 doi: 10.4182/amt.2011.D14

D14

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

FOLIAR INSECTICIDES FOR CONTROL OF ASIAN CITRUS PSYLLID AND CITRUS LEAFMINER ON ORANGES, SPRING, 2010

Philip A. Stansly
University of Florida/IFAS
Southwest Florida Res. and Ed. Center
2685 State Road 29 North
Immokalee, FL 34142-9515
Phone: (239) 658-3427
Fax: (239) 658-3469
Email: pstansly@ufl.edu

Jawwad A. Qureshi
Email: jawwadq@ufl.edu

Barry C. Kostyk
Email: bkostyk@ufl.edu

Asian citrus psyllid (ACP): *Diaphorina citri* Kuwayama
Citrus leafminer (CLM): *Phyllocnistis citrella* Stainton

ACP vectors the bacterium *Candidatus* Liberibacter asiaticus, causal organism of citrus greening disease or "Huanglongbing". Feeding damage from CLM larvae facilitates the spread of citrus canker caused by *Xanthomonas axonopodis* pv. *citri*. Effective control measures are needed upon which to develop integrated management strategies against these pests and the associated diseases in Florida citrus. The experimental block at the Southwest Florida Research and Education Center, Immokalee, Florida consisted of 15-yr-old sweet orange 'Valencia' trees planted on double-row raised beds at a density of 132 trees/acre. Trees were irrigated by micro-sprinklers and subjected to conventional cultural practices. Trees had been recently hedged so new shoots for psyllid reproduction were plentiful. Nine treatments and an untreated check were randomly distributed across 4 replicates in 19 rows that included an unhedged buffer row between treated rows. Each replicate contained 10 five-tree treatment plots. Treatments were applied on 14 May 2010 using a Durand Wayland 3P-10C-32 air blast speed sprayer operating at 1500 RPM with 2 stainless steel T-Jet # 5 nozzles per side delivering 65 gpa. Post treatment evaluations were made on 17, 24, and 31 May. Ten to twelve shoots were tagged in each plot prior to treatment application. Ten randomly selected shoots per plot were collected and examined under a stereomicroscope in the laboratory to count ACP nymphs. Three fully expanded leaves per shoot were examined to count CLM larvae and mines. Adult ACP density was estimated from three central trees in each five-tree plot by counting insects falling on a clipboard covered with an 8 ½ × 11 inch laminated white sheet placed under randomly chosen branches which were then struck 3 times with the PVC pipe to make a count for one "tap" sample. Four tap samples were conducted per tree. Data were subjected to ANOVA and means were separated using LSD ($P = 0.05$).

All treatments significantly reduced the total number of ACP nymphs of all instars compared to untreated check on 17 May, except M-Pede + Addit and the low rate of Belt + Induce (Table 1). Treatments effects were similar on 24 and 31 May except that 435oil alone was not different from untreated check on both dates and the high rate of Belt + Induce was not different from untreated check on 31 May. Number of mature nymphal instars was significantly reduced compared to the untreated check by all treatments except M-Pede + Addit on all dates and 435 Oil alone on the last two dates. Movento, NAI-2302, Agri-Flex (MK 936) and Micromite all applied with 435 Oil and Portal applied alone provided the greatest reduction in nymphal density. The same four treatments provided the greatest reduction in adult numbers

Significant reduction in number of CLM larvae compared to the untreated check was observed with all treatments except 435 Oil alone and M-Pede + Addit on 17 and 24 May and Portal and NAI-2302 + 435 Oil on 24 May (Table 2). Reduction in number of CLM mines compared to the untreated check was observed from all treatments on 17 May, but only from Agri-Flex (MK 936) treatment on 24 May. Treatment effects against CLM were generally less marked and more short lived than against ACP.

 doi: 10.4182/amt.2011.D14

Table 1.

Treatment/ formulation	Rate amt product/acre or % v/v	ACP nymphs (all instars)/shoot			ACP nymphs (3+4+5 instar)/shoot			ACP adults/4 tap samples/tree		
		17-May	24-May	31-May	17-May	24-May	31-May	17-May	24-May	31-May
Untreated check		17.28ab	10.83b	33.23b	10.78a	5.52b	21.30b	3.67b	2.33abc	5.58a
Movento 240 SC + 435 Oil	5 oz + 3%	2.10de	0.18d	2.60de	0.88c	0.10d	0.03d	1.25b	0.58bcd	0.75bc
435 Oil	3%	10.23c	7.93b	22.63bc	5.78b	4.50bc	13.35bc	2.58b	3.42a	2.08bc
Portal	64 fl oz	5.88cde	0.20d	1.40de	1.00c	0.20d	0.20d	0.08b	0.00d	0.42bc
NAI-2302 + 435 Oil	24 fl oz + 3%	1.18de	0.20d	0.08e	0.65c	0.20d	0.05d	0.00b	0.00d	0.17c
Agri-Flex (MK 936) + 435 Oil	8.5 oz + 3%	0.30e	0.00d	0.55e	0.05c	0.00d	0.08d	0.00b	0.00d	0.00c
Belt + Induce	5 oz + 0.25%	10.75bc	6.88bc	11.70cde	6.07b	5.80b	5.28dc	2.08b	1.33abcd	1.75bc
Belt + Induce	7.5 oz + 0.25%	7.48dc	2.50cd	20.60bc	4.52bc	2.38dc	10.92c	3.67b	1.42abcd	1.67bc
Micromite + 435 Oil	6.25 oz + 3%	1.65de	0.78d	16.23cd	0.33c	0.68d	8.00dc	0.08b	0.25dc	0.25c
M-Pede + Addit	2% + 1.5%	22.90a	21.60a	64.08a	15.30a	11.95a	41.28a	9.17a	2.58ab	2.58b

Means in a column followed by the same letter are not significantly different (P > 0.05, LSD).

Table 2.

Treatment/ formulation	Rate amt product/ acre or % v/v	CLM larvae/3 leaves/shoot			CLM mines/3 leaves/shoot		
		17-May	24-May	31-May	17-May	24-May	31-May
Untreated check		2.35a	8.43c	8.05d	3.80a	10.38abcd	10.05d
Movento 240 SC + 435 Oil	5 oz + 3%	0.45bc	3.65f	12.38a	2.50b	6.35cde	15.70a
435 Oil	3%	1.78a	5.95d	9.13cd	2.88b	7.15cde	11.13cd
Portal	64 fl oz	0.08c	13.03a	10.63abc	1.28c	14.58ab	12.68bc
NAI-2302 + 435 Oil	24 fl oz + 3%	0.55bc	10.58b	10.18abcd	2.25b	12.38abc	12.08bcd
Agri-Flex (MK 936) + 435 Oil	8.5 oz + 3%	0.15c	0.55g	9.90bcd	0.80c	0.68e	11.93bcd
Belt + Induce	5 oz + 0.25%	0.55bc	3.93ef	8.50cd	1.40c	5.88cde	11.20cd
Belt + Induce	7.5 oz + 0.25%	0.83b	5.80de	8.75cd	2.30b	9.80bcd	11.08cd
Micromite + 435 Oil	6.25 oz + 3%	0.20c	3.85ef	11.80ab	1.28c	4.63de	14.05ab
M-Pede + Addit	2% + 1.5%	1.98a	8.88bc	10.13abcd	2.90b	16.83a	12.38bc

Means in a column followed by the same letter are not significantly different (P > 0.05, LSD).