

2008 Progress Report to the WSCPR
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Cranberry weed, insect and disease management for Washington using low-risk alternative pesticides

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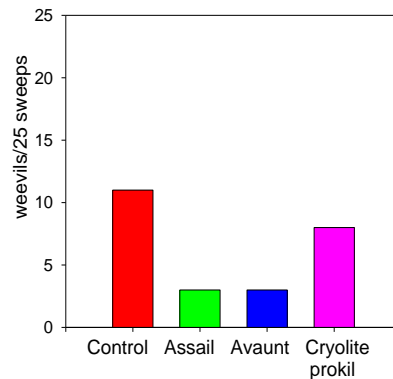
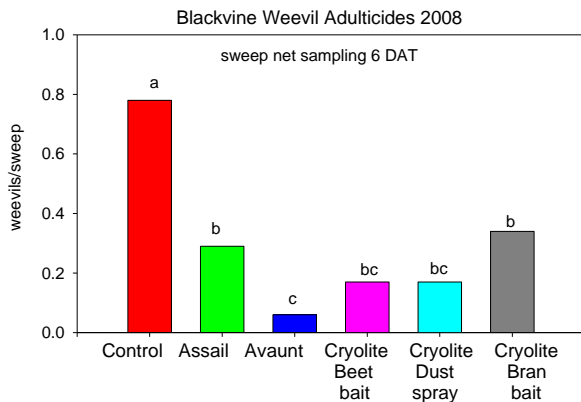
Objective 1: Evaluate quinclorac herbicide for control of perennial broadleaf weeds in cranberries:

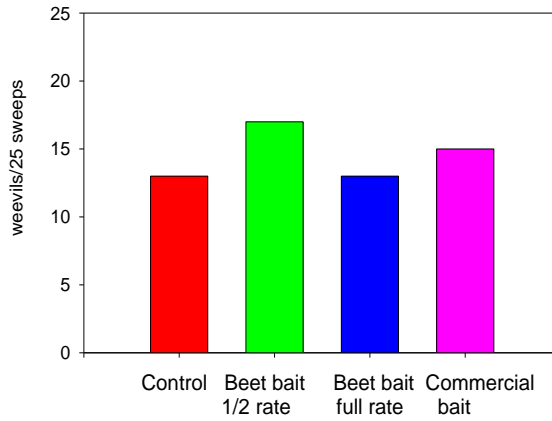
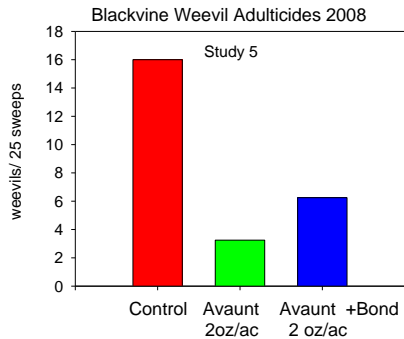
Numerous replicated trials were conducted on several farms to assess efficacy of quinclorac and/or quinclorac + mesotrione on yellow loosestrife and false lily-of-the valley. A summary of findings is as follows:

- Quinclorac: good control of loosestrife with no phytotoxicity noted, minor suppression of other target weeds. Timing very critical for efficacy. Late timing impaired efficacy.
- Quinclorac + mesotrione: improved control for loosestrife and false lily of the valley over either product alone, no phytotoxicity noted. This combination appeared to be a particularly effective mixture for lily control.

Quinclorac results look good and will be used to support IR4 data and future registration. Particularly impressive were combinations of quinclorac with mesotrione. Additional research on this combination is planned.

Objective 2: Evaluate biorational insecticides for control of blackvine weevil: In 2008 we evaluated Assail, Avaunt and various formulations of baits for adult blackvine weevil control. Excellent results were obtained with Avaunt, providing almost immediate kill (see graph). Assail was also a good adulticide. None of the bait formulations, including the commercial one used by the growers, had commercially viable efficacy. Data on larvicide efficacy will be collected spring 2009.





Objective 3: Evaluate biorational insecticides for control of blackheaded fireworm: Two trials on first and second generation fireworm were conducted. The first generation research was conducted in Grayland WA, with 7'x6' plots and 4 replications; the second generation research was in Long Beach WA, with 7'x6' plots and 4 replications. The efficacy of new insecticides was assessed when applied through simulated chemigation systems. An untreated control and Diazinon treatment were used as comparisons. Efficacy was measured by assessing larvae in 10 sweeps per plot. Dates of application and assessment are provided in the tables.

Experiment 1: For first generation fireworm control, most chemistries provided excellent control. There was no difference between insecticides for the first application; by the second application fireworm counts were too low to make strong inferences. However, Esteem, Venom and Rimon appeared to be less effective than the other insecticides. Overall there was a slight difference in efficacy between the 3.25 and 6.5 oz/ac rates of Delegate.

Experiment 2: For second generation fireworm control, both rates of Delegate were as effective as Diazinon. Intrepid was no better than the control.

Overall, Delegate appears to be an excellent contender for replacing Diazinon for application through a chemigation system. Not enough data is available, however, to determine if the 3.5 oz/ac rate of Delegate is adequate for achieving consistent efficacy through chemigation. Altacor is another chemistry that looks very promising but more data will be required to determine if it is consistent.

Table 1. WSU Long Beach blackheaded fireworm insecticide screening # 1 2008

Treatment		First assessment on 1 st generation blackheaded fireworm 5/19/2008								
		Small larvae		Medium larvae		Large larvae		Total		Total Alive + dead
		Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	
Control		6.5	4.5	4.0	3.0	0.5	0.0	7.5	11.0	18.5
Delegate	3.25 oz wt/a	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.5
Assail	8 oz/a	0.5	0.3	0.0	0.0	0.0	0.0	0.3	0.5	0.8
Avaunt	6 oz/a	0.0	1.3	0.0	0.0	0.0	0.0	1.3	0.0	1.3
Diazinon	2 qt/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Altacor	0.066 lb ai/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rimon	40 fl oz/a	0.3	0.5	0.0	0.0	0.0	0.0	0.5	0.3	0.8
Venom	3 oz/a	0.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.5
Tesoro	6.4 oz/a	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.8
Calypso	6 oz/a	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Esteem	5 oz/a	0.3	0.3	0.3	0.0	0.0	0.0	0.3	0.5	0.8
Delegate	6.5 oz wt/a	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.3
LSD (P=.05)		2.30	1.16	2.39	1.18	0.42	0.00	1.98	4.98	6.62
Treatment Prob(F)		0.0001	0.0001	0.0723	0.0004	0.4671	1.0000	0.0001	0.0038	0.0001
Treatment		Second assessment on 1 st generation blackheaded fireworm 6/12/2008								
		Small larvae		Medium larvae		Large larvae		Total		Total Alive + dead
		Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	
Control		0.3	0.3	0.0	0.3	0.8	0.0	1.0	0.5	1.5
Delegate	3.25 oz wt/a	0.0	0.5	0.3	0.0	0.3	0.0	0.5	0.5	1.0
Assail	8 oz/a	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.5
Avaunt	6 oz/a	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.5
Diazinon	2 qt/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Altacor	0.066 lb ai/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rimon	40 fl oz/a	0.5	0.3	0.3	0.5	0.8	0.3	1.5	1.0	2.5
Venom	3 oz/a	0.0	0.0	0.0	0.8	0.5	1.0	0.5	1.8	2.3
Tesoro	6.4 oz/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calypso	6 oz/a	0.0	0.0	0.5	0.5	0.3	0.8	0.8	1.3	2.0
Esteem	5 oz/a	0.0	0.0	0.5	0.3	2.3	1.3	2.8	1.5	4.3
Delegate	6.5 oz wt/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LSD (P=.05)		0.47	0.38	0.58	0.72	0.91	1.02	1.41	1.08	1.41
Treatment Prob(F)		0.5458	0.1784	0.4671	0.3356	0.0007	0.1408	0.0092	0.0111	0.0092

4 replications, 7' x 8' plots, in a heavily infested McFarlin bed in Grayland WA. Treatment applied to first generation 5/19/2008 and 6/4/2008 with 50 gpa spray volume followed by 620 gpa washoff. Data were collected from 10 sweeps per plot.

Table 2. WSU Long Beach blackheaded fireworm insecticide screening # 2 2008

Treatment		Second generation blackheaded fireworm assessed 4 days after treatment 7/24/08								
		Small larvae		Medium larvae		Large larvae		Total		Total Larvae
		Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	
Control		0.8	0.0	1.3	1.3	1.8	0.0	3.8	1.3	5.0
Delegate	3.25 oz wt/a	0.0	0.8	0.0	0.3	0.0	0.0	0.0	1.0	1.0
Delegate	6.5 oz wt/a	0.0	0.8	0.0	0.5	0.3	0.0	0.3	1.3	1.5
Diazinon	2 qt/a	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0
Intrepid	16 fl oz/a	0.5	0.5	1.3	1.5	0.3	0.0	2.0	2.0	4.0
LSD (P=.05)		1.29	1.74	0.98	2.46	0.58	0.00	0.58	0.00	3.47
Treatment Prob(F)		0.5980	0.7700	0.0176	0.5388	0.0001	1.0000	0.0188	0.9199	0.1153

4 replications, 7' x 8' plots, in a heavily infested Stevens bed in Long Beach WA. Treatment applied to second generation fireworm on 7/21/08 with 50 gpa spray volume followed by 620 gpa washoff. Data were collected from 10 sweeps per plot on 7/24/08.