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TOMATO: *Lycopersicon esculentum* (Mill.) ‘Florida 47’

**CONTROL OF SILVERLEAF WHITEFLY AND SPREAD OF TOMATO YELLOW LEAF
CURL VIRUS ON STAKED TOMATO WITH INSECTICIDES, 2007**

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Silverleaf whitefly (SLW): *Bemisia argentifolii* Bellows & Perring

Silverleaf whitefly (SLW) remains the principal tomato pest in south and south central Florida, primarily due to its role as vector of tomato yellow leaf curl virus (TYLCV). The disease and even the insect alone can cause dramatic losses in fruit yield and quality. For this trial, seedlings from a

commercial greenhouse were transplanted 21 Feb at 18-inch spacing on 2 sets of 3 beds 240 ft in length and covered with black polyethylene film mulch. The center bed in each set of 3 was left untreated to serve as a source of whiteflies and an untreated check. A randomized complete block (RCB) design was used consisting of 6 treatments replicated 4 times with plots of 40 feet each.

Approximately 20% of the fertilizer was preplant soil incorporated and 80% applied through the drip tape. Admire Pro was applied 6 Mar as a soil drench at 8.5 oz/acre to all treatments except for the center rows which were left untreated. Foliar sprays were applied with a single row high clearance sprayer operating at 200 psi and 2.3 mph with the spray delivered through two vertical booms fitted with yellow Albuz® hollow cone nozzles, each delivering 10 gpa. Total spray volume increased as nozzles were added to accommodate plant growth. Concentration was adjusted accordingly to maintain constant rates per acre except for Movento which was applied at constant concentration so that rates per acre increased with volume, in conformance with local grower practice. Avaunt 30WG at 3.5 product oz/acre was applied 3- Apr to control lepidopteron pests

and maintenance fungicides Kocide and Maneb were applied as needed to control foliar diseases at rates of 2 lb and 1 lb per acre, respectively. Incidence of plants expressing symptoms of TYLCV was monitored weekly from 20-Mar until 25-Apr and whitefly adults were evaluated on 21-Mar, 31-Mar, 09-Apr and 23-Apr by counting all adults on one mid-canopy level true leaf from 10 plants per plot. Adults were monitored subsequently by striking 5 plants twice on one side and counting adults fallen into a 9 x 13 inch pie pan painted black and coated with a 9:1 mixture of vegetable oil and liquid detergent . Immature stages were counted under a stereoscopic microscope from one terminal trifoliolate taken from the 6th node of 4 centrally located plants in each plot on 21-Mar, 31-Mar, 09-Apr and 23-Apr. Leaves severely distorted by TYLCV were not sampled and no suitable plants were found after 23-Apr. Nine plants per plot were harvested on 14-May and number, sizes, and weight of marketable

fruit recorded.

Whitefly pressure was heavy from the beginning of the trial and TYLCV spread rapidly throughout the field reaching 100% by 25 Apr. No significant differences were noted in incidence of symptomatic plants among treatments prior to this date. Fewer adult whiteflies compared to the untreated check were seen from 21 Mar through 9 Apr on plants treated with the grower standard, although all treatments resulted in fewer than Admire Pro only. Fewer adults were seen from all treated plants compared to untreated plants on 19 Apr, with fewest seen with the low rate of Movento, though not significantly different from the high rate or the grower standard. There were no differences among both rates of GWN-1708, the high rate Movento, and grower standard or between either rate of GWN-1708 and Admire Pro. Fewest large nymphs were seen with all treatments compared to the untreated check on 31 Mar with no differences among the former. All treatments resulted in fewer large nymphs than the untreated check on 9 Apr except Admire Pro only, with fewest on plants treated with the low rate of Movento, though not different from the high rate or the grower standard. The latter two were not different from either rate of GWN-1708 that performed similar. On 23 Apr, fewest large nymphs were again seen with the low rate of Movento, though not significantly different from the high rate or the grower standard, with the low rate of GWN 1708 and the high rate of Movento also different from the untreated check. Average yield on 14 May was 61.7 fruit per 9 plants weighing 26.1 lbs with no significant difference amongst treatments. Thus, the grower standard suppressed adult populations early and nymphs later on while Movento appeared to control nymphs which later translated into fewer adults.

		Application rate oz/ac product) by date and application					
		volume (gal/ac)					
		16 Mar (20 gal)	27 Mar (20 gal)	3 Apr (40 gal)	12 Apr (60 gal)	24 Apr (60 gal)	Total (200 gal)
<u>Standard</u>							
Thionex	3EC	42	42				84
Danitol	2.4 EC			10.7			10.7
Malathion	5 EC			32			32
Oberon	2 SC				8.5		85
Courier	40 SC					13.6	13.6
Movento	150 SC	1.25	1.25		3.75	3.75	10
Low							
Movento	150 SC	2.0	2.0			6.0	10
High							
GWN 1708	20%	3.0	3.0		9.0	9.0	24
Low	a.i.						
GWN 1708	20% a.i	5.0	5.0		15.0	15.0	40
High							

Treatment	Adults		Large Nymphs/trifoliolate (No.)		
	No./10 leaves	No./10 beats	31-Mar	9-Apr	23-Apr
Untreated	40.4 ab	146.0 a	0.94 a	17.63 a	65.19 ab
AdmirePro Only	44.7 a	86.8 b	0.19 b	15.19 a	85.00 a
Grower Standard	26.9 c	53.3 cd	0.31 b	4.38 bc	10.31 d
Movento - low rate	33.9 bc	28.0 d	0.00 b	1.00 c	3.63 d
Movento - high rate	33.7 bc	56.5 cd	0.00 b	2.94 bc	20.75 cd
GWN -1708 - low rate	34.8 b	59.25 bc	0.19 b	6.81 b	40.19 bc
GWN -1708 - high rate	37.1 b	66.0 bc	0.00 b	6.12 b	79.38 a

Part II: Materials Tested for Arthropod Management

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Brand Name	Formulation	Common Name	Composition*	Manufacturer**
Admire Pro	4.6 FL	imidacloprid	1_((6-Chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine	Bayer CropScience LP P.O. Box 12014 1 T.W. Alexander Drive

				Research Triangle Park, North Carolina 27709
Oberon	2SC	spiromesifen	2-oxo-3-(2,4,6-trimethylphenyl)- 1-oxaspiro(4,4)non-3-en-4-yl 3,3-dimethylbutanoate	Bayer CropScience LP P.O. Box 12014 1 T.W. Alexander Drive Research Triangle Park, North Carolina 27709
Courier	40 SC	Buprofezin	2-tert-Butylimino-3-isopropyl-5- phenylperhydro-1,3,5-thiadiazin- 4-one	Nichino America Inc. 4550 New Linden Hill Rd. Suite 501 Wilmington DE 19808
Danitol	2.4 EC	fenpropathrin	(alpha-Cyano-3-phenoxybenzyl- 2,2,3,3-tetramethyl cyclopropanecarboxylate)	Valent USA Corporation P.O. Box 8025 Walnut Creek, CA 94596-8025
Malathion 5	5 EC	Malathion	0,0 dimethyl phosphorodithoate	Agrisolutions LLC

			of diethyl mercaptosuccinate	P.O. Box 64089 St.Paul MN 55164
Thionex	3EC	Endosulfan	Hexachlorohexahydromethano - 2,4,3 -benzodioxathaepin-3- oxide	Makhteshim Agan of North America Inc. 4515 Falls of Neuse Rd. Suite 300 Raleigh NC 27609
Movento	150 SC	Spirotetramat	<i>cis</i> -3-(2,5-dimethylphenyl)-8- methoxy-2-oxo-1- azaspiro[4.5]dec-3-en-4-yl ethyl carbonate	Bayer CropScience LP P.O. Box 12014 1 T.W. Alexander Drive Research Triangle Park, North Carolina 27709
GWN-1708	20% a.i.	experimental	experimental	Gowan Company P.O. Box 5569 Yuma Az. 85366-5569