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ORANGE: *Citrus sinensis* (L.) 'Valencia'

CONTROL OF CITRUS LEAFMINER AND ASIAN CITRUS PSYLLA IN ORANGE, 2003

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Citrus leafminer (CLM): *Phyllocnistis citrella* (Stainton)

Asian citrus psylla (ACP): *Diaphorina citri* (Kuwayama)

Damage to young foliage caused by CLM feeding is a concern in its own right but also provides sites for disease entry, in particular citrus canker. ACP is an even more recent arrival in Florida

that also damages developing leaves and could vector greening disease should that also appear. The trial was conducted at the SWFREC in Collier County, Florida with 2 replications on sweet orange and 2 replications on mandarin using 3-year-old trees planted at 12 X 24 ft spacing. Seven treatments were assigned in an RCB design to 4 tree plots in single rows separated by 6 buffer rows. Application of the spray was timed so that the majority of the new flush was 4-6 inches in length and had 6-8 leaves, which were ½ to ⅓ expanded. This condition occurred on 17 Oct and a precount of target pests was made from 5 randomly selected terminals per replication. A sample of flush was tagged in random plots to follow the same age of leaves through the sampling period. Treatments were applied to both sides of the trees on 20 Oct using a Durand Wayland 3P100-32 air blast speed sprayer. All treatments except Satisfy were applied using an array of seven # 5 T-Jet stainless steel cone nozzles per side, at a pressure of 180 psi delivering 100 gpa. The Satisfy was applied using the same configuration but the nozzle size was changed to # 3 T-Jet stainless steel cone for a delivery of 50 gpa at 350 psi. All treatments except Satisfy were tank mixed at 3 % v/v with "Glacial" horticultural mineral oil. The first application of Satisfy was applied with no additional adjuvants. A second application of Satisfy was made on 27 Oct at the same rate and tank mixed with a foliar nutrient compound Foli-Zyme GA at 0.5 % v/v. Evaluations were made by collecting 6 flush samples from each plot at 7, 14 and 21 days post treatment and counting the number of leaves per flush, live CLM miners, CLM pupa, parasitized CLM pupa , ACP eggs and ACP nymphs per piece of flush. Each piece of flush collected was compared to the flush marked during precount to evaluate flush each week that was the same age as that present during the initial treatment application.

Of the total 20 pieces of flush evaluated for the precount, 95 % had CLM larva present and 60 % were infested with ACP nymphs for a 9.5 ± 1.4 (mean ± SE) CLM larva and 5.4 ± 1.9 ACP

nymphs per flush. There were no differences in live CLM between replications but the mean ACP nymph count in replication 1 was 17.2 per piece of flush and significantly different from the other 3 replications with none found in replication 4. All treatments reduced the number of live larvae and pupae at 7 days after treatment (DAT), with fewest CLM larvae seen on leaves from trees sprayed with E2Y45, Assail and Agri-Mek. At 14 DAT, fewer larvae than the control were only seen with the high rate of E2Y45 and AgriMek, although there were fewer pupae in all treatments than the control. At 21 DAT, the high rate of E2Y45 and AgriMek had fewer larvae than the control and all treatments had fewer pupae, with fewest seen with the high rate of E2Y45 and AgriMek, reflecting the results for most undamaged leaves. All treatments provided significant protection by the criterion of undamaged leaves at 21 DAT. Parasitism of CLM pupa was 72.6 % of 2737 pupae observed, with no differences among treatments. The total number of ACP nymphs observed was 539 and much fewer than the 4,764 total CLM larva counted. The poor condition of the leaves in the control was probably a factor in the quick decline in eggs. The numbers of eggs/nymphs was 180/270, 63/185 and 0/84 for DAT's 7, 14 and 21 respectively.

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Treatment/ Formulation	Rate lb(AI)/acre	Leaves per flush[b]	Live Citrus Leafminer (No. per flush) 7 DAT Larvae[c]	7 DAT Pupae[c]	14 DAT Larvae[c]	14 DAT Pupae[c]	21 DAT Larvae[c]	21 DAT Pupae[c]	Undamaged leaves (%)[d]
E2Y45 35WG[a]	0.005	14.3	0.1d	0.6c	12.3a	0.2c	4.7a	7.3dc	47b
E2Y45 35WG[a]	0.018	13.7	0.1d	0.3c	4.4b	0.0c	1.3c	0.7e	84a
Assail 70WP[a]	0.075	15.5	0.1d	0.1c	11.9a	0.3c	3.2ab	5.5d	56b
Satisfy	6 oz	15.0	7.2b	0.5c	13.2a	2.4b	4.0ab	12.5ab	19c
Agri-Mek 0.15 EC[a]	0.006	16.9	0.1d	0.1c	4.4b	0.1c	2.4bc	1.6e	76a
HMO	3 % v/v	15.9	4.7c	2.1b	13.8a	3.4b	3.2ab	10.5bc	15c
Untreated check [b]	----------	14.5	13.6a	3.0a	11.1a	7.3a	2.6bc	15.4a	2d

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

[a]Horticultural mineral oil (Glacier Spray Fluid)was tank mixed at 3% v/v with these treatments.

[b]Mean leaves per flush from 3 sample dates

[c]Number per 10 leaves

[d]Percentage of leaves per flush with no CLM damage at DAT 21

Part II: Materials Tested for Arthropod Management

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Common name	Trade name/ Cultivar	Concentration/ Formulation	Chemical name/resistance	Manufacture/source
abamectin	Agrimek	0.15EC	(Butyl)-7-((2,6-dideoxy-40-2,6-dideoxy3-0-methyl-x-L-arabinohexopyran osyl)-3-0-methyl-x-L-arabino-hexopyranosyl)oxy)-5'c6,6",7,10,11,14,15,17a,20,20a,20b-dodecanydro-20b-dihydroxy-5'6,8,19-tetramethylsprio (11,16-methano-2H,13H,17H-furo (4,3,2-pg)(2,6) benzodioxacyclootadecin	Syngenta Crop Protection P.O. Box 18300 Greensboro, NC 27419
acetamiprid	Assail	70WP	(E)-N^1-((6-chloro-3-pydridyl)methyl)-N^2 – cyano-N^1 –methyl acetamide	Cerexagri, Inc. 630 Freedom Business Center Suite 402 King of Prussia, PA 19406
Cytokinin	Satisfy	0.009%	Cytokinin (as kinetin)	Stoller USA

Gibberellic acid Indole-3-butyric acid		0.005% 0.005%	Gibberellic acid Indole-3-butyric acid	4001 W. Sam Houston Pkwy. N. Suite100 Houston,Tx 77043
horticultural mineral oil (HMO)	435 oil 98.8	98.8%L	Refined petroleum distillate	Drexel Chemical Company P.O. Box 13327 Memphis, TN 38113-0327
unknown	E2Y45	35WG	unknown	DuPont Company Stine-Haskell Research Center Dupont Crop Protection Newark, DE 19711