

(D9)

ORANGE: *Citrus sinensis* (L.) Osbeck, ‘Valencia’**EVALUATION OF EXPERIMENTAL AND COMMONLY USED INSECTICIDES FOR CONTROL OF ASIAN CITRUS PSYLLID AND CITRUS LEAFMINER IN ORANGES: SUMMER, 2011****Philip A. Stansly**

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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 (SWFREC), Immokalee, Florida consisted of 16-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. Selected branches were pruned 3 weeks prior to application to encourage growth of new shoots essential for reproduction of ACP and CLM. Thirteen treatments and an untreated check were randomly distributed across 4 replicates in 4 rows separated by a buffer row. Each replicate (row) contained 14 five-tree plots. Treatments were applied on 22 Aug 2011 using a Durand Wayland AF100-32 air blast speed sprayer operating at 1.9 mph and 400 psi with four #4, #4, #3 and #3 (one side, top to bottom) John Bean ceramic nozzles delivering 120 gpa except that 240 gpa was used for the Mpede+Addit treatment. A second application of the MBI-203 DF1 (dry formulation) and MBI-206 EP (emulsified product) treatments was made 14 days later on 5 Sep 2011. MPI-203F2 and F3 (flowable liquid) products were only applied once. Evaluations were made at 3, 10, 17, 24, and 31 days after treatment (DAT) in reference to the first application. Ten randomly selected shoots per plot were collected and examined under a stereomicroscope in the laboratory to count ACP nymphs. Five of the ten shoots were examined for CLM larvae by checking three fully expanded leaves on each shoot under the microscope. Density of ACP adults was assessed from three of the five trees in each plot by counting adult insects falling on a white clipboard placed under randomly chosen branches which were then struck 3 times with a short length of PVC pipe to make a count for one “tap” sample. Four tap samples were conducted per tree. Data were subjected to ANOVA and means separated using LSD ($P = 0.05$) are presented.

All treatments reduced nymphs compared to the untreated check through 24 DAT except MBI203 DF1 2 lbs/ac + Hyperactive at 10 DAT (4 days prior to 2nd spray), MBI203 F3 2 gal/ac + Hyperactive at 10 and 17 DAT, and Portal 0.4 EC and MBI203 F2 2 gal/ac + Hyperactive at 24 DAT (Table 1). MBI203 DF1 3 lbs/ac and MBI206 EP 2 gal/ac both both applied twice and with Hyperactive provided more reduction compared to all other MBI treatments and, were equal in effectiveness to other the commonly used insecticides applied once. MBI-203 DF and MBI-206 EP treatments applied twice provided more and longer protection compared to MBI203 F2 and F3 treatments applied once. Reduction of nymphs in response to Dibrom 8 E 16 oz/ac + 435 oil and Mpede 2% + Addit 0.50% and other commonly used insecticides tested was similar. All treatments reduced adults through 31 DAT except MBI203 F2 2 gpa + Hyperactive which did not differ from untreated check at 31 DAT and was relatively less effective along with MBI203 F3 2 gpa and MBI203 DF1 4 lbs/ac both with Hyperactive at 3 and 10 DAT. Significantly fewer CLM larvae compared to the untreated check were observed with Actara 25 WG 5.5 oz/ac + 435 oil, Agri-flex 8.5 oz/ac + 435 oil, Voliam Flexi 7.5 oz/ac, Dibrom 8 E 16 oz/ac + 435 oil and Portal 0.4 EC 32 oz/ac at 3 DAT but only with Agri-flex 8.5 oz/ac + 435 oil and Voliam Flexi 7.5 oz/ac at 10 DAT (Table 2).

Table 1

Treatment/ formulation	Rate amt product/ acre or % v/v	ACP nymphs/shoot				ACP Adults/tap sample				
		3 DAT	10 DAT	17 DAT	24 DAT	3 DAT	10 DAT	17 DAT	24 DAT	31 DAT
Untreated check		7.88a	10.35a	8.60a	4.35ab	0.48a	0.46a	0.60a	0.65a	0.19ab
Danitol 2.4 EC + 435 oil	16 oz + 2%	2.55cd	0.70de	0.48c	0.05d	0.02d	0.00d	0.00c	0.00b	0.00b
Actara 25 WG + 435 oil	5.5 oz + 2%	0.90d	0.00e	0.00c	1.00cd	0.00d	0.00d	0.00c	0.00b	0.02b
Agri-flex + 435 oil	8.5 oz + 2%	1.93cd	0.00e	0.35c	1.34cd	0.00d	0.00d	0.00c	0.00b	0.00b
Voliam Flexi	7.5 oz	2.28cd	0.00e	0.13c	0.28cd	0.00d	0.00d	0.00c	0.00b	0.00b
Dibrom 8 E + 435 oil	16 oz + 2%	1.33d	0.35e	1.80bc	0.40cd	0.00d	0.02d	0.20bc	0.00b	0.00b
Portal 0.4 EC	32 oz + 2%	2.93bcd	1.75cde	2.08bc	2.80bc	0.06cd	0.04cd	0.04bc	0.04b	0.04b
MBI203 DF1 + Hyperactive	2 lbs + 0.125%	4.38bc	7.30ab	0.80c	0.08d	0.00d	0.00d	0.00c	0.08b	0.02b
MBI203 DF1 + Hyperactive	3 lbs + 0.125%	1.55d	0.88de	1.05bc	0.72cd	0.02d	0.02d	0.10bc	0.00b	0.00b
MBI203 DF1 + Hyperactive	4 lbs + 0.125%	1.70d	4.45bc	3.55b	0.90cd	0.25b	0.21bc	0.04bc	0.10b	0.00b
MBI203 F2 + Hyperactive	2 gal + 0.125%	2.64bcd	3.80cd	2.28bc	5.84a	0.21bc	0.25b	0.27b	0.15b	0.33a
MBI203 F3 + Hyperactive	2 gal + 0.125%	5.18b	9.15a	7.03a	1.43cd	0.17bcd	0.04cd	0.06bc	0.04b	0.02b
MBI206 EP + Hyperactive	2 gal + 0.125%	0.45d	2.45cde	1.23bc	0.63cd	0.02d	0.00d	0.00c	0.00b	0.00b
Mpede + Addit	2% + 0.50%	0.97d	1.23cde	0.95c	0.23d	0.02d	0.02d	0.02bc	0.00b	0.00b

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	
		3 DAT	10 DAT
Untreated check		2.14bc	1.75abc
Danitol 2.4 EC + 435 oil	16 oz + 2%	2.00c	2.05ab
Actara 25 WG + 435 oil	5.5 oz + 2%	0.16d	2.05ab
Agri-flex + 435 oil	8.5 oz + 2%	0.00d	0.05de
Voliam Flexi	7.5 oz	0.16d	0.00e
Dibrom 8 E + 435 oil	16 oz + 2%	0.20d	2.05ab
Portal 0.4 EC	32 oz + 2%	0.20d	1.95abc
MBI203 DF1 + Hyperactive	2 lbs + 0.125%	3.2b	1.50abc
MBI203 DF1 + Hyperactive	3 lbs + 0.125%	4.9a	0.90cde
MBI203 DF1 + Hyperactive	4 lbs + 0.125%	2.1c	1.10bcd
MBI203 F2 + Hyperactive	2 gal + 0.125%	2.45bc	1.20abc
MBI203 F3 + Hyperactive	2 gal + 0.125%	1.64c	1.65abc
MBI206 EP + Hyperactive	2 gal + 0.125%	2.40bc	1.70abc
Mpede + Addit	2% + 0.50%	0.30d	2.20a

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