2007 Wine Grape Weed Control Trial

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Methods: Conducted in cooperation with Bernie Borges on the Phelps Ranch south of King City. The trial was located off of Wild Horse Road, east of Hwy 101 in block of Chardonnay. Each plot was 4 feet wide by 30 feet long. There were four replications arranged in a randomized complete block design. All materials were applied on February 7, 2007. Immediately after application, a light rain began to fall which helped to incorporate the preemergence materials but made it necessary to reapply all Roundup treatments on February 15. Vines were spaced 5 feet apart and each plot consisted of 7 vines, including two at the ends of the plot. Rows were 8 feet apart. Material were applied in a four foot wide strip the length of the plot in 72 gallons of water using a CO_2 backpack sprayer at 30 psi using two passes of a one nozzle wand with an 8008E tip. Evaluations were conducted on four dates (see tables below) by counting all weeds in the 4-foot wide strip the 30 foot length of the plot: March 2 (23 DAT), March 23 (44 DAT), April 26 (78 DAT) and June 1 (114 DAT). Percent weed control was estimated by using the number of weeds of a given species in each rep as the numerator and the number of weeds of a given species in the untreated as the denominator in the formula shown below:

Percent weed control = [(no. weeds in treatment/no. weeds in untreated) * 100]

Results: The main weeds at this site were sow thistle, bind weed and annual grasses. The annual grasses were mostly emerged at the beginning of the trial and it was important to include Roundup with the preemergence treatments to start with a clean slate; as can be seen on the first evaluation date, Roundup helped control this weed in the two Matrix treatments that did not include Roundup (Table 1). The principle weed at the site was sow thistle; it comprise 75% of the weeds on the final evaluation. The control of this weed by Matrix and Goal+Surflan started to diminish by the 3rd evaluation date (Tables 1-4 and Figure 1). Interestingly, Matrix + Surflan and Matrix + Goal had better control of this weed than the Goal + Surflan treatment. Chateau + Roundup had intermediate control of this weed; V-10142 at 0.5 and 1.0 lb and combinations of this material with Chateau provided excellent control of this weed through the 114 days of evaluation. There were some initial impacts of the treatments on bind weed, but by the final evaluation date there were no difference among the treatments.

Table 1. Weed evaluations on March 2, 2007: counts per 120 ft2 upper number and percent weed control lower number

Treatment	Lb a.i./A	Sow Thistle	Bind Weed	Annual Grass	Malva	Fiddle-neck	Summer Mustard	Total Weeds
Matrix 25WG	0.0625	0.5	1.0	7.0	0.0	0.0	0.5	9.0
X-77 Non-ionic surfactant	0.25% v/v	75.0	75.0	5.7		100.0	50.0	1.9
Matrix 25WG	0.0625	0.3	0.3	0.3	0.0	0.0	0.3	1.0
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	75.0	100.0	87.5		100.0	75.0	85.5
Goal 2XL	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Surflan 4SC	4.0							
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	100.0	100.0	100.0		100.0	100.0	100.0
Matrix SG25	0.0625	0.3	0.0	7.3	0.0	1.5	0.3	9.3
X-77 Non-ionic surfactant	0.25% v/v	75.0	100.0	13.4		75.0	75.0	13.4
Matrix SG25	0.0625	0.0	0.5	0.0	0.3	0.0	0.0	0.8
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	100.0	100.0	100.0		100.0	100.0	68.7
Matrix SG25	0.0625	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chateau 51WG	0.25							
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	100.0	100.0	100.0		100.0	100.0	100.0
Matrix SG25	0.0625	0.0	0.5	0.0	0.0	0.0	0.0	0.5
Surflan 4SC	4.0							
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	100.0	75.0	100.0		100.0	100.0	87.5
Matrix SG25	0.0625	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Goal 2XL	0.5							
Roundup 4.0LG	1.0							
X-77 Non-ionic surfactant	0.25% v/v	100.0	100.0	100.0		100.0	100.0	100.0
V-10142 75WG	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.3
Roundup 4.0LG	1.0	100.0	100.0	100.0		100.0	100.0	75.5
V-10142 75WG	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Roundup 4.0LG	1.0	100.0	100.0	100.0		100.0	100.0	100.0
V-10142 75WG	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chateau 51WG	0.25							
Roundup 4.0LG	1.0	100.0	100.0	100.0		100.0	100.0	100.0
V-10142 75WG	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chateau 51WG	0.25							
Roundup 4.0LG	1.0	100.0	100.0	100.0		100.0	100.0	100.0
Chateau 51WG	0.25	0.0	0.0	0.3	0.0	0.0	0.5	0.8
Roundup 4.0LG	1.0	100.0	100.0	75.0		100.0	50.0	71.8
Untreated	----	0.3	0.0	6.0	0.0	0.0	0.3	6.5
		0.0	0.0	0.0		0.0	0.0	0.0
LSD (0.05)		0.4	0.7	2.6	0.2	1.1	0.5	3.1
		n.s.	n.s.	8.3		19.1	47.8	33.1

Table 2. Weed evaluations on March 23, 2007: counts per 120 ft2 upper number and percent weed control lower number

Treatment	Lb a.i./A	Sow Thistle	Bind Weed	Annual Grass	Malva	Chick-Weed	Prickly Lettuce	Dead Nettle	Fiddle-neck	Total Weeds
Matrix 25WG	0.0625	1.3	7.5	3.5	0.0	0.0	0.0	0.0	0.3	12.5
X-77 Non-ionic surfactant	0.25% v/v	81.7	15.0	56.1	100.0	100.0	100.0	100.0	75.0	55.7
Matrix 25WG	0.0625	0.0	4.0	0.0	0.5	0.0	0.0	0.0	0.0	4.5
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	100.0	32.7	100.0	100.0	100.0	100.0	100.0	100.0	85.7
Goal 2XL	0.5	0.3	2.0	0.8	0.0	0.0	0.0	0.0	0.0	3.0
Surflan 4SC	4.0									
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	97.8	52.5	90.6	100.0	100.0	100.0	100.0	100.0	89.5
Matrix SG25	0.0625	0.0	1.0	5.5	0.0	0.3	0.0	0.0	0.0	6.8
X-77 Non-ionic surfactant	0.25% v/v	100.0	64.4	33.8	100.0	96.9	100.0	100.0	100.0	80.3
Matrix SG25	0.0625	0.0	5.5	2.8	0.0	0.0	0.0	0.0	0.0	8.3
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	100.0	55.3	55.2	100.0	100.0	100.0	100.0	100.0	74.1
Matrix SG25	0.0625	0.0	1.0	0.3	0.0	0.0	0.0	0.0	0.0	1.3
Chateau 51WG	0.25									
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	100.0	72.7	91.7	100.0	100.0	100.0	100.0	100.0	95.9
Matrix SG25	0.0625	0.0	4.3	3.0	0.0	0.0	0.0	0.0	0.0	7.3
Surflan 4SC	4.0									
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	100.0	30.9	47.7	100.0	100.0	100.0	100.0	100.0	76.6
Matrix SG25	0.0625	0.0	4.0	1.3	0.0	0.0	0.0	0.0	0.0	5.3
Goal 2XL	0.5									
Roundup 4.0LG	1.0									
X-77 Non-ionic surfactant	0.25% v/v	100.0	43.1	80.0	100.0	100.0	100.0	100.0	100.0	84.3
V-10142 75WG	0.5	0.0	7.5	3.0	0.0	0.0	0.0	0.0	0.0	10.5
Roundup 4.0LG	1.0	100.0	50.0	38.6	100.0	100.0	100.0	100.0	100.0	62.6
V-10142 75WG	1.0	0.0	1.5	4.3	0.0	0.3	0.0	0.0	0.0	6.0
Roundup 4.0LG	1.0	100.0	63.6	57.5	100.0	93.8	100.0	100.0	100.0	79.3
V-10142 75WG	0.5	0.0	4.8	1.8	0.3	0.0	0.0	0.0	0.0	6.8
Chateau 51WG	0.25									
Roundup 4.0LG	1.0	100.0	25.0	71.8	100.0	100.0	100.0	100.0	100.0	75.5
V-10142 75WG	1.0	0.0	1.3	2.0	0.0	0.0	0.0	0.0	0.0	3.3
Chateau 51WG	0.25									
Roundup 4.0LG	1.0	100.0	68.1	62.8	100.0	100.0	100.0	100.0	100.0	88.9
Chateau 51WG	0.25	0.0	4.5	5.0	0.0	0.0	0.0	0.0	0.0	9.5
Roundup 4.0LG	1.0	100.0	22.8	29.8	100.0	100.0	100.0	100.0	100.0	68.2
Untreated	----	15.8	5.0	6.3	0.5	5.8	1.0	0.5	0.5	35.3
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LSD (0.05)		6.1	6.0	4.3	0.5	0.7	0.8	0.4	0.2	9.7
		8.4	40.6	45.5	0.1	5.3	0.1	0.1	19.1	27.5

Table 3. Weed evaluations on April 26, 2007: counts per 120 ft2 upper number and percent weed control lower number

Treatment	Lb a.i./A	Sow Thistle	Bind Weed	Annual Grass	Malva	Chick-Weed	Prickly Lettuce	Dead Nettle	Fiddle-neck	Summer Mustard	Other weeds	Total Weeds
Matrix 25WG	0.0625	19.5	14.0	4.8	0.5	0.0	0.0	0.0	0.3	0.0	0.0	39.0
X-77 Non-ionic surfactant	0.25% v/v	73.8	4.6	70.6	68.8	100.0	100.0	100.0		100.0		64.2
Matrix 25WG	0.0625	5.8	15.5	2.3	1.0	0.0	0.0	0.0	0.0	0.5	0.0	25.0
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	91.2	31.2	82.7	68.8	100.0	100.0	100.0		75.0		78.9
Goal 2XL	0.5	22.0	10.0	3.5	0.3	0.0	0.0	0.0	0.0	0.3	0.5	36.5
Surflan 4SC	4.0											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	71.4	24.8	73.3	75.0	100.0	100.0	100.0		75.0		65.6
Matrix SG25	0.0625	22.3	7.0	6.5	1.5	0.0	0.0	0.0	0.3	0.5	2.0	40.0
X-77 Non-ionic surfactant	0.25% v/v	71.8	50.7	45.2	37.5	100.0	100.0	100.0		50.0		66.9
Matrix SG25	0.0625	12.8	20.3	3.5	1.0	0.0	0.0	0.0	0.5	0.0	0.0	38.0
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	86.4	33.3	67.0	75.0	100.0	100.0	100.0		100.0		67.5
Matrix SG25	0.0625	6.0	6.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
Chateau 51WG	0.25											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	92.1	42.8	63.1	100.0	100.0	100.0	100.0		100.0		86.3
Matrix SG25	0.0625	1.0	14.3	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
Surflan 4SC	4.0											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	98.3	22.6	78.7	100.0	100.0	100.0	100.0		100.0		83.5
Matrix SG25	0.0625	1.3	16.3	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5
Goal 2XL	0.5											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	98.7	36.6	88.3	100.0	100.0	100.0	100.0		100.0		83.6
V-10142 75WG	0.5	0.3	28.5	9.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	38.5
Roundup 4.0LG	1.0	99.5	15.3	27.5	75.0	100.0	100.0	100.0		100.0		62.5
V-10142 75WG	1.0	0.3	12.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.8
Roundup 4.0LG	1.0	99.5	43.3	17.3	100.0	100.0	100.0	100.0		100.0		74.7
V-10142 75WG	0.5	0.0	17.5	5.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	23.3
Chateau 51WG	0.25											
Roundup 4.0LG	1.0	100.0	25.0	61.4	75.0	100.0	100.0	100.0		100.0		76.4
V-10142 75WG	1.0	0.0	12.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8
Chateau 51WG	0.25											
Roundup 4.0LG	1.0	100.0	46.1	60.4	100.0	100.0	100.0	100.0		100.0		83.8
Chateau 51WG	0.25	9.5	20.5	10.8	0.5	0.0	0.0	0.0	0.3	0.0	0.0	41.5
Roundup 4.0LG	1.0	87.6	7.7	25.4	50.0	100.0	100.0	100.0		100.0		62.0
Untreated	----	83.8	12.3	12.5	1.8	4.0	0.8	0.5	0.8	1.3	0.8	118.3
		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
LSD (0.05)		22.3	17.6	6.0	1.3	0.1	0.6	0.4	0.7	0.5	1.2	28.1
		20.2	38.7	35.0	54.0	2.4	0.1					23.1

Table 4. Weed evaluations on June 1, 2007: counts per 120 ft2 upper number and percent weed control lower number

Treatment	Lb a.i./A	Sow Thistle	Bind Weed	Annual Grass	Malva	Chick-Weed	Prickly Lettuce	Dead Nettle	Fiddle-neck	Summer Mustard	Other weeds	Total Weeds
Matrix 25WG	0.0625	39.3	21.5	5.0	0.8	0.0	0.0	0.0	0.0	0.3	0.0	66.8
X-77 Non-ionic surfactant	0.25% v/v	47.0	0.0	76.9	66.7	100.0				100.0	100.0	32.0
Matrix 25WG	0.0625	29.3	17.8	4.3	1.3	0.0	0.0	0.0	0.0	0.3	0.0	52.8
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	57.3	12.5	76.7	33.3	100.0				83.3	100.0	48.4
Goal 2XL	0.5	31.0	9.8	2.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	43.8
Surflan 4SC	4.0											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	58.4	2.0	87.8	100.0	100.0				77.7	100.0	56.5
Matrix SG25	0.0625	33.8	10.0	7.8	2.3	0.0	1.0	0.3	0.0	0.3	1.8	57.0
X-77 Non-ionic surfactant	0.25% v/v	55.3	25.0	42.8	0.0	100.0				66.7	33.3	45.9
Matrix SG25	0.0625	27.3	23.5	4.3	1.3	0.0	0.0	0.0	0.0	0.0	0.5	56.8
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	67.5	25.0	77.3	66.7	100.0				100.0	33.3	46.2
Matrix SG25	0.0625	23.0	10.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	34.8
Chateau 51WG	0.25											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	72.4	19.8	92.1	100.0	100.0				100.0	66.7	66.9
Matrix SG25	0.0625	3.5	14.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
Surflan 4SC	4.0											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	95.2	0.0	82.8	100.0	100.0				100.0	100.0	78.3
Matrix SG25	0.0625	3.8	19.3	3.0	0.5	0.0	0.3	0.0	0.0	0.3	0.0	27.0
Goal 2XL	0.5											
Roundup 4.0LG	1.0											
X-77 Non-ionic surfactant	0.25% v/v	95.8	28.1	80.3	100.0	100.0				66.7	100.0	74.2
V-10142 75WG	0.5	2.3	27.3	8.8	1.3	0.0	0.8	0.0	0.0	0.0	0.0	40.3
Roundup 4.0LG	1.0	96.8	0.0	54.2	33.3	100.0				100.0	100.0	58.8
V-10142 75WG	1.0	0.5	14.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.5
Roundup 4.0LG	1.0	99.1	12.5	26.8	100.0	100.0				100.0	100.0	69.6
V-10142 75WG	0.5	0.3	18.3	5.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	24.8
Chateau 51WG	0.25											
Roundup 4.0LG	1.0	99.7	25.0	70.9	66.7	100.0				100.0	100.0	72.8
V-10142 75WG	1.0	0.3	15.3	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.3
Chateau 51WG	0.25											
Roundup 4.0LG	1.0	99.6	25.0	81.6	100.0	100.0		100.0		100.0	100.0	79.0
Chateau 51WG	0.25	10.8	18.3	8.5	0.3	0.0	0.3	0.0	0.3	0.5	0.0	38.8
Roundup 4.0LG	1.0	85.6	0.0	39.4	100.0	100.0				100.0	100.0	60.8
Untreated	----	75.5	7.3	15.3	1.0	2.5	0.0	0.0	0.0	2.3	0.3	104.0
		0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
LSD (0.05)		25.0	17.6	7.0	1.6	n.s.	n.s.	n.s.	n.s.	1.2	n.s.	30.5
		29.5	n.s.	37.7	59.7	n.s.				40.4	n.s.	28.1

Figure 1. Summary comparison of percent control of sow thistle on four evaluation dates.