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TOMATO: *Lycopersicon esculentum* (Mill.) ‘Neptune’

CONTROL OF SOUTHERN ARMYWORM ON STAKED TOMATO, 2002

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Southern Armyworm (SAW): *Spodoptera eridania* (Cramer)

Southern armyworm is the principal early-season pest of fall tomatoes in southwest Florida, capable of destroying a crop if left uncontrolled. This trial evaluated a wide range of insecticide types alone and in combination or rotation toward the goal of providing more options for

controlling these pests. Greenhouse-raised seedlings were planted 23 Sep at 18-inch spacing on raised beds 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 3 beds was left untreated to serve as a source of SAW. The treated beds were divided into plots 35 ft long to which 13 treatments were assigned in a completely randomized block design with 4 replications. A precount 28 Oct showed worms present in 14 % of 110 plants sampled over all blocks. Treatments were applied in five weekly applications initiated 30 Oct using a high clearance sprayer with two vertical booms operating at 200 psi. Each boom was fitted with 2 horizontally directed ceramic yellow@ Albus ® hollow cone nozzles for the first treatment to deliver 44 gpa. An additional nozzle added to each boom for the next 2 application delivering 66 GPA and 2 more for the last 2 applications raising the output to 88gpa. Number of larvae and damage on 8 plants per plot were monitored weekly 5 times starting 12 Nov. Damage was rated as 0 = no damage, 1 = 1% leaflets with damage, 2 = 2 to 5%, 3 = 6 to 15%, 4 = 16 to 30% and 5 > 30%. All fruit of marketable size from 16 plants per plot was harvested on 3 and 16 Dec. Fruit was classified as marketable or not and sized on a commercial grading table.

SAW numbers increased in the control plots during early Nov, peaking at a mean of 2.4 per plant on 12 Nov before decreasing to 0.6 by the first harvest in early Dec. Significant differences between the untreated control and all treatments with no differences among the latter in number of SAW larvae of all stages and damage were seen at each sample date and over all dates. A 66 % loss in harvested fruit number and weight was observed from untreated plants compared to the best treatments. No differences in fruit number were observed among sprayed treatments but the treatment of SpinTor plus Intrepid yielded significantly greater weight of marketable fruit than did the low rates of Avaunt or Renounce. Both number and weight of

worm-damaged fruit was significantly different between the control and all other treatments with no differences among the latter. These results demonstrated that a number of materials could be rotated to obtain effective control and forestall rapid selection for resistance.

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Renounce 20 WP	0.022 lb AI	0.0a	0.1a	160.7a	72.9a	220.8a	89.0b	3.3a	1.9a
Renounce 20 WP	0.044 lb AI	0.0a	0.1a	171.1a	81.9a	228.2a	100.4ab	2.3a	0.9a
Warrior 1 CS	0.022 lb AI	0.0a	0.2a	179.5a	82.6a	232.8a	104.0ab	3.5a	1.6a
Crymax	1 lb product	0.0a	0.3a	174.2a	83.3a	243.8a	100.1ab	13.6a	5.5a
Untreated	-----	1.6a	3.5b	65.1b	30.9b	95.3b	38.0c	87.8b	35.4b

^aMeans in columns followed by the same letter are not significantly different (LSD, $P < 0.05$)

^bSum of small, medium, large and X-large from 16 plants over 2 harvests

Part II: Materials Tested for Arthropod Management

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Common name	Trade name/ Cultivar	Concentration/ Formulation	Chemical name/resistance	Manufacture/source
Bacillus thuringiensis	Dipel	0.726 billion IU/1b	Microbial insecticide containing viable spores and/or endotoxin of Bacillus thuringiensis subspecies kurstaki	Valent U.S.A. Corporation 1333 N. California Blvd., Suite 600 Walnut Creek, CA 94596
Bacillus thuringiensis	Cert-1604	WG	Microbial insecticide containing viable spores and/or the Cry1Aa, Cry1Ab, Cry1Ac, Cry2A, or Cry2B toxins from Bacillus thuringiensis kurstaki	Certis U.S.A. L.L.C. 9145 Guilford Road, Suite 175 Columbia, MD 21046 U.S.A.
Bacillus thuringiensis	Crymax	15WDG	Bacillus thuringiensis subspecies kurstaki strain EG7841 solids, spores and Lepidopteran active toxins	Certis U.S.A. L.L.C. 9145 Guilford Road, Suite 175 Columbia, MD 21046

				U.S.A.
Cyfluthrin	Renounce	20WP	Cyano(4-fluoro-3-phenoxyphenyl)methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate	Bayer CropScience 2 T.W. Alexander Drive Research Triangle Park, NC 27709
DPX-E2Y45	unknown	20WP	unknown	DuPont Company Stine-Haskell Research Center Dupont Crop Protection Newark, DE 19711
gamma cyhalothrin	XDE-225	0.5SC	((3-(2-Chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropane carboxylate (S)-(S)-cis-Z isomer	Dow AgroSciences LLC 9330 Zionsville Road Indianapolis, IN 46268
indoxacarb	Avaunt	30WP	(S)-methyl 7-chloro-2,5-dihydro-2-((methoxycarbonyl)(4-(trifluoromethoxy)phenyl)amino)-carbonyl)indeno(1,2-e)(1,3,4)oxadiazine-4a(3H)-carboxylate	DuPont Company Stine-Haskell Research Center Dupont Crop Protection Newark, DE 19711
lambda-cyhalothrin	Warrior	1CS	(1 α (5*),3 α (Z)-(\pm)-cyano-(3-phenoxyphenyl)methyl-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate dimethylcyclopropanecarboxylate	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
methoxyfenozide	Intrepid	2F	Benzoic acid, 3-methoxy-2-methyl-,2-(3,5-dimethylbenzoyl)-2-(1,1-dimethylethyl) hydrazide	Dow AgroSciences LLC 9330 Zionsville Road Indianapolis, IN 46268
spinosad	SpinTor	2SC	2((6-Deoxy-2,3,4-tri-O-methyl-a-L-mannopyranosyl)oxy)-13-((5-(dimethylamino)tetrahydro-6-methyl-2H-pyran-2-yl)oxy)-9-ethyl 2,3,2a,5a,6,9,10,11,12,13,14,16a,16b-tetradecahydro-14-methyl-1H-as-	Dow AgroSciences LLC 9330 Zionsville Road Indianapolis, IN 46268

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