2005 Progress report to the WSCPR

Cranberry weed, insect and disease management for Washington using low-risk alternative pesticides.

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Evaluate alternative herbicides for control of perennial broadleaf weeds in cranberries: Efficacy trials continued with soil drench application of vinegar for control of false lily-of-the-valley (*Maianthemum dilatatum*). Inconsistent results were obtained. Control and phytotoxicity were strongly influenced by soil moisture at the time of applications.

Table 1. Effects of acetic acid applied on 3/23/05 on false lily-of-the-valley and cranberry vines.

% Acetic acid	Application volume (gpa)	Washoff Volume (gpa x103)	Lily (% control)	Vine damage rating*
2	5000	2500	67	1.7
3	5000	2500	81	1.8
4	5000	2500	89	2.1

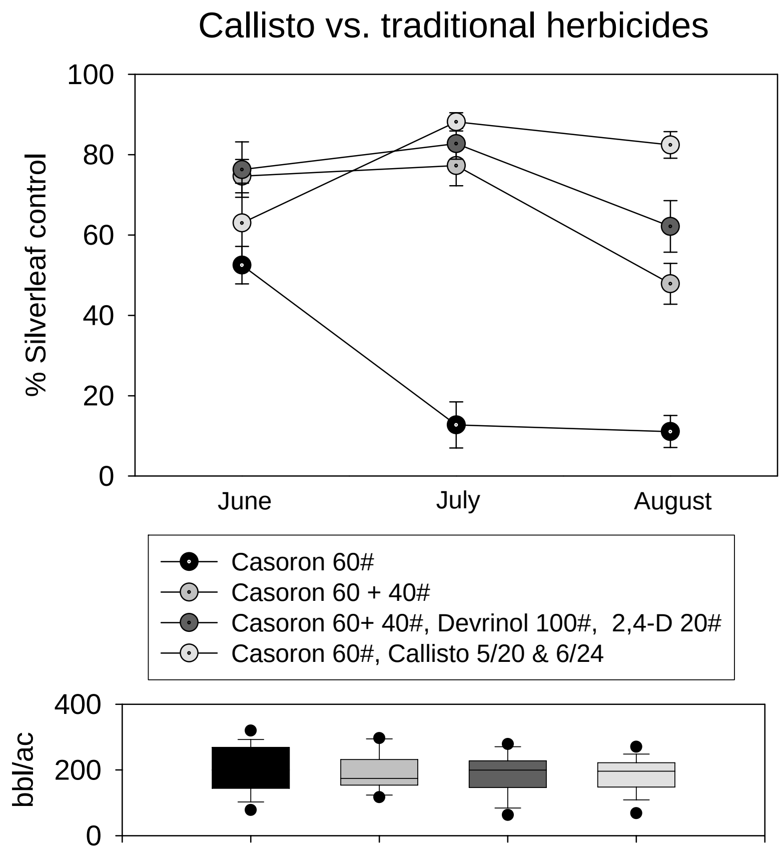
*1=none; 5=dead

Table 2. Effects of acetic acid applied on 4/20/05 on false lily-of-the valley and cranberry vines.

% Acetic acid	Application volume (gpa)	Washoff Volume (gpa x103)	Lily (% control)	Vine damage rating*
4	6000	2500	97	3.3
4	8000	2500	97	3.7
4	10000	2500	99	2.7

*1=none; 5=dead

Raptor (imazamox) is a newly registered, tolerance-exempt herbicide. Research was conducted to assess if it has a fit in cranberry weed management. Only moderate weed control was obtained and considerable vine damage was observed. Six herbicides (Hussar, Envoke, Osprey, Matrix, Upbeet and Plateau) were evaluated for control of silverleaf, buttercup and yellow loosestrife and crop phytotoxicity. Matrix was the overall most efficacious herbicide. Research will continue with Matrix in 2006. Matrix plus Callisto was an effective combination for silverleaf and yellow weed control. Similarly 2,4-D g in combination with Callisto improved control of silverleaf. Multiple studies comparing the efficacy and phytotoxicity of Callisto to traditional cranberry herbicides were conducted. A summary of that data is shown in the adjacent figure. Callisto proved to be a superlative herbicide treatment.



Evaluate biorational insecticides for control of cranberry girdler and other insects: Emergent trap data for cranberry girdler was too variable to determine efficacy of clothianidin and no reliable data were obtained. This has been problematic for any research projects attempting to evaluate girdler control.

<u>Black vine weevil:</u> Our research in 2005 consisted of two trials: a comparison of winter application of Belay (clothianidin) to Admire, and a comparison of mid-summer application of Belay and Actara to Admire for black vine weevil control. Admire and Belay both equally suppressed larvae in the winter (Table 1). Summer applications were not as effective, although there was a trend for Admire to be the more effective of the three insecticides.

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Table 1. Control of black vine weevil larvae with winter application of insecticides in 2005.

Treatment				RATE	Larvae #/m2 4-26-05
Admire February 2	2	F	16	OZ A/A	2.5 a
Admire March 31	2	F	16	OZ A/A	3.4 a
Belay February 2	16	WDG	3	OZ A/A	3.3 a
Belay March 31	16	WDG	3	OZ A/A	3.0 a
control					11.9 b
LSD (P=.05)					7.83

Table 2. Control of black vine weevil larvae with summer application of insecticides in 2005.

Treatment			Larvae #/m2 4 MAT
Admire	2 F	16 OZ A/A	2.5 a
Belay	16 WDG	3 OZ A/A	3.8 a
Actara	25 WG	8 OZ/A	4.5 a
control			5.6 a
LSD (P=.05)			3.45

Cranberry girdler: Clothianidin efficacy data based on emergent traps from our girdler control experiment in 2004 was collected in June 2005 from 3 sites with over 25 replications. There was no significant treatment effect. This doesn't necessarily reflect on the lack of efficacy, but on the difficulty of conducting girdler research. Since no other cranberry research entomologist was successful in this effort, no additional studies were conducted.

Evaluate alternative fungicides for control of fruit rots and keeping quality of fresh cranberries: Research in 2005 focused on developing fruit rot management strategies. Grower beds with historical high rot percentages were selected. Treatments compared traditional grower fungicide applications (Bravo at fruit set followed by Maneb in 14

					% Fruit Rot at harvest			
Treatment	Form Conc.	Form Type	Rate	Rate Unit	McPhail Stevens	McPhail Pilgrim	Gray Pilgrim	Gray Pilgrim
Grower - treatment					7.2 ab	19.6 a	3.6 a	1.3 ab
Grower - treatment					8.7 a	14.2 a	3.4 a	2.4 ab
Abound 10% bloom 5/27	2.08	F	0.1	LB A/A				
Abound +10 days 6/9	2.08	F	0.1	LB A/A				
Grower - treatment					5.3 ab	18.4 a	3.9 a	3.1 a
Abound 10% bloom 5/27	2.08	F	0.2	LB A/A				
Abound + 10 days 6/9	2.08	F	0.2	LB A/A				
Grower - treatment					1.7 b	13.4 a	2.1 a	0.8 b
Echo 720 10% bloom 5/27	54	F	6	PT/A				
Echo 720 + 10 days 6/9	54	F	6	PT/A				
Grower - treatment					2.6 b	14.6 a	3.5 a	1.6 ab
Abound 10% bloom 5-27	2.08	F	0.2	LB A/A				
Echo 720 + 10 days 6/9	54	F	6	PT/A				

days) against earlier and more aggressive applications of fungicides. Yield, fruit rot at

harvest and during storage were collected. Overall there was no significant treatment effect on fruit rot or yield across all sites. (Tables 3, 4, & 5). However, there was a trend for reduced rot with Echo application during bloom, without any effect on yield.

Table 1. Fruit rot at harvest at four grower beds as a function of fungicide application during bloom.

Table 2 Fruit rot after six weeks storage at four grower beds as a function of fungicide application during bloom.

					% fruit rot at 6 weeks storage			
Treatment	Form Conc.	Form Type	Rate	Rate Unit	McPhail Stevens	McPhail Pilgrim	Gray Pilgrim	Gray Pilgrim
Grower - treatment					1.8 a	6.2 a	3.1 a	4.4 a
Grower - treatment					1.8 a	7.1 a	3.4 a	2.8 a
Abound 10% bloom 5/27	2.08	F	0.1	LB A/A				
Abound +10 days 6/9	2.08	F	0.1	LB A/A				
Grower - treatment					0.6 a	7.5 a	2.7 a	5.8 a
Abound 10% bloom 5/27	2.08	F	0.2	LB A/A				
Abound + 10 days 6/9	2.08	F	0.2	LB A/A				
Grower - treatment					0.9 a	7.0 a	1.6 a	2.9 a
Echo 720 10% bloom 5/27	54	F	6	PT/A				
Echo 720 + 10 days 6/9	54	F	6	PT/A				
Grower - treatment					0.7 a	7.8 a	2.7 a	3.6 a
Abound 10% bloom 5-27	2.08	F	0.2	LB A/A				
Echo 720 + 10 days 6/9	54	F	6	PT/A				

Table 3. Yield at four grower beds as a function of fungicide application during bloom.

Treatment	Form Conc.	Form Type	Rate	Rate Unit	Yield (bbl/ac) McPhail Stevens	McPhail Pilgrim	Gray Pilgrim	Gray Pilgrim
Grower - treatment					224 a	212 a	156 a	174 a
Grower - treatment Abound 10% bloom 5/27 Abound +10 days 6/9	 2.08 2.08	 F F	 0.1 0.1	 LB A/A LB A/A	254 a	258 a	161 a	207 a
Grower - treatment Abound 10% bloom 5/27 Abound + 10 days 6/9	 2.08 2.08	 F F	 0.2 0.2	 LB A/A LB A/A	277 a	264 a	167 a	201 a
Grower - treatment Echo 720 10% bloom 5/27 Echo 720 + 10 days 6/9	 54 54	 F F	 6 6	 PT/A PT/A	240 a	229 a	178. a	168 a
Grower - treatment Abound 10% bloom 5-27 Echo 720 + 10 days 6/9	 2.08 54	 F F	 0.2 6	 LB A/A PT/A	283 a	201 a	196 a	181 a