests will depend on knowledge on their effective use. To this end, greenhouse raised tomato seedlings were planted 9 Oct at 18-inch spacing on 2 sets of 3 beds. Beds were 32 inches wide, 240 ft long, on 6-ft centers covered with white polyethylene film and irrigated with Netafim 7 streamline drip-tape containing emitters at 12-inch intervals. Beds had been fertilized with 800 lb/acre of 5-16-8 incorporated dry mix and fumigated with 300 lb/acre of 67/33% mixture of methyl bromide/chloropicrin. Additional fertilization was provided through drip to supply 175 lb N and 225 lb of K₂O total for the growing season. Tomatoes were staked and tied according to standard practices. Plants were sprayed with a combination of Maneb 80 WP at 1 lb/acre plus Kocide 101 at 3 lb/acre for disease control weekly. The middle "inoculum" row of each 3-bed set was left untreated, and the remaining beds divided into 5 plots 48 ft long. The four treatments and an untreated check were assigned to the 5 plots in each bed in a RCB design with four replications. A pre-count on 4 Nov from 15 plants per replication indicated a mean 0.6 armyworms per plant. Five weekly treatment applications were initiated 5 Nov using a high clearance sprayer driven by a hydraulic pump operating at 200 psi and delivering the spray through two drop booms equipped with 2 yellow hollow cone ceramic AlbuZ® nozzles each for a rate of 44 GPA. On 9 Dec another nozzle was added to each drop for an output of 66 GPA for the last 4 applications. Six weekly evaluations were initiated 12 Nov to estimate damage and number of live larvae. The sample unit consisted of 10 sub-samples/plot each one side of two plants between the support stakes. Foliar damage was rated on a scale of 0 to 5 where 0= no damage, 1 = 0-1% of sub-sample, 2 = 2-5 % , 3 = 6-15 % , 4 = 16-30 % and 5 = > 30%. All fruit of marketable size was harvested from 20 plants/plot on 6 Jan and 15 Jan 98. Fruit was graded for size and marketability on a commercial grading table. Data was analyzed using a GLM and LSD.

Pest pressure was moderate over the course of the trial with BAW observed early but SAW predominating by 72% overall. Damage ratings and larval counts showed significant differences between all treatments and the check with no differences among treatments. The same pattern was seen in the number of marketable fruit although their weight from plants treated with Lannate was significantly greater than from plants sprayed with Match alone. Likewise, fewest unmarketable fruit were harvested from Lannate-treated plants, although not significantly less than all other treatments except Spintor alone. Thus, the chemical standard at the tested rate appeared to perform somewhat better than either biopesticide (Match or SpinTor) alone, but not significantly better than a rotation of the two biopesticides.

Treatment/formulation	Rate amt (AI)/acre	Foliar damage rating	No. insects/10 plants/plot (over all dates)								All larvae (Total)
			Beet armyworm				Southern armyworm				
			Small	Medium	Large	Total	Small	Medium	Large	Total	
SpinTor 2SC	0.03 lb	0.54b	0.01	0.00b	0.00	0.01b	0.08b	0.10b	0.03b	0.21b	0.26b
Match SC	1.0 qt	0.60b	0.04	0.08ab	0.02	0.14b	0.10b	0.13b	0.04b	0.27b	0.45b
SpinTor 2SC in rotation w/Match SC	0.03 lb 1.0 qt	0.49b	0.05	0.04b	0.01	0.10b	0.17b	0.09b	0.06b	0.33b	0.35b
Lannate LV 2.4SL	0.465 lb	0.43b	0.03	0.08ab	0.03	0.14b	0.00b	0.02b	0.00b	0.02b	0.17b
Untreated check		2.15a	0.64	0.31a	0.05	0.99a	1.52a	1.07a	0.29a	2.88a	3.89a

Means in a column followed by the same letter are not significantly different (LSD, P < 0.05).

Treatment/formulation	Rate amt (AI)/acre	Fruit harvested from 20 plants/plot 6 and 15 Jan 1998)											
		X-Large		Large		Medium		Small		Marketable		Unmarketable	
		No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
SpinTor 2SC	0.03 lb	164.75a	73.30a	67.75ab	20.65ab	165.00a	42.10a	159.00a	28.93a	556.50a	164.98ab	67.00b	19.03b
Match SC	1.0 qt	174.50a	72.68a	67.00b	20.05b	145.25a	36.13a	153.25a	27.65a	540.00a	156.50b	57.50bc	17.58bc
SpinTor 2SC in rotation	0.03 lb	158.75a	67.13a	75.00ab	23.05ab	170.25a	42.80a	152.75a	28.03a	556.75a	161.00ab	49.75bc	15.08bc
Lannate LV 2.4SL	0.465 lb	189.25a	82.63a	78.50a	24.18a	172.25a	47.28a	150.75a	28.03a	590.75a	182.10a	29.75c	9.50c
Untreated check		81.50b	33.18b	29.50c	9.38c	83.25b	21.16b	88.50b	16.30b	282.75b	80.01c	213.75a	58.53a

Means in a column followed by the same letter are not significantly different (LSD, P < 0.05).