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TOMATO: *Lycopersicon esculentum* (Mill.) 'Florida 47'

**CONTROL OF SILVERLEAF WHITEFLY AND INCIDENCE OF TOMATO YELLOW
LEAF CURL VIRUS ON STAKED TOMATO WITH NEONICATINOID AND OTHER
INSECTICIDES, 2005**

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

Silverleaf whitefly (SLW) and whitefly-borne TYLCV are major constraints to tomato production in southwest Florida. Development of more effective formulations of soil applied products and new

modes of action for foliar materials are necessary to maintain control of this pest. For this trial, seedlings from a commercial greenhouse were transplanted 22 Mar at 18-inch spacing on 2 sets of 3 beds 250 ft in length and covered with polyethylene film mulch. The center bed in each set of 3 was left untreated to serve as a source of whiteflies and untreated check. A randomized complete block (RCB) design was used consisting of 9 treatments replicated 4 times with plots of 31 feet each. Water and fertilizer were provided through drip tape. Approximately 20% of the fertilizer was preplant soil incorporated and 80% applied through the drip tape. On 24 Mar, two days after transplanting, liquid formulations of Admire, Platinum, and Admire Pro were applied as soil drenches in 10 ml of solution, and the dry formulation of V10112 at a rate of 1 g per plant. Foliar sprays were applied with a single row high clearance sprayer operating at 180 psi and 2.3 mph with the spray delivered through two vertical booms fitted with yellow Albuz® hollow cone nozzles, each delivering 10 gpa. Two nozzles per boom were used to apply 40 gallons per acre when plants were small, additional nozzles being added later to maintain spray coverage to a maximum of 4 nozzles per boom to deliver 80 gpa. As nozzles were added, concentration was adjusted to maintain a constant product rate per acre. Avaunt 30WG at 3.5 product oz/acre was applied two times to control tomato pinworm larvae and maintenance fungicides of Kocide and Maneb were applied weekly to control foliar diseases at rates of 2 lb and 1-2 lb per 100 gallons respectively.

Seven weekly evaluations of whitefly adults were made beginning 6 Apr by beating 1 side of 8 plants per plot with 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 monitored 25 Apr, 4, 9 and 18 May using 1 trifoliolate leaf removed from the 6th node of 4 centrally located plants in each plot. All whitefly stages were counted that appeared in a 2 cm area ring placed on each leaflet of the 3 terminal leaflets collected. Plants were evaluated 7 times from 6 Apr to 20 May for the presence of TYLCV symptoms. Fruit was

harvested from the 10 plants per plot on 26 May and 6 Jun and the number, sizes, and weights of marketable fruit were recorded.

Whitefly pressure was heavy from the beginning of the trial and movement of TYLCV through the plots was rapid. Area under the disease progression curve (AUDPC) was lowest where plants were treated with dinotefuran at planting, though not significantly less those treated with Admire.

Significant differences in numbers of adults were seen on 6, 13 Apr between the control and all other treatments, and on 25 May when again most whiteflies were seen on untreated plants, although not fewer than on plants treated at planting with Platinum (Treatment 2). Fewest adults over all dates were seen on plants receiving Admire at planting and 2 sprays of NNI-2302 (Treatment 7), though not significantly different from treatments 3,4,5 and 8. Significant differences were seen on 25 Apr in large nymphs (most in check) and all nymphs which were also most in the check and fewest on plants receiving AdmirePro at planting, although differences with other treatments except No. 2 were not significant. On 9 May, fewer large nymphs were seen on plants receiving treatments 1 and 7 though differences with all other treatments other than the control and No. 2 were not significant, a similar pattern over all dates when No. 2 grouped with the control against all other treatments. Plants drenched with 2% V10112 (treatment 1) expressed lowest incidence of TYLCV incidence, though not different from plants drenched with 16 oz Admire (treatment 8). All other treatments were not significantly different from the check. There were no significant treatment effects on yield with an average 67.7 marketable fruit (17.7lb) and 25.4 (5.0 lb) culls picked per 10 plants in each plot over 2 harvests. Lack of treatment effects was attributable to heavy whitefly and virus pressure over all treatments.

5	Admire 2FL	.250	X		
	Courier 40SC	.253		X	X
6	Admire 2FL	.250	X		
	Courier 40SC	.380		X	X
7	Admire 2FL	.250	X		
	NNI-2302 EC	.137		X	X
8	Admire 2FL	.250	X		
9	Untreated				

¹ Rates of the adjuvants Kinetic and Induce or by % by volume.

² Kinetic not included on 4 Apr.

Table 2

Treatment	TYLCV	6-Apr	13-Apr	25-Apr		9-May	25-May	Over all Dates	
	incidence	Adults	Adults	Large	All	Large	Adults	Large	Adults
	AUDPC ¹	(per beat)	(per beat)	nymphs	Nymphs	Nymphs	(per beat)	nymphs	(per beat)
1	0.45d	0.17b	0.28b	0.25b	3.75bc	4.75c	6.78c	1.67b	5.17bc
2	0.73abc	0.19b	0.63b	0.50b	9.00b	18.25a	12.34ab	6.42a	6.01ab
3	0.73abc	0.16b	0.72b	0.25b	5.5bc	6bc	5.81c	2.08b	4.01bcd
4	0.73abc	0.16b	0.28b	0.25b	2.00c	2.00c	5.41c	0.90b	4.14bcd
5	0.65bcd	0.09b	0.25b	0.25b	3.75bc	6.25bc	7.94bc	2.17b	3.44cd
6	0.84ab	0.08b	0.75b	0.50b	3.75bc	5.75bc	8.75bc	2.08b	4.22bcd
7	0.75ab	0.14b	0.53b	0.50b	5.25bc	3.00c	7.44c	1.17b	3.04d
8	0.53cd	0.03b	0.56b	0.50b	5.25bc	5.00bc	7.91bc	1.83b	3.44cd
9	0.88a	0.67a	1.75a	6.25a	17.0a	15.5ab	14.13a	7.75a	7.36a

Means
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column
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follow
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the
same
letter
are
not
signifi

cantly different (LSD, $P < 0.05$)

¹ Area under the disease progression curve.

Part II: Materials Tested for Arthropod Management

TOMATO: *Lycopersicon esculentum* Mill. 'Florida 47'

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Common name	Trade name/ Cultivar	Concentration/ Formulation	Chemical name/resistance	Manufacture/source
buprofezin	Courier	40SC	(2-tert-butylimino-3-isopropyl-5-phenylperthydro-1,3,5-thiadiazin-4-one)	Nichino America, Inc. 4550 New Linden Hill Road, Suite 501 Wilmington, DE 19808
dinotefuran	V10112	2G	(RS)-1-methyl-2-nitro-3-(tetrahydro-3-furylmethyl)guanidine	Valent U.S.A. Corporation 1333 N. California Blvd., Suite 600 Walnut Creek, CA 94596
imidacloprid	Admire	2F	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
imidacloprid	Admire Pro	4.6FL	1_((6-Chloro-3-pyridinyl)methyl)-N-	Bayer CropScience LP

			nitro-2-imidazolidinimine	P.O. Box 12014 1 T.W. Alexander Drive Research Triangle Park, North Carolina 27709
non-ionic adjuvant	Kinetic	99%L	Proprietary blend of polyalkleneoxide modified polydimethylsiloxane and polyoxypropylene-polyoxyethylene copolymers	Helena Chemical Company 225 Schilling Blvd. Collierville, TN 38017
non-ionic adjuvant	Induce	90%L	Proprietary bland of Alkyl Aryl Polyoxylkane Ethers, Free Fatty Acids, and Dimethyl Polysiloxane	Helena Chemical Company 225 Schilling Blvd. Collierville, TN 38017
pymetrozine	Fullfill	50WG	1,2,4-Triazin-3(2H)-one,4,5-dihydro- [^] -methyl-4-((3-pyridinylmethylene)amino)-	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
pyriproxyfen	Knack	.86EC	(2-(1-methyl-2-(4-phenoxyphenoxy)ethoxy)pyridine)	Valent U.S.A. Corporation 1333 N. California Blvd., Suite 600 Walnut Creek, CA 94596
spiromesifen	Oberon	2SC	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
thiamethoxam	Platinum	2SC	4H-1,3,5-Oxadiazin-4-imine,3-((2-chloro-5-thiazolyl)methyl)tetrahydro-5-methyl-N-nitro-	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
tofenpyrad	NNI-2302	15EC	4-chloro-3-ethyl-1-methyl-N-(4-(p-tolyloxy)benzyl)pyrazole-5-carboxamide	Nihon Nohyaku Co. 1-2-5 Nihonbashi, Chuo-Ku Tokyo 103-8236

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