

## 2008 Progress Report on Cranberry Tipworm Control

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Objective: Evaluate reduced-risk chemical controls for cranberry tipworm:

Methods: Trials on tipworm were conducted at three sites in Grayland WA (7'x'6' plots, 4 replications) in 6 trials. Data was only obtained from four experiments. An untreated control and Diazinon treatment were used as comparisons. Efficacy was measured based by assessing 25 randomly gathered uprights/plot for cupping, crewing in the apical meristem, larvea and pupae. Dates of application and assessment are provided in the tables.

### Results:

Experiment 1: Cupping and crewing damage were reduced by all insecticide at the first assessment, but there was not treatment effect at the second assessment. Overall, there was high variability at the site which masked treatment effects. By the end of the experiment there was a clear trend indicating good control was provided by Movento.

### WSU Long Beach Research Cranberry Tipworm insecticide screening # 1 2008

Treatment	Tip damage/25 uprights				Insects/25 uprights		
	Cupping		Apical crewing		7/2/08		
	6/4/08	7/2/08	6/4/08	7/2/08	Larvea	Pupae	Total
CONTROL	7.5	2.0	7.5	2.0	1.8	1.5	3.3
Delegate 6.5 oz wt/a	2.5	4.8	2.5	4.3	5.0	0.3	5.3
Assail 8 oz/a	2.0	4.3	2.3	4.3	4.5	0.5	5.0
Avaunt 6 oz/a	3.3	2.3	3.3	2.3	2.3	0.8	3.0
DIAZINON 2 qt/a	1.3	1.0	1.3	1.0	0.8	0.3	1.0
Altacor 0.066 lb ai/a	1.3	2.5	1.3	2.5	2.3	0.5	2.8
Rimon 40 fl oz/a	0.8	2.8	0.8	2.5	4.0	0.0	4.0
Movento 16 oz/a	1.3	0.0	2.0	0.0	0.0	0.0	0.0
Tesoro 6.4 oz/a	0.8	2.3	0.8	2.3	2.3	0.8	3.0
LSD 0.05	3.8	4.2	3.9	4.5	6	1.8	4.3
Treatment F value	0.03	0.4	0.04	0.6	0.3	0.4	0.6

4 replications, 7x8' plots, Treatments applied 5/19/2008 and 5/27/2008 using 50 gpa spray volume to a heavily infested McFarlin bed in Grayland WA, insect damaged assessed 6/4/2008 and 7/2/2008. Yield for the control treatment, Diazinon

Experiment 3: Cupping and crewing damage and larvea and pupae counts were reduced by Diazinon, but none of the other insecticides showed comparable efficacy.

### WSU Long Beach Research Cranberry Tipworm insecticide screening # 3 2008

Treatment	Tip damage/25 uprights				Insects/25 uprights			Insects/25 uprights		
	Cupping		Apical crewing		6/20/08			6/25/08		
	6/4/08	7/2/08	6/4/08	7/2/08	Larvea	Pupae	Total	Larvea	Pupae	Total
CONTROL	4.0	3.3	4.0	0.3	3.3	0.3	3.5	3.5	1.8	5.3
ALTACOR 0.066 lb ai/a	4.3	2.3	4.0	1.0	2.3	1.0	3.3	3.8	0.0	3.8
Delegate 6.5 oz wt/a	6.5	4.3	4.8	0.0	4.3	0.0	4.3	5.0	1.0	6.0
Assail 8 oz/a	4.8	3.8	4.5	0.0	3.8	0.0	3.8	4.8	1.8	6.5
Tesoro 6.4 oz/a	9.8	7.0	8.5	1.3	7.0	1.3	8.3	9.5	1.5	11.0
Movento 16 oz/a	3.8	2.5	3.5	0.3	2.5	0.3	2.8	3.0	0.5	3.5
DIAZINON 2 qt/a	1.3	0.8	1.0	0.0	0.8	0.0	0.8	0.8	1.8	1.0
LSD 0.05	3.4	3.3	5.9	5.4	3.7	1.2	3.7	3.8	2.0	5.2

Treatment F value	0.002	0.01	0.04	0.02	0.06	0.18	0.02	0.006	0.38	0.02
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4 replications, 7x8' plots, Treatments applied 6/17/08 and 6/20/2008 using 50 gpa spray volume to a heavily infested McFarlin bed in Grayland WA, insect damaged assessed 6/20/2008 and 6/25/2008. Yield for the control treatment, Movento and Diazinon were 132, 133 and 108 bbl/ac, respectively. These yields were significantly different.

Experiment 4: Cupping and crewing damage and larvea and pupae counts were completely eliminated by Movento and Diazinon. There was a trend for Altacor and Esteem to reduce damage and insect counts.

#### WSU Long Beach Research Cranberry Tipworm insecticide screening # 4 2008

Treatment	Tip damage/25 uprights		Insects/25 uprights		
	Cupping	Apical crewing	Larvea	Pupae	total
CONTROL	1.8	1.8	2.3	0.0	2.3
ALTACOR 0.066 lb ai/a	1.0	0.5	0.5	0.0	0.5
Movento 16 oz/a	0.0	0.0	0.0	0.0	0.0
Esteem 5 oz/a	0.5	0.5	0.5	0.3	0.8
DIAZINON 2 qt/a	0.0	0.0	0.0	0.0	0.0
LSD 0.05	1.3	1.3	1.6	0.3	1.7
Treatment F value	0.06	0.06	0.06	0.4	0.07

4 replications, 7x8' plots, Treatments applied 6/17/08 using 50 gpa spray volume and immediately washoff with 580 gpa to simulated chemigation to a heavily infested McFarlin bed in Grayland WA, insect damaged assessed 7/2/2008.

Experiment 6: Due to high variability at the site no treatment effect was significant, however the earlier Movento treatment appeared to have residual control at the site.

#### WSU Long Beach Research Cranberry Tipworm insecticide screening # 6 2008

Treatment	Tip damage/25 uprights		Insects/25 uprights		Yield (bbl/ac)
	Cupping	Apical crewing	Larvea	Pupae	
CONTROL	3.3	3.0	1.3	2.0	52
Movento 7/17 & 7/24 16 oz/a	1.8	1.3	0.0	1.0	59
DIAZINON 7/17 & 7/24 2 qt/a	1.8	1.5	0.0	1.5	27
Actara 7/17 & 7/24 4 oz/a	2.8	2.3	0.8	1.3	45
Movento 5/19 & 5/27 16 oz/a	0.1	0.1	0.0	0.1	43
LSD 0.05	2.6	2.6	1.2	2.3	37
Treatment F value	0.16	0.2	0.1	0.5	0.4

4 replications, 7x8' plots, in a heavily infested McFarlin bed in Grayland WA. Movento, Diazinon and Actara were applied 7/17/08 and 7/24/08 using 50 gpa spray volume and immediately washoff with 10 minutes of irrigation 580 gpa to simulated chemigation, or Movento was applied 5/19/2008 and 5/27/2008 using 50 gpa spray volume with no washoff. Insect damaged assessed 7/24/2008.

**Conclusion:** The cool late season and the distance between WSU and the research plots made it difficult to time our application at egg laying and first instar. This in turn affected our ability to obtain consistent efficacy across each experiment. Plot variability limited our ability to make strong statistical inferences. Nevertheless, Movento showed a consist trend across these trials to suppress cranberry tipworm. This control was usually comparable to Diazinon and appeared to be obtained when chemigation was used for application. Data in experiment 6 suggest that Movento may provide some significant residual control. Movento appears to be a most promising new chemistry for tipworm control in cranberries.