(E86)

TOMATO: *Lycopersicon esculentum* Mill., 'Neptune'

CONTROL OF SOUTHERN ARMYWORM AND BEET ARMYWORM ON STAKED TOMATO, 2001

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Southern armyworm: *Spodoptera eridania* (Cramer)
Beet armyworm: *Spodoptera exigua* (Hübner)

Southern armyworm is the principal early-season pest of fall tomatoes in southwest Florida, capable of destroying a crop if left uncontrolled. This trial examined a wide range of insecticide types alone and in combination or rotation to provide growers additional options for controlling these pests. Greenhouse-raised seedlings were planted 11 Sep at 18-inch spacing on 6 raised beds 490 ft long on 6-ft centers, each covered with whiteface polyethylene film. Plants were irrigated and fertilized using Netafim drip tape with 12-inch spacing between emitters. The center bed of each set of three beds was left untreated to serve as a source of pest inoculum. The treated beds were divided into plots 35 ft long to which 14 treatments were assigned in a completely randomized block design with four replications. A precount 19 Oct showed 9 % of 160 plants sampled across the trial had worms present. Treatments were applied in six weekly applications initiated 22 Oct using a high clearance sprayer with two vertical booms operating at 200 psi. Each boom was fitted with three ceramic yellow Albuz hollow cone nozzles for the first four treatments to deliver 66 gpa. An additional nozzle added to each boom for the last two applications raising the output to 88 gpa. The Avaunt and DiPel treatment was a weekly rotation starting with Avaunt. The adjuvant Kinetic was tank mixed with the Proclaim treatments at 0.25% v/v. Number of larvae and damage on four plants per plot were monitored weekly five times starting 26 Oct. Damage was rated as 0 = no damage, 1 = 1% leaflets with damage, 2 = 2 to 5%, 3 = 6-15%, 4 = 16-30% and 5 implies >30%. Vacuum samples to evaluate spiders and parasitic wasps were taken on 26 Oct, 9 and 27 Nov and 10 Dec from Avaunt at 0.65 lb/AI, Lannate and the untreated plots using a modified Homelite leaf blower. All fruit of marketable size from 16 plants per plot was harvested on 3 and 17 Dec. Fruit was classified as marketable or not and sized 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 25.2 per plant on 2 Nov, then decreasing to 5.2 by the first harvest in early Dec. Significant differences in number of larvae were seen between all sprayed treatments and the untreated control with no differences among sprayed treatments. Damage rating was significantly lower for all treated plants than the control, with the 2 *Bt* products used alone intermediate between the control and the remaining treatments. Parasitic hymenoptera and spiders were significantly more numerous on untreated plants and plants treated with Avaunt at 0.065 lb AI than on plants treated with Lannate. The weight of marketable fruit harvested from all treated plants was significantly higher than untreated plants. A larger number of marketable fruit was harvested from plants treated with Avaunt alone or in combination or V-1812 at 15 lb AI/acre than DiPel or CERT-1604 alone. Two of the remaining three treatments that included V-1812 were added to the list when marketable fruit

weight was considered. *Bt* treatments were intermediate between the control and remaining treatments in terms of unmarketable fruit. Thus, a number of products gave satisfactory control under the conditions of this study, including *Bt* products which were, however, most effective when used in rotation with selective synthetic insecticides.

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Table 1.

Treatment/formulation	Rate lb/acre	Weekly evaluations			Mean[b] Number and weight of fruit[a]			
					Marketable		Unmarketable	
		No. larvae[b]	Damage rating[b]	No. beneficials[b,c]	No	Wt (lb)	No	Wt (lb)
Avaunt 30 WG	0.045 (AI)	0.0b[a]	0.5c[c]	---	578a	147a	7d	2d
Avaunt 30 WG	0.065 (AI)	0.0b	0.3c	8.3a	561a	146a	8d	2d
Avaunt 30 WG rotated	0.065 (AI)	0.0b	0.4c	---	561a	141a	6d	2d
DiPel SC	1.0 product							
Proclaim 5 SG	0.007 (AI)	0.2b	0.6c	---	515abc	129ab	6d	2d
Proclaim 5 SG	0.010 (AI)	0.0b	0.5c	---	511abc	134ab	6d	1d
SpinTor 2 SC	0.078 (AI)	0.0b	0.3c	---	513abc	131ab	43c	9cd
CERT-1604	1.0 product	0.9b	1.2b	---	409bc	101bc	83b	19b
V-1812 35 WP	0.15 (AI)	0.0b	0.4c	---	596a	154a	6d	1d
V-1812 35 WP	0.20 (AI)	0.0b	0.4c	---	522abc	140a	4d	1d
V-1812 35 WP plus	0.10 (AI)	0.1b	0.5c	---	486abc	127ab	7d	2d
Asana XL 0.66EC	0.02 (AI)							
V-1812 35 WP plus	0.10 (AI)	0.0b	0.2c	---	537ab	139a	5d	1d
DiPel SG	0.5 product							
Lannate 2.4 LV	0.50 (AI)	0.8b	0.4c	1.3b	504abc	135ab	11d	3d
DiPel SC	1 product	1.4b	1.5b	---	391c	94c	148a	31a
Untreated check	---	14.5a	3.7a	3.8a	145d	37d	84b	16bc

Means in columns followed by the same letter are not significantly different (LSD, $P < 0.05$).
[a]Sum of small, medium, large and X-large from 16 plants over two harvests.
[b]Number per four plants.
[c]Included spiders and parasitic wasps.