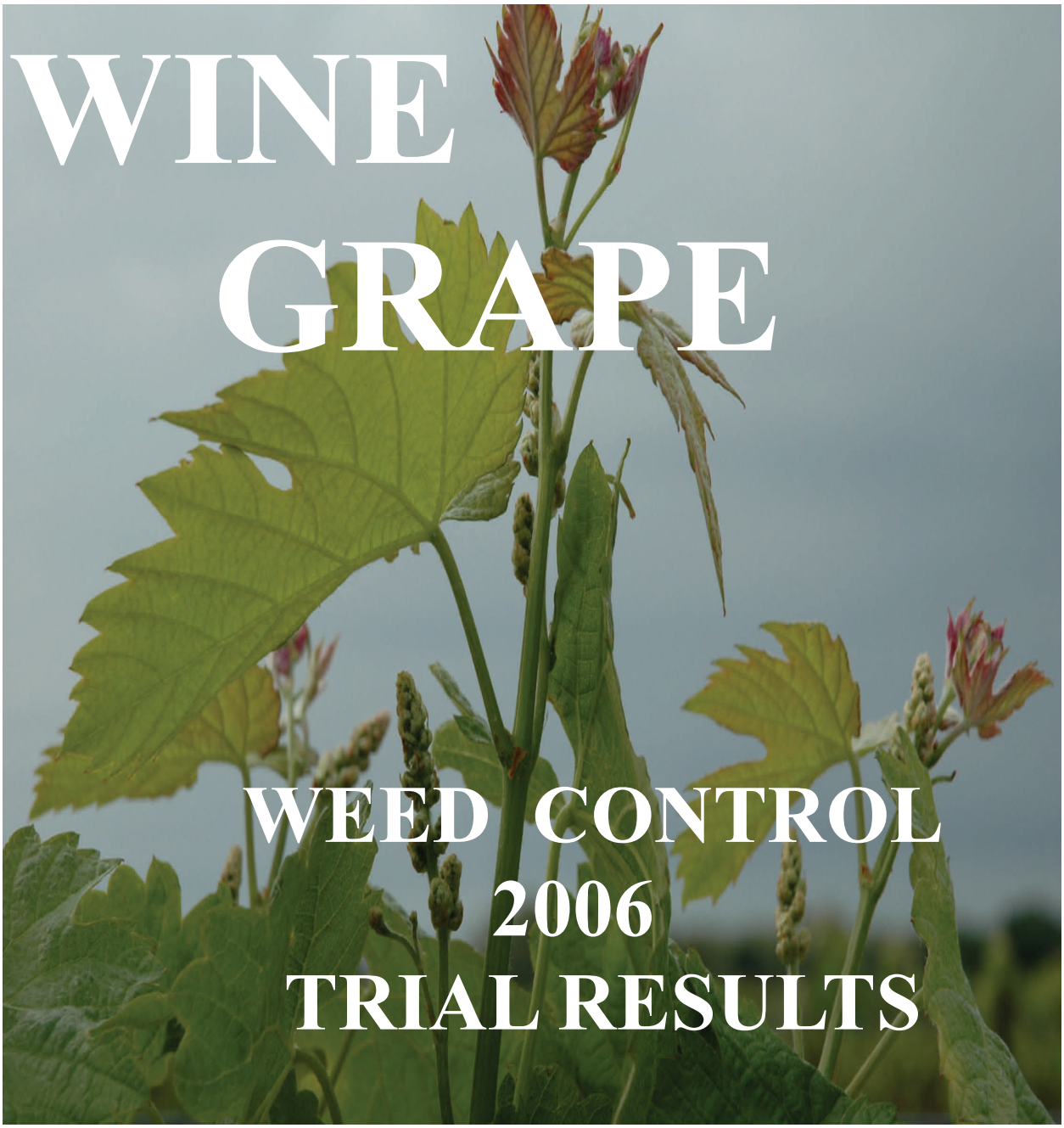

WINE GRAPE

WEED CONTROL 2006 TRIAL RESULTS

SAN JOAQUIN COUNTY

Cooperative Extension University of California
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2006 WINE GRAPE

WEED CONTROL RESEARCH PROGRESS REPORT

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And

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San Joaquin County

ACKNOWLEDGEMENTS

The wine grape weed control program in San Joaquin County was conducted with the cooperation and management assistance of Aberle Acres (Bob Aberle & Donald Lutz) located near Woodbridge, CA. Appreciation and many thanks are extended to them for their assistance, interest and patience.

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Caution

This report is a summary of grape weed control studies conducted in San Joaquin County. **It should not in any way be interpreted as a recommendation of the University of California**.

Trade names of herbicides are used in this report, as well as the less familiar common names to familiarize the reader with the various products tested. No endorsement of products mentioned or criticism of similar products is intended.

The rates of herbicides in this report are always expressed as **active ingredient (a.i.) of material per treated acre.**

Trade Name	Common Name	Company
Chateau	Flumioxazin	Valent
Gramoxone Max	paraquat	Syngenta
Gramoxone Inteon	paraquat	Syngenta
DPX-E9636	rimsulfuron	Dupont
Goal	oxyfluorfen	Dow
Princep Caliber 90	Simazine	Syngenta
Rage	carfentrazone-ethyl/glyphosate	FMC Corporation
Rely	glufosinate ammonium	Bayer
Roundup	glyphosate	Monsanto
Shark	carfentrazone-ethyl	FMC Corporation
Surflan	oryzalin	United Phosphorus, Inc.
V-10142	imazsulfuron	Valent

2006 Grape Weed Control Trial Results

During the 2006 season, seven weed control trials were established and evaluated in San Joaquin County. All of the field trials were located on Aberle Acres which is located near Woodbridge, CA.

All of the trials were established to evaluate the effectiveness of the candidate herbicides for controlling annual and perennial weeds in an established vineyard. Complete trial descriptions and weed control/crop phytotoxicity ratings for each trial follow.

Trial 1 - **Evaluate DPX-E9636 and V-10142 for Yellow Nutsedge Control in Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert, Randall Wittie & Scott Whiteley.

OBJECTIVE: Evaluate several herbicides for controlling yellow nutsedge (*Cyperus esculentus*) in grapes.

MATERIALS & METHODS: The following herbicide treatments were applied at various timings to the berm of an established Merlot vineyard located near Lodi, CA: (1) DPX-E9636 25%WG 0.0625 lb ai/A application timing(**A)**, (2) DPX-E9636 25%WG 0.0625 lb ai/A application timing (**A)** and (**B)**, (3) DPX-E9636 25%WG 0.0625 lb ai/A application timing (**B)**, (4) DPX-E9636 25%WG 0.0625 lb ai/A application timing **A** followed by Roundup Weathermax 5.5SL 1.5 lb ai/A application timing (**B)**, (5) Roundup Weathermax 5.5SL 1.5 lb ai/A application timing (**B)**, (6) Untreated Check, (7) V-10142 75%WG 0.5 lb ai/A application timing (**A)** and (8) V-10142 75%WG 0.5 lb ai/A + Chateau 51%WG 0.188 lb ai/A application timing (**A)**. No Foam A (NIS) added to all treatments at 0.25% V/V. Plots were 6 by 21 ft arranged in a randomized complete block design with three replications. Applications were made with a CO_2 backpack sprayer, 30 psi in 30 gpa. Growth stages prior to application (**A)**, February 16, 2006 were: grapes were dormant and yellow nutsedge = 90% preemergence, 10% postemergence (1-2.5 leaf, 0.5-1 inch height). April 14, 2006 application (**B)** growth stages: grapes = Bud break, 1-2 inch shoots and yellow nutsedge = 20% 1-3 leaf, 0.5-1.5 inch height and 80% 4-5 leaf, 3-4 inch height..

RAINFALL DATA: Weather Station: LODI.C (NCDC #5032, Lodi, CA).
PRECIPITATION AMOUNT (INCHES) *Application Dates: 2/16/2006 & 4/14/06

DATE	INCHES
2/17/06	0.01
2/18/06	0.14
2/20/06	0.01
2/26/06	0.18
2/27/06	0.69
2/28/06	0.05
March Total	4.27
April 1 – April 13 Total	3.45
4/14/06	0.00
4/16/06	0.23
April 17 – April 30 Total	0.00
May Total	0.53

RESULTS & DISCUSSIONS:

Grape Injury:
All treatments showed no grape injury.

Weed Control:
DPX-E9636 0.0625 lb ai/A
A single application early (**A**) 117 DAT gave 72% yellow nutsedge control which was reduced to 58% control 146 DAT. DPX-E9636 applied early (**A**) followed by a DPXF9636 late application (**B**) gave 78% nutsedge control 83 DAT and 72% control on the final rating date 146 DAT. A single application of DPX-E9636 applied late (**B**) showed no activity on the nutsedge. A single application of DPXF9636 applied early (**A**) followed by a late application (**B**) of Roundup Weathermax 1.5 lb ai/A gave 75% nutsedge control 83 DAT with 67% control on the final rating 146 DAT.

V-10142 0.5 lb ai/A
A single application early (**A**) gave 94% yellow nutsedge control 83 DAT. On the final rating date 146 DAT control was 87%. A tank-mix treatment of V-10142 + Chateau gave similar nutsedge control as the above alone treatment of V-10142.

Table – Grape Injury & Yellow Nutsedge Control in Bearing Grapes

Treatment[1]	Rate lb ai/A	Application[2] Timing	% Yellow Nutsedge Control - Rating Date[3] 4/14	5/10	6/13	7/12	% Grape Injury[3] 5/10	7/12
DPX-E9626	0.0625	A	67	67	72	58	0	0
DPX-E9636 + DPX-E9636	0.0625 + 0.0625	A B	60	78	77	72	0	0
DPX-E9636	0.0625	B	-	23	15	8	0	0
DPX-E9636 + Roundup Weather Max	0.0625 + 1.5	A B	73	75	75	67	0	0
Roundup Weather Max	1.5	B	-	17	0	0	0	0
V-10142	0.5	A	98	94	91	87	0	0
V-10142 + Chateau	0.5 + 0.188	A A	100	91	88	80	0	0
Untreated Check	-	-	0	0	0	0	0	0

[1] – No Foam A (NIS) added to all treatment at 0.25% V/V

[2] – Application timing; A = applied on 2/15/06, yellow nutsedge growth stage; 90% preemergence and 10% postemergence 1-2.5 leaf, 0.5-1 inch height. B = applied on 4/14/06 postemergence to the following yellow nutsedge growth stages; 20% 1-3 leaf, 0.5-1.5 inch height and 80% 4-5 leaf, 3-4 inch height.

[3] – 0 = No weed control or crop injury, 100 = Complete weed control; crop dead

Trial 2 - **Evaluate Several Herbicides Applied Alone and Tank Mixtures for Yellow Nutsedge, Large Crabgrass and Turkey Mullein Control in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert & Randall Wittie

OBJECTIVE: Evaluate herbicides applied alone and combinations for summer grass and turkey mullein control in wine grapes.

MATERIALS & METHODS: The following postemergence herbicide treatments were applied to the berm of an established Merlot vineyard located near Lodi, CA on either January 17th application (**A**), or February 28, 2006 application (**B)**: (1) DPX-E9636 25%WG 0.0625 lb ai/A application (**A**), (2) DPX-E9636 25%WG 0.0625 lb ai/A + Surflan 85% DF 4.0 lb ai/A application (**A**), (3) DPX-E9636 25%WG + Chateau 51%WG 0.188 lb ai/A application (**A**), (4) DPX-E9636 25%WG 0.0625 lb ai/A + Chateau 51%WG 0.188 lb ai/A + Surflan 85%DF 4.0 lb ai/A application **A**), (5) Surflan 85%DF 4.0 lb ai/A application (**A**), (6) DPX-E9636 25%WG 0.0625 lb ai/A application (**A)** + DPX-E9636 25%WG 0.0625 lb ai/A application (**B**), (7) DPX-E9636 25%WG 0.0625 lb ai/A + Chateau 51%WG 0.188 lb ai/A application (**B**), (8) DPX-E9636 25%WG 0.0625 lb ai/A + Surflan 85%DF 4.0 lb ai/A application (**B**), (9) DPX-E9636 25%WG 0.0625 lb ai/A application (**B**), (10) Chateau 51%WG 0.375 lb ai/A application (**A**), (11) Chateau 51%WG 0.375 lb ai/A application (**B**), (12) Surflan 85%WG 4.0 lb ai/A application (**B**) and (13) Untreated Check. To burn down the existing vegetation, Rely 1EC 1.0 lb ai/A + No Foam A (NIS) 0.25% V/V were added to each herbicide treatment. Plots were 6 by 21 ft arranged in a randomized complete block design with three replications. Applications were made with a $C)_2$ backpack sprayer, 30 psi in 40 gpa. Growth stages prior to application (**A**) January 17th were: grapes = dormant, common chickweed (*Stellaria media*) = 6-24 lf, 0.5-3 inch ht., hairy fleabane (*Conyza bonariensis*) = 10-16 lf, 6-8 inch diameter, annual bluegrass (*Poa annua*) = 1-2 tiller, 1-2 inch ht., whitestem filaree (*Erodium moschatum*) = 4-8 lf, 4-8 inch diameter, henbit =(*Lamium amplexicaule*) 8-12 lf, 1-2 inch ht. and annual sowthistle (*Sonchus oleraceus*) = 6-10 lf, 4-8 inch diameter. All other weeds were not emerged; prickly lettuce (*Lactuca serriola*), desert rockpurslane (*Calandrinia ciliata*), panicle willowweed (Epilobium paniculatum), turkey mullein (*Eremocarpus setigerus*), yellow nutsedge (*Cyperus esculentus*) and large crabgrass (*Digitaria sanguinalis*). Growth stages prior to application (**B**) February 28th were: common chickweed = flowering, 4-6 inch ht., hairy fleabane = 6-20 lf, early bolting, 2-9 inch diameter, annual bluegrass = seedling to 3-4 tiller, 0.5-4 inch ht., whitestem filaree = 6-16 lf, 4-9 inch diameter, henbit = 4 lf to flowering, 1-4 inch ht., annual sowthistle = 4-16 lf, 2-7 inch diameter, prickly lettuce = 4-6 lf, 3-5 inch diameter, desert rock purslane = 12-20 lf, 1-3 inch diameter, panicle willowweed = 10-14 lf, 1-2 inch ht., turkey mullein = preemergence to cotyledon, 0.25 inch diameter, yellow nutsedge = 1-3 lf, 0.5-2.5 inch ht. and preemergence to large crabgrass. Immediately after application it started to rain (total 0.05 inch).

RAINFALL DATA: Weather Station: LODI.C (NCDC #5032, Lodi, CA).

PRECIPITATION AMOUNT (INCHES) *Application Dates: 1/17/06 (A) 2/28/06 (B)

DATE	INCHES
1/17/06 (**A**)	0.0
1/18/06	0.46
1/19/06	0.08
1/21/06	0.02
1/23/06	0.01
1/26-1/31	0.41
2/1-2/27/06	1.22
2/28/06 (**B**)	0.05
3/2/06	0.15
3/3/06	0.18
3/5/06	0.42
3/6/06	0.33
3/7/06	0.09
3/8-3/31/06	3.10
April Total	3.68
May Total	0.53

RESULTS & DISCUSSIONS:

All treatments showed no grape injury.

January 17, 2006 Application (**A**)

All herbicide treatments gave 94-100% burndown of the emerged weeds 3 MAT (Months after application).
4 MAT: DPX-E9636 applied alone and tank mix combinations with Surflan, Chateau or Surflan + Chateau gave 97-100% control of large crabgrass, 84-93% control of yellow nutsedge with 100% control of turkey mullein. Surflan alone gave 99% crabgrass control, 67% turkey mullein and no activity on yellow nutsedge. Chateau alone gave 97% large crabgrass control, 100% turkey mullein and no control of yellow nutsedge.

5 MAT: All DPX-E9636 treatments were giving similar, excellent weed control data as above except for the DPX-E9636 alone treatment where large crabgrass control dropped 10% to 88% control. Surflan and Chateau alone treatments gave 96% and 98% large crabgrass control, respectively. Control of turkey mullein and yellow nutsedge were the same as the above 4 MAT ratings

6 MAT: Large crabgrass control with DPX-E9636 applied alone had fallen off to 48% while the tank mix combinations with Chateau, Surflan or Chateau + Surflan gave 87%, 98% and 98%, respectively. All DPX-E9636 treatments gave 100% control of turkey mullein while yellow nutsedge control was reduced to 50-68%. Surflan and Chateau alone, 91% and 96% crabgrass control, respectively. Surflan poor yellow nutsedge and turkey mullein control. Chateau gave excellent control of turkey mullein with no activity on yellow nutsedge.
February 28, 2006 Application (**B**)

2.5 MAT: DPX-E9636 applied alone and tank mix combinations with either Surflan or Chateau resulted in the following weed control ratings; large crabgrass 98-100%, yellow nutsedge 86-93% and 100% on turkey mullein. Chateau alone, gave 95% large crabgrass control, turkey mullein 100% and 0% on yellow nutsedge. Surflan alone, large crabgrass control 98% with no activity on yellow nutsedge or turkey mullein.

3.5 MAT: Large crabgrass control with DPX-E9636 alone had fallen 20% to 78% control. Yellow nutsedge and turkey mullein control were similar to 2.5 MAT; 84% and 100%, respectively. DPX-E9636 tank mix combinations with either Surflan or Chateau gave 95-100% control of large crabgrass, 75-83% for yellow nutsedge and 100% turkey mullein control. Chateau and Surflan alone gave similar results taken 2.5 MAT.

4.5 MAT: Large crabgrass control with DPX-E9636 alone was reduced to only 17% with 100% control of turkey mullein and 70% yellow nutsedge control. DPXF9636 tank mixed with Chateau gave 85% control of large crabgrass, 100% on turkey mullein and 77% yellow nutsedge control. DPX-E9636 tank mixed with Surflan gave 99% large crabgrass control, 100% control of turkey mullein and 60% on yellow nutsedge. Surflan and Chateau applied alone gave 88% and 89% control of large crabgrass, respectively. Again, Surflan showed no activity on turkey mullein or yellow nutsedge. Chateau gave excellent control of turkey mullein and no activity on yellow nutsedge.

January 17, 2006 Application (**A**) + February 28, 2006 Application (**B**)

The only treatment applied under this scenario was DPX-E9636 0.0625 lb ai/A applied in January (**A**) and then another 0.0625 lb ai/A of DPX-E9636 applied on the same plot in February (**B**).

4 MAT & 5 MAT: Excellent control of the above three weeds (89-100%).

6 MAT: Large crabgrass control fell off to 73% with 100% turkey mullein control and 70% control of yellow nutsedge.

SUMMARY:

Large Crabgrass: 4 MAT, DPX-E9636 applied alone gave excellent (97-100%) control of crabgrass. 5 MAT, DPX-E9636 applied alone showed a 10-20% reduction in control compared to 4 MAT with control ranging from 78-98%. 6 MAT, these same treatments were giving a 25-61% reduction in control compared to 5 MAT. Actual control ranged from 17-73%. Overall, the split application of DPX-E9636 (**A** + **B**) was more effective in controlling large crabgrass than applied on (**A**) or (**B**). Also, application (**A**) gave better crabgrass control than (**B**). On both application dates (**A**) or (**B**) tank mixtures of DPX-E9636 with Surflan, Chateau or Chateau + Surflan and alone applications of Surflan and Chateau resulted in commercial (85-96%) control of large crabgrass 6 MAT.

In a nut shell, the best treatments for controlling (%) large crabgrass on the final rating date July 14, 2006 were:

1. DPX-E9636 0.0625 lb ai/A + Surflan 4.0 lb ai/A February application = 99%
2. DPX-E9636 0.0625 lb ai /A + Surflan 4.0 lb ai/A January application = 98%
3. DPX-E9636 0.0625 lb ai/A + Chateau 0.188 lb ai/A + Surflan 4.0 lb ai/A January application = 98%
4. Chateau 0.375 lb ai/A January application = 96%
5. Surflan 4.0 lb ai/A January application = 91%
6. Chateau 0.375 lb ai/A February application = 89%
7. Surflan 4.0 lb ai/A February application = 88%
8. DPX-E9636 0.0625 lb ai/A + Chateau 0.188 lb ai/A January application = 87%
9. DPX-E9636 0.0625 lb ai/A + Chateau 0.188 lb ai/A February application = 85%
10. DPX-E9636 0.0625 lb ai/A January followed by a February application = 73%
11. DPX-E9636 0.0625 lb ai/A January application = 48%
12. DPX-E9636 0.0625 lb ai/A February application = 17%

Turkey Mullein: Surflan was the only treatment that did not control turkey mullein.

Yellow nutsedge: Surflan and Chateau were the only herbicides to show no activity on this weed. All treatments of DPX-E9636 showed 75-90% nutsedge control 5 MAT. Control 6 MAT was reduced to 50-77%.

Table 1 – Large Crabgrass and Turkey Mullein Control in Wine Grapes

Treatment[1]	Rate lb ai/A	App[2] Timing	% - Large Crabgrass Control[3] 5/16	6/13	7/14	% - Turkey Mullein Control[3] 5/16	6/13	7/14
DPX-E9636	0.0625	A	97	88	48	100	100	100
DPX-E9636 + Surflan	0.0625 + 4.0	A	100	100	98	100	100	100
DPX-E9636 + Chateau	0.0625 + 0.188	A	100	100	87	100	100	100
DPX-E9636 + Chateau + Surflan	0.0625 + 0.188 + 4.0	A	100	100	98	100	100	100
Surflan	4.0	A	99	96	91	67	67	67
DPX-E9636	0.0625	A + B	100	98	73	100	100	100
DPX-E9636 + Chateau	0.0625 + 0.188	B	98	95	85	100	100	100
DPX-E9636 + Surflan	0.0625 + 4.0	B	100	100	99	100	100	100
DPX-E9636	0.0625	B	97	78	17	100	100	100
Chateau	0.375	A	97	98	96	100	100	100
Chateau	0.375	B	95	94	89	100	100	100
Surflan	4.0	B	98	97	88	0	0	0
Untreated Check	-	-	0	0	0	0	0	0

[1] – To control existing vegetation, Rely 1.0 lb ai/A + No Foam A (NIS) 0.25% V/V were added to each herbicide treatment.

[2] – Application timing; A = applied on 1/17/06, preemergence to the weed species large crabgrass and turkey mullein. B = applied on 2/28 /06 preemergence to large crabgrass and postemergence to turkey mullein in the cotyledon growth stage.

[3] – 0 = No weed control, 100 = Complete weed control

Table 2 – Crop Tolerance and Yellow Nutsedge Control in Wine Grapes

Treatment[1]	Rate lb ai/A	App[2] Timing	% - Grape Injury[3] 5/16	7/14	% - Yellow Nutsedge Control[3] 4/14	5/16	6/13	7/14
DPX-E9636	0.0625	A	0	0	94	90	90	68
DPX-E9636 + Surflan	0.0625 + 4.0	A	0	0	95	88	83	55
DPX-E9636 + Chateau	0.0625 + 0.188	A	0	0	94	88	85	63
DPX-E9636 + Chateau + Surflan	0.0625 + 0.188 + 4.0	A	0	0	65	84	81	50
Surflan	4.0	A	0	0	11	0	0	0
DPX-E9636	0.0625	A + B	0	0	98	93	89	70
DPX-E9636 + Chateau	0.0625 + 0.188	B	0	0	62	89	83	77
DPX-E9636 + Surflan	0.0625 + 4.0	B	0	0	62	86	75	60
DPX-E9636	0.0625	B	0	0	83	88	84	70
Chateau	0.375	A	0	0	10	0	0	0
Chateau	0.375	B	0	0	0	0	0	0
Surflan	4.0	B	0	0	21	0	0	0
Untreated Check	-	-	0	0	0	0	0	0

[1] – To control existing vegetation, Rely 1.0 lb ai/A + No Foam A (NIS) 0.25% V/V added to each herbicide treatment.

[2] – Application timing; A = applied on 1/17/06 preemergence to the yellow nutsedge. B = applied on 2/28/06 postemergence to yellow nutsedge; 1-3 leaf, 0.5-2.5 inch height.

[3] – 0 = No weed control or crop injury, 100 = Complete weed control; crop dead

Trial 3 - **Postemergence Herbicides for Controlling Horseweed at Various Growth Stages in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert, Randall Wittie & Steven Colbert.

OBJECTIVE: Evaluate postemergence herbicides for controlling horseweed at various growth stages in wine grapes.

MATERIALS & METHODS: The following postemergence herbicides were applied to three growth stages of horseweed (*Conyza canadensis*) in an established Merlot vineyard located near Lodi, CA on April 6, 2006: (1) DPX-E9636 25%WG 0.0625 lb ai/A + Goal Tender 4F 1.0 lb ai/A (2) Roundup Weathermax 5.5SL 1.0 lb ai/A + Surflan 85%DG 4.0 lb ai/A, (3) Gramoxone Inteon 2EC 1.0 lb ai/A + Surflan 85%DG 4.0 lb ai/A, (4) Rely 1EC 1.0 lb ai/A + Surflan 85%DG 4.0 lb ai/A (5) Chateau 51%WG + Goal Tender 4F 1.0 lb ai/A and (6) Untreated Check. No Foam A (NIS) was added to all herbicide treatments at 0.25% V/V. Applications were made to a strip plot (3 ft spray swath on both sides of the vine row) 6 ft by 63 ft on April 6, 2006. Materials were applied with a CO_2 backpack sprayer, 35 psi in 40 gpa. Eight to eleven horseweed plants were flagged at each growth stage to determine % control: **White** = 4-6 leaf, 1-1.5 inch diameter, **Green** = 10-14 leaf, 2-3 inch diameter and **Red** = 16-20 leaf, 3-5 inch height, bolting. Grape growth stage prior to application 10-12 inch shoots.

RAINFALL DATA: Weather Station: **LODI.C (NCDC # 5032, Lodi, CA).**
PRECIPITATION AMOUNT (INCHES) *Application Date: 4/6/2006

DATE	INCHES
4/7/06	0.13
4/9/06	0.12
4/10/06	1.11
4/11/06	0.09
4/12/06	0.34
4/16/06	0.23
May Total	0.53

RESULTS & DISCUSSIONS:

All treatments showed no grape injury.

DPX-E9636, Roundup Weathermax and Gramoxone Inteon were most effective in controlling the younger horseweed plants; **White** = 4-6 leaf, 1-1.5 inch diameter. Chateau gave poor control on all horseweed growth stages. The most effective treatment was Rely, giving 90-100% control of horseweed on all growth stages.

Table – Control of Various Horseweed Growth Stages and Crop Tolerance in Wine Grapes

		% Horseweed Control – Days After Treatment (DA)[1]								
		……Horseweed Growth Stage[2]……								
	Rate	White:4-6 lf,1-1.5"Diam			Green:10-14 lf,2-3"Diam			Red:16-20 lf,3-5"ht		
Treatment[3]	lb ai/A	15DA	22DA	34DA	15DA	22DA	34DA	15DA	22DA	34DA
DPX-E9636 + Goal Tender	0.0625 + 1.0	56	78	80	23	75	55	0	0	11
Roundup Weathermax + Goal Tender + Surflan	1.0 + 1.0 + 4.0	100	100	100	33	42	50	0	50	50
Gramoxone Inteon + Surflan	1.0 + 4.0	56	80	82	20	25	22	0	14	17
Rely + Surflan	1.0 + 4.0	36	100	90	25	100	100	33	67	100
Chateau + Goal Tender	0.375 + 1.0	10	11	14	11	13	13	0	0	0
Untreated Check	-	0	0	0	0	0	0	0	0	0

[1] - % Horseweed control ratings were taken 15, 22 and 34 days after treatment (DA). 0 = No weed control, 100 = Complete weed control.

[2]– Horseweed growth stage: 8-11 plants flagged with white color were 4-6 leaf and 1-1.5 inch in diameter; 8-11 plants flagged with green color were 10-14 leaf and 2-3 inch in diameter and 8-11 plants flagged with red color were 16-20 leaf, 3-5 inch in height and bolting.

[3] – No Foam A (NIS) added to all herbicide treatments at 0.25% V/V.

Trial 4 - **Evaluate Various Herbicide Treatments for Weed Control in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert & Randall Wittie.

OBJECTIVE: Evaluate several herbicide treatments for postemergence weed control and preemergence grass control in wine grapes.

MATERIAL & METHODS: The following postemergence herbicide treatments were applied to the berm of a established Merlot vineyard located near Lodi, CA on January 25, 2006: (1) DPX-E9636 25%WG 0.0625 lb ai/A, (2) Roundup Weathermax 5.5SL 1.0 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (3) Rely 1EC 1.0 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (4) Gramoxone Inteon 2EC 0.75 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (5) Chateau 51%WG 0.375 lb ai/A + Roundup Weathermax 5.5SL 1.0 lb ai/A and (6) Untreated Check. No Foam A (NIS) added to each treatment at 0.25% V/V. Plots were 6 by 7 ft arranged in a completely randomized design with three replications. Applications were made with a CO_2 backpack sprayer, 30 psi in 40 gpa. Growth stages prior to application were: grapes = dormant, hairy fleabane (*Conyza bonariensis*) = 20% 8-12 lf, 2-3 inch diameter, 80% 14-24 leaf, 4-7 inch diameter, annual bluegrass (*Poa annua*) = 3 lf – 2 tillers, 1-2 inch height, whitestem filaree (*Erodium moschatum*) = 6-20 lf, 3-10 inch diameter, annual sowthistle (*Sonchus oleraceus*) = 12-20 lf, 2-7 inch diameter, common chickweed (*Stellaria media*) = 10-30 lf, 1-3 inch height, miner's lettuce (*Claytonia perfoliata*) = 4-8 lf, 2-4 inch diameter, barnyardgrass (*Echinochloa crus-galli*) = preemergence and large crabgrass (*Digitaria sanguinalis*) = preemergence.

RAINFALL DATA: Weather Station: LODI.C (NCDC #5032, Lodi, CA).
PRECIPITATION AMOUNT (INCHES) *Application Date: 1/25/06

DATE	INCHES
1/25/06	0.00
1/26/06	0.03
1/27/03	0.03
1/28/06	0.05
1/29/06	0.09
1/30/06	0.19
1/31/06	0.02
February Total	1.27
March Total	4.27
April Total	3.68
May Total	0.53

RESULTS & DISCUSSIONS:

All treatments showed no grape injury.

DPX-E9636: 71 DAT(Days After Treatment), excellent control of common chickweed, miner's lettuce, annual bluegrass and crabgrass with only fair activity on annual sowthistle and whitestem filaree. Hairy fleabane control 78%. 110 DAT, excellent preemergence control of large crabgrass and barnyardgrass with poor control of filaree and fleabane. 139 DAT, DPX-E9636 still giving excellent control of the summer grasses.

Roundup Weathermax + Surflan: 71 DAT, excellent control of common chickweed, miner's lettuce, annual bluegrass, annual sowthistle and barnyardgrass with 67% filaree control and 78% on fleabane. 110 DAT, excellent preemergence control of large crabgrass and barnyardgrass with fair control of filaree and fleabane. 139 DAT, excellent summer grass control 92-98%.

Rely + Surflan: Excellent control of common chickweed, miner's lettuce, annual sowthistle, whitestem filaree and barnyardgrass with 77% control of fleabane and 72% on annual bluegrass. 110 DAT, excellent preemergence activity on crabgrass and barnyardgrass with 87% filaree control and 82% control of fleabane. 139 DAT, excellent control (93%) of the summer grasses.

Gramoxone Inteon + Surflan: 71 DAT, excellent control of chickweed, miner's lettuce, bluegrass and barnyardgrass with 87% filaree control. Poor control of sowthistle and fleabane. 110 DAT, excellent preemergence control of the summer grasses with 80% filaree control and only 20% fleabane control. 139 DAT, summer grass control 100%.

Chateau + Roundup Weathermax: 71 DAT, excellent control of all weed species except for 83% control of filaree. 110 DAT, excellent preemergence control of crabgrass and barnyardgrass with 87% control of filaree and 88% on fleabane. 139 DAT, still giving excellent control of the summer grasses.

SUMMARY - PREEMERGENC SUMMER GRASS CONTROL
All treatments showed excellent soil residual activity by giving 92-100% control of barnyardgrass and large crabgrass 139 DAT.

SUMMARY – POSTEMERGENCE BROADLEAF CONTROL
All treatments gave excellent control of common chickweed and miner's lettuce. DPX-E9636: applied alone resulted in poor control of filaree, fleabane and sowthistle. Gramoxone Inteon: 80% control of filaree with poor control of sowthistle and fleabane.
Roundup Weathermax: 100% sowthistle control with only fair control of fleabane and filaree.
The best treatments were Rely and a tank mixture of Chateau + Roundup Weathermax which gave 82-100% control of the broadleaf species present.

Table 1 – Grass Control and Crop Tolerance in Wine Grapes

		% - Grass Control & Grape Injury – Days After Treatment (DAT)[2]						Grape[2]
		Annual Bluegrass		Barnyardgrass		Large Crabgrass		Injury
Treatment[1]	lb ai/A	71 DAT	110 DAT	110 DAT	139 DAT	110 DAT	139 DAT	139 DAT
DPX-E9636	0.0625	100	95	100	98	98	97	0
Roundup Weathermax + Surflan	1.0 + 4.0	100	100	100	97	98	92	0
Rely + Surflan	1.0 + 4.0	72	82	97	93	95	93	0
Gramoxone Inteon + Surflan	0.75 + 4.0	100	100	100	100	100	100	0
Chateau + Roundup Weathermax	0.375 + 1.0	100	100	100	100	96	92	0
Untreated Check	-	0	0	0	0	0	0	0

[1] – No Foam A (NIS) added to each herbicide treatment at 0.25% V/V
[2] – 0 = No weed control or crop injury, 100 = Complete weed control; crop dead

Table 2 – Broadleaf Weed Control in Wine Grapes

		% Broadleaf Control[1] - After Treatment (DAT)[2]						
		Common Chickweed	Annual Thistle	Miner's Lettuce	Whitestem Filaree		Hairy Fleabane	
Treatment[2]	lb ai/A	71 DAT	71 DAT	71 DAT	71 DAT	110 DAT	71 DAT	110 DAT
DPX-E9636	0.0625	100	50	100	68	40	78	40
Roundup Weathermax + Surflan	1.0 + 4.0	100	100	100	67	70	78	62
Rely + Surflan	1.0 + 4.0	100	97	100	90	87	77	82
Gramoxone Inteon + Surflan	0.75 + 4.0	100	49	100	87	80	7	20
Chateau + Roundup Weathermax	0.375 + 1.0	100	88	100	83	87	92	88
Untreated Check	-	0	0	0	0	0	0	0

[1]– 0 = No weed control, 100 = Complete weed control

[2] – No Foam A (NIS) added to each herbicide treatment at 0.25% V/V

Trial 5 - **Postemergence Herbicides for Weed Control in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert & Randall Wittie.

OBJECTIVE: Evaluate several postemergence herbicides for overall weed control in grapes.

MATERIALS & METHODS: The following postemergence herbicides were applied to the berm of an established Merlot vineyard located near Lodi, CA on February 16th, 2006: (1) Rage 3.7EW 0.375 lb ai/A, (2) Rage 3.7EW 0.50 lb ai/A, 93) Shark 2EC 0.031 lb ai/A, (4) Shark 2EC 0.031 lb ai/A + Roundup Weathermax 5.5SL 0.75 lb ai/A, (5) Shark 2EC 0.031 lb ai/A + Chateau 51WG 0.375 lb ai/A, (6) Roundup Weathermax 5.5SL 1.5 lb ai/A, (7) Rage 3.7EW 0.75 lb ai/A, (8) Rely 1EC 1.0 lb ai/A and (9) Untreated check. Ammonium Sulfate 2% W/W was added to treatments 1, 2, 6 and 7. No Foam A (NIS) 0.25% V/V was added to all treatments except for #4 and #5 where a COC (Herbimax) was added at 1.0% V/V. Rage 3.7EW is a mixture of Shark and Roundup with a ratio of (1: 92.5). Plots were 6 by 14 ft arranged in a completely randomized design with three replications. Applications were made with a CO_2 backpack sprayer, 30 psi in 30.4 gpa. Growth stages prior to application were: grapes were dormant, annual bluegrass (*Poa annua*) = 2-4 tiller, 1-3" ht., common chickweed (*Stellaria media*) = flowering, 3-5" ht., miner's lettuce (*Claytonia perfoliata*) = 10-16 lf, 3" ht., hairy fleabane (*Conyza bonariensis*) = 10% 6-10 lf, 2-3" diameter, 30% 12-20 lf, 4-5" diameter and 60% >30 lf, early bolting 7-10" diameter, annual sowthistle (*Sonchus oleraceus*) = 10% 6-12 lf, 3-6" diameter, 30% 30 lf, 8" diameter and 60% early bolting, 8" ht., whitestem filaree (*Erodium moschatum*) = 60% 8-14 lf, 6-10" diameter and 40% 16-30 lf, 12-18" diameter and preemergence to the grass species; barnyardgrass (*Echinochloa crus-galli*) and large crabgrass (*Digitaria sanguinalis*).

RAINFALL DATA: Weather Station: LODI.C (NCDC # 5032, Lodi, CA).
PRECIPITATION AMOUNT (INCHES) *Application Date: 2/16/2006

DATE	INCHES
2/17/06	0.01
2/18/06	0.14
2/20/06	0.01
2/26/06	0.18
2/27/06	0.69
2/28/06	0.05
March Total	4.27
April Total	3.68
May Total	0.53

RESULTS & DISCUSSIONS:

All treatments showed no grape injury.

Rage 0.375, 0.50 and 0.75 lb ai/A – All rates of Rage gave excellent control of all weed species present except for whitestem filaree where control ranged from 40-70%. The 0.75 lb ai/A rate of Rage gave similar weed control as the 1.5 lb ai/A rate of Roundup Weathermax. Rage formulation would not be commercially acceptable, too thick.

Shark 0.031 lb ai/A – Poor activity on all weed species with only 47% control of whitestem filaree.

Shark 0.031 lb ai/A + Roundup 0.75 lb ai/A (TM) – Compared to a similar rate of Rage (0.75 lb ai/A) both treatments gave similar weed control with the Rage treatment giving better control of whitestem filaree 70% versus 50% for the above tank mixture.

Roundup Weathermax 1.5 lb ai/A – Based on weed spectrum and size 1.5 lb ai/A required for effective control. Treatment gave excellent control of all weed species with 78% control of whitestem filaree. All Rage treatments gave similar weed control compared to this high rate of Roundup Weathermax except it took the 0.75 lb ai/A rate of Rage to get 70% control of whitestem filaree.

Shark 0.031 lb ai/A + Chateau 0.375 lb ai/A (TM) – Gave excellent control of annual bluegrass, common chickweed, miner's lettuce and whitestem filaree with poor activity on hairy fleabane and annual sowthistle. Best treatment for controlling whitestem filaree 88%. With Chateau the only soil active herbicide in the trial, large crabgrass and barnyardgrass control was excellent 117 DAT.

Rely 1.0 lb ai/A – Resulted in excellent control of common chickweed, hairy fleabane, annual sowthistle and miner's lettuce with 77% control of whitestem filaree. Annual bluegrass control was poor.

Table – Winter Weed and Summer Grass Control in Wine Grapes

		% - Control of Winter Weeds – 56 Days After Treatment[1]						% Grass Control 117 DAT[2]	
Treatment[3]	Rate lb ai/A	Annual Bluegrass	Chick Weed	Miner's Lettuce	Hairy Fleabane	Whitestem Filaree	Sow Thistle	Large Crabgrass	Barnyardgrass
Rage[4]	0.375	95	100	100	96	57	92	0	0
Rage[4]	0.5	97	100	100	93	40	79	0	0
Shark	0.031	0	100	17	23	47	0	0	0
Shark + Roundup[5]	0.031 + 0.75	95	100	100	94	50	85	0	0
Shark + Chateau[2] + COC	0.031 + 0.375 + 1.0%V/V	92	100	92	24	88	44	100	99
Roundup[4,5]	1.5	99	100	100	99	78	100	0	0
Rage[4]	0.75	99	100	100	100	70	90	0	0
Rely	1.0	20	100	100	93	77	97	0	0
Untreated Check	-	0	0	0	0	0	0	0	0

[1] – 0 = No weed control, 100 = Complete weed control

[2] = Data collected 117 days after treatment (DAT). Large crabgrass and barnyardgrass were not up prior to the application date 2/16/06. Soil residual activity of Chateau is controlling these summer grasses.

[3] – No Foam A (NIS) added to all herbicide treatments at 0.25% V/V except for the tank mix combination of Shark + Chateau. Added Herbimax (COC) at 1.0% V/V

[4] – Ammonium Sulfate added to these treatments at 2% W/W

[5] – Roundup formulation used in this trial was Roundup Weathermax 5.5SL

Trial 6 - **Herbicides Applied on Different Dates for Horseweed Control in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert, Randall Wittie & Steven Colbert.

OBJECTIVE: Evaluate herbicides applied on various dates for controlling horseweed (marestail) in wine grapes.

MATERIALS & METHODS: The following herbicide treatments were applied on different dates for horseweed (*Conyza canadensis*) control in an established Merlot vineyard located near Lodi, California: Application (**A**) January 4, 2006; Trt.#13 = Untreated check, Trt.#14 = DPX-E9636 25%WG 0.0625 lb ai/A + Gramoxone Inteon 2EC 0.75 lb ai/A and Trt.#15 = Chateau 51%WG 0.375 lb ai/A. Application (**B**) February 10, 2006; Trt. #1 = Roundup Weathermax 5.5SL 1.0 lb ai/A + Surflan 85%DF 4.0 lb ai/A, Trt. #2 = Rely 1EC 1.0 lb ai/A + Surflan 85%WG 4.0 lb ai/A, Trt. #3 = Gramoxone Inteon 2EC 0.75 lb ai/A + Surflan 85%WG 4.0 lb ai/A, Trt. #4 = Chateau 51%WG .375 lb ai/A + Goal Tender 4F 1.0 lb ai/A and Trt #5 = DPX-E9636 25%WG 0.0625 lb ai/A + Goal Tender 4F 1.0 lb ai/A. Application (**C**) March 30, 2006; Trt. # 7 = Shark 2EW 0.0625 lb ai/A + Surflan 85%WG 4.0 lb ai/A, Trt. #8 = Shark 2 EW 0.0625 lb ai/A + Chateau 51% WG 0.375 lb ai/A, Trt. #9 = V-10142 75%WG 0.5 lb ai/A + Surflan 85%WG 4.0 lb ai/A and Trt. #10 = V-10142 75%WG 0.5 lb ai/A + Chateau 75%WG 0.375 lb ai/A. Application (**D**) April 6, 2006; Trt.# 11 = DPX-E9636 25%WG 0.0625 lb ai/A + Goal Tender 4 F 1.0 lb ai/A, Trt.# 12 = Roundup Weathermax 5.5SL 1.0 lb ai/A + Surflan 85%WG 4.0 lb ai/A, Trt.#16 = Gramoxone Inteon 2EC 1.0 lb ai/A + Surflan 85%WG 4.0 lb ai/A, Trt.#17 = Rely 1EC 1.0 lb ai/A + Surflan 85%WG 4.0 lb ai/A and Trt#18 = Chateau 51%WG 0.375 lb ai/A + Goal Tender 4F 1.0 lb ai/A. No Foam A was added to all herbicide treatments at 0.25% V/V. Plots were 6 by 21 ft arranged in a randomized complete design with three replicates. Applications were made with a CO_2 backpack sprayer, 30 psi in 40 gpa. Growth stages prior to application (**A**), January 4, 2006 were: grapes = dormant, common chickweed (*Stellaria media*) = 4-8 lf, .5-1 inch ht., whitestem filaree (*Erodium moschatum*) = 2-4 lf, .25-.5 inch ht., annual bluegrass (*Poa annua*) = 2-3 lf, .5-1 inch ht. and preemergence to all other weeds; horseweed (*Conyza Canadensis*), prickly lettuce (*Lactuca serriola*), annual sowthistle (*Sonchus oleraceus*), panicle willowweed (*Epilobium paniculatum*), shepherd's purse (*Capsella bursa-pastoris*), desert rockpurslane (*Calandrinia ciliata*), miner's lettuce (*Claytonia* perfoliata), yellow nutsedge (*Cyperus esculentus*) and large crabgrass (*Digitaria sanguinalis*). February 10, 2006 application (**B**) growth stages: grapes = dormant, horseweed = 85% 2-4 lf, .25-.5 inch diameter; 14% 6-10 lf, 1-2 inch diameter and 1% 14-18 lf, 2.5-3 inch diameter, common chickweed = flowering, 5-7 inch ht., whitestem filaree = 90% 6-12 lf, 2-6 inch diameter, 10% 14-30 lf, 10-20 inch diameter, annual bluegrass = 2-3 tiller, 1-3 inch ht., prickly lettuce = 4 lf, 1-2 inch diameter, annual sowthistle = 4-8 lf, 1-3 inch diameter, panicle willowweed = 6-14 lf, 1-1.5 inch ht., common groundsel = 4-12 lf, 1-2 inch ht., shepherd's purse = 6-10 lf, 1-2 inch diameter, desert rockpurslane = 20-26 lf, 3-5 inch diameter, miner's lettuce = 6-10 lf, 3-5 inch diameter and preemergence to yellow nutsedge and large crabgrass. Application (**C**) , March 30, 2006 growth stages: grapes = bud break, horseweed = 10% 4 lf, 1 inch diameter, 80% 6-10 leaf, 1.5-2.5 inch diameter and 10% 14-20 lf, 3-5 inch diameter, common chickweed = flowering, 5-7 inch ht., whitestem filaree = 10-30+ lf, 10-24" diameter, annual bluegrass, seed set, 2-5 inch ht., prickly lettuce = 6-10 lf, 2-7" diameter, annual sowthistle = 10-16 lf, 5-10 inch diameter/ht., panicle willowweed = 50% lateral branching, 3-4 inch ht. and 50% lateral branching, 5-8 inch ht., common groundsel = flowering, 6-10 inch ht., shepherd's purse = flowering, 2-6 inch diameter, desert rockpurslane = flowering, 3-6 inch diameter, miner's lettuce = flowering, 3-6 inch ht. and preemergence to large crabgrass and yellow nutsedge. Started to rain 6 hours after application. Application (**D**) April 6, 2006 growth stages: grapes = bud break, horseweed = 30% 4-6 lf, 1-1.5 inch diameter, 60% 10-14 lf, 2-3 inch diameter and 10% 16-20 lf, few bolting and 3-5 inch ht./diameter. All other weed growth stages were the same as on application (**C**).

RAINFALL DATA: Weather Station: LODI.C (NCDC #5032, Lodi, CA).
PRECIPITATION AMOUNT (INCHES)*Application Date: 1/4, 2/10, 3/30&4/6/2006

DATE	INCHES	DATE	INCHES
1/4/06	0.00*	3/1-3/29/06	3.69
1/6/06	0.01	3/30/06 *	0.04
1/8/06	0.01	3/31/06	0.54
1/10/06	0.01	4/2-4/5/06	1.66
1/11/06	0.02	4/6/06*	0.00
1/12/06	0.02	4/7/06	0.13
1/14/06	0.46	4/9/06	0.12
1/15/06	0.01	4/10/06	1.10
1/18/06	0.46	4/11/06	0.09
1/19-1/31/06	0.52	4/12/06	0.34
2/1-2/9/06	0.19	4/16/03	0.23
2/10/06	0.00*	May Total	0.53
2/17/06	0.01		
2/18/06	0.14		
2/20/-2/28/06	0.93		

RESULTS & DISCUSSIONS:

All treatments showed no grape injury.

Application (**A**) January 4, 2006

DPX-E9636 0.0625 lb ai/A + Gramoxone Inteon 0.75 lb ai/A: Gave excellent preemergence control of horseweed, prickly lettuce, annual sowthistle, panicle willowweed, common groundsel, shepherd's purse, miner's lettuce and desert rockpurslane. Postemergence activity on common chickweed, whitestem filaree and annual bluegrass was excellent. Preemergence control of large crabgrass was poor with 60% yellow nutsedge control. 6.5 MAT, plant counts showed a new flush of whitestem filaree occurred, averaged 40 plants/plot.

Chateau 0.375 lb ai/A: Preemergence and postemergence activity was similar to the above DPX-E9636 treatment except the preemergence control of large crabgrass was much better (80%). However, it showed no activity on yellow nutsedge. 6.5 MAT, Chateau was still very effective in controlling a new flush of whitestem filaree plants, counts were only 2/plot.

Application (**B**) February 10, 2006

Roundup Weathermax 1.0 lb ai/A + Surflan 4.0 lb ai/A: 3 MAT, excellent (94-100%) postemergence control of horseweed, common chickweed, annual bluegrass, prickly lettuce, annual sowthistle, common groundsel, shepherd's purse, desert rockpurslane and miner's lettuce with poor control of whitestem filaree and panicle willowweed. 5 MAT, horseweed control had fallen off to 78%. Preemergence control of large crabgrass 4.5 MAT and 5 MAT was 92% and 80%, respectively. As expected, no control of yellow nutsedge. 5 MAT, poor control on a new flush of whitestem filaree plants.

Rely 1.0 lb ai/A + Surflan 4.0 lb ai/A: 3 MAT, gave excellent postemergence control (92-100%) of the above weed species with 83% whitestem filaree control. 5 MAT, still giving 95% control of horseweed and 88% on large crabgrass. No control on the new flush of whitestem filaree or yellow nutsedge.

Gramoxone Inteon 0.75 lb ai/A + Surflan 4.0 lb ai/A: 3 MAT, excellent postemergence control (97-100%) control of the above weed species with 77% horseweed control. 5 MAT, horseweed control had fallen off to 68% with 88% large crabgrass control. No activity on yellow nutsedge or newly germinating whitestem filaree plants.

Chateau 0.375 lb ai/A + Goal Tender 1.0 lb ai/A: 3 MAT, postemergence control of all the above weed species ranged from 97-100%. 5 MAT, 97% control of horseweed and 99% on large crabgrass. Poor control of yellow nutsedge. Excellent control on the newly germinating whitestem filaree plants, counts showed only 1/plot.

DPX-E9636 0.0625 lb ai/A + Goal Tender 1.0 lb ai/A: 3 MAT, excellent postemergence control (97-100%) of the above mentioned weed species. 5 MAT, horseweed control was still 98%. Preemergence control of large crabgrass 4.5 MAT and 5 MAT was only 67% and 63%, respectively. Yellow nutsedge control was 75% 4.5 MAT and 60% for 5 MAT. Poor control on a new flush of whitestem filaree plants 5 MAT.

DPX-E9636 0.0625 lb ai/A + Goal Tender 1.0 lb ai/A + Prowl H_2O 4.0 lb ai/A: This treatment preformed quite similar to the above DPXF9636 + Goal Tender treatment except the large crabgrass control 5 MAT was excellent, 99%.

Application (**C**) March 30, 2006 & Application (**D**) April 6, 2006
These two applications were put together because the weed growth stages were essentially the same.

Shark 0.0625 lb ai/A + Surflan 4.0 lb ai/A: 6 WAT, this postemergence treatment gave only commercial control of miner's lettuce, desert rockpurslane and shepherd's purse. 14 WAT, preemergence control of large crabgrass was 97%.
Shark 0.0625 lb ai/A + Chateau 0.375 lb ai/A: 6 WAT, excellent postemergence control (97-100%) on all the weed species except for 80% on annual sowthistle, yellow nutsedge 26% and 0% for horseweed. 14 WAT, preemergence control of large crabgrass was 100%. Excellent control on the new flush of whitestem filaree with 0 plants/plot.

V-10142 0.5 lb ai/A + Surflan 4.0 lb ai/A: 6 WAT, 90-100% control of miner's lettuce, annual bluegrass, shepherd's purse and yellow nutsedge with 80% sowthistle control. 14 WAT, yellow nutsedge and large crabgrass control was 75% and 90%, respectively. Good control on the newly germinated whitestem filaree with only 3 plants/plot.

V-10142 0.5 lb ai/A + Chateau 0.375 lb ai/A: 6 WAT, this postemergence treatment gave excellent control (90-100%) control of all the weed species with 80% horseweed control. 14 WAT, horseweed control had fallen off to 53% and 67% for yellow nutsedge. Preemergence control of large crabgrass was 99% with excellent control on a new flush of whitestem filaree plants.

DPX-E9636 0.0625 lb ai/A + Goal Tender 1.0 lb ai/A: 5 WAT, excellent postemergence control (96-100%) control of all weed species except for poor control of horseweed, whitestem filaree and yellow nutsedge. 13 WAT, excellent preemergence control of large crabgrass and newly germinating whitestem filaree.

Roundup Weathermax 1.0 lb ai/A + Goal Tender 1.0 lb ai/A + Surflan 4.0 lb ai/A: 5 WAT, poor postemergence control of whitestem filaree, panicle willowweed and yellow nutsedge. Excellent control of other weeds with 85% control of horseweed. 13 WAT, horseweed control had fallen off to 38% with 99% control of large crabgrass.

Gramoxone Inteon 1.0 lb ai/A + Surflan 4.0 lb ai/A: 5 WAT, excellent postemergence control of all the weed species except for average control of annual sowthistle and prickly lettuce. Horseweed and yellow nutsedge control were 38% and 37%, respectively. 13 WAT, preemergence control of large crabgrass was 96%.

Rely 1.0 lb ai/A + Surflan 4.0 lb ai/A: 5 WAT, excellent postemergence control (92-100%) of all the weed species except for poor activity on the yellow nutsedge. 13 WAT, horseweed control was reduced to 78% with excellent preemergence control of large crabgrass.

Chateau 0.375 lb ai/A + Goal Tender 1.0 lb ai/A: 5 WAT, Excellent postemergence (92-100%) control of all the weed species except for no activity on horseweed and yellow nutsedge. 13 WAT, excellent preemergence control of large crabgrass.

Summary Horseweed Growth Stages & % Control
Application (**A**) 1/6/6 = Preemergence to horseweed.
Application (**B**) 2/10/6 = 85% 2-4 lf, 0.25-0.5 inch diameter, 14% 6-10 lf, 1-2 inch diameter and 1% 14-18 lf, 2.5-3 inch diameter.
Application (**D**) 4/6/6 = 30 % 4-6 lf, 1-1.5 inch diameter, 60% 10-14 lf, 2-3 inch diameter and 10% 16-20 lf, few bolting, 3-5 inch height.

Chateau: Most effective when applied preemergence; application (**A**) 1/4/6 = 98% or early postemergence; application (**B**) 2/10/6 = 97%. No horseweed control with application (**D**) 4/6/6 = 0%.

Roundup Weathermax: Best control, early postemergence application (**B**) 2/10/6 = 78% followed by application (**D**) 4/6/6 = 62%.

Rely: Application (**B**) 2/10/6 most effective control 92% and application (**D**) 4/6/6= 78%.

Gramoxone Inteon: Application (**B**) 2/10/6 = 68%. Application (**D**) 4/6/6 = 0%.

DPX-E9636: Most effective when applied preemergence; application (**A**) 1/4/6 = 100% or early postemergence; application (**B**) 2/10/6 = 98% and Application (**C**) = 38%.

Table 1 – Herbicide Application Timings for Weed Control in Wine Grapes

			% - Weed Control[1] – Rating Dates 4/21 & 5/11					
	Rate	App[3]	Common Chickweed	Common Groundsel	Prickly Lettuce	Desert Rock Purslane	Willowweed	Miner's Lettuce
Treatment[2]	lb ai/A	Time	4/21	5/11	5/11	5/11	5/11	5/11
DPX-E9636 + Gramoxone[4] Inteon	0.0625 + 0.75	A	100	100	100	100	100	100
Chateau	0.375	A	100	100	100	100	100	100
Roundup[4] + Surflan	1.0 + 4.0	B	99	100	95	100	37	100
Rely + Surflan	1.0 + 4.0	B	100	99	100	100	100	100
Gramoxone + Surflan	0.75 + 4.0	B	100	100	100	100	100	100
Chateau + Goal Tender	0.375 + 1.0	B	100	100	100	100	97	100
DPX-E9636 + Goal Tender	0.0625 + 1.0	B	100	100	100	100	100	100
DPX-E9636 + Prowl + Goal Tender	0.0625 + 3.8 + 1.0	B	100	100	100	100	100	100
Shark + Surflan	0.062 + 4.0	C	40	53	77	100	66	100
Shark + Chateau	0.062 + 0.375	C	97	100	100	100	100	100
V-10142 + Surflan	0.5 + 4.0	C	70	83	40	70	20	100
V-10142 + Chateau	0.5 + 0.375	C	100	100	100	100	100	100
DPX-E9636 + Goal Tender	0.0625 + 1.0	D	100	100	100	100	96	100
Roundup + Surflan + Goal Tender	1.0 + 4.0 1.0	D	100	100	90	100	73	100
Gramoxone + Surflan	1.0 + 4.0	D	100	100	75	100	97	100
Rely + Surflan	1.0 + 4.0	D	100	100	100	100	98	100
Chateau + Goal Tender	0.375 + 1.0	D	100	100	100	100	100	100
Untreated Check	-		0	0	0	0	0	0

[1] – 0 = No weed control, 100 = complete weed control

[2] - No Foam A (NIS) added to all herbicide treatments at 0.25% V/V

[3] – Application timing; (**A**) = 1/4/06 preemergence to all weed species except for annual bluegrass, whitestem filaree and common chickweed. Application timing (**B**) = 2/10/06, (**C**) = 3/30/06 and (**D**) = 4/6/06 were applied preemergence to yellow nutsedge and large crabgrass. Postemergence to all other weed species.

[4] – Roundup Weathermax 5.5SL and Gramoxone Inteon 2 EC formulations were used in this trial

.

Table 2 – Herbicide Application Timings for Horseweed Control in Wine Grapes

			% - Weed Control[1] – Rating Dates 5/11, 6/21 and 7/13/06									
						Annual						
					Whitestem	Blue	Shepherd's	Sow	Large		Yellow	
	Rate	App[3]	Horseweed		Filaree	Grass	Purse	Thistle	Crabgrass		Nutsedge	
Treatment[2]	lb ai/A	Time	5/11	7/13	7/13	5/11	5/11	5/11	6/21	7/13	5/11	7/13
DPX-E9636 + Gramoxone[4]	0.0625 + 0.75	A	100	100	100	100	100	100	20	13	78	57
Chateau	0.375	A	100	98	94	100	100	100	80	83	0	0
Roundup[5] + Surflan	1.0 + 4.0	B	94	78	60	100	95	100	92	80	0	0
Rely + Surflan	1.0 + 4.0	B	92	92	83	100	99	100	95	88	0	0
Gramoxone + Surflan	0.75 + 4.0	B	77	68	100	100	97	100	97	88	17	23
Chateau + Goal Tender	0.375 + 1.0	B	100	97	100	100	100	100	99	99	50	23
DPX-E9636 + Goal Tender	0.0625 + 1.0	B	99	98	100	100	100	100	67	63	78	60
DPX-E9636 + Prowl + Goal Tender	0.0625 + 3.8 + 1.0	B	98	93	100	100	100	100	100	99	75	55
Shark + Surflan	0.062 + 4.0	C	7	0	50	100	100	57	100	97	0	0
Shark + Chateau	0.062 + 0.375	C	0	0	97	100	100	80	100	100	27	7
V-10142 + Surflan	0.5 + 4.0	C	53	13	52	100	98	50	100	90	90	75
V-10142 + Chateau	0.5 + 0.375	C	80	53	97	100	100	100	98	99	90	67
DPX-E9636 + Goal Tender	0.0625 + 1.0	D	68	38	57	100	100	100	100	99	47	7
Roundup + Surflan + Goal Tender	1.0 + 4.0 + 1.0	D	85	62	47	100	100	100	100	99	13	0
Gramoxone + Surflan	1.0 + 4.0	D	38	0	100	100	100	77	100	98	37	7
Rely + Surflan	1.0 + 4.0	D	92	78	90	100	97	100	100	98	23	10
Chateau + Goal Tender	0.375 + 1.0	D	18	0	92	100	100	100	100	100	20	13
Untreated Check	-	-	0	0	0	0	0	0	0	0	0	0

[1] – 0 = No weed control, 100 = complete weed control

[2] – No Foam A (NIS) added to all herbicide treatments at 0.25% V/V

[3] - Application timing; (**A**) = 1/4/06 preemergence to all weed species except for annual bluegrass, whitestem filaree and common chickweed. Application timing (**B**) = 2/10/06, (**C**) = 3/30/06 and (**D**) = 4/6/06 were applied preemergence to yellow nutsedge and large crabgrass. Postemergence to all other weed species.

[4] – Gramoxone Inteon 2EC formulation

[5] – Roundup Weathermax 5.5SL formulation

Trial 7 - **Winter Postemergence Herbicides for Season Long Weed Control in Wine Grapes.** Mick Canevari, Paul Verdegaal, Don Colbert & Randall Wittie.

OBJECTIVE: Evaluate various postemergence herbicides applied in the winter for overall weed control in wine grapes.

MATERIALS & METHODS: The following postemergence herbicide treatments were applied to the berm of an established Merlot vineyard located near Lodi, CA on January 16, 2006: (1) DPX-E9636 25%WG 0.0625 lb ai/A + Goal Tender 4F 1.0 lb ai/A, (2) DPX-E9636 25%WG 0.0625 lb ai/A + Rely 1EC 1.0 lb ai/A, (3) DPX-E9636 25%WG 0.0625 lb ai/A + Roundup Weathermax 5.5SL 1.0 lb ai/A, (4) DPX-E9636 25%WG 0.0625 lb ai/A + Karmex 80%DF 1.6 lb ai/A, (5) DPX-E9636 25%WG 0.0625 lb ai/A + Chateau 51%WG 0.375 lb ai/A, (6) DPX-E9636 25%WG 0.0625 lb ai/A + Chateau 25%WG 0.375 lb ai/A + Goal Tender 4F 1.0 lb ai/A (7) DPX-E9636 25%WG 0.0625 lb ai/A applied in January followed by another application of DPX-E9636 25%WG 0.0625 lb ai/A applied in February, (8) DPX-E9636 25%WG 0.0625 lb ai/A + Goal Tender 4F 1.0 lb ai/A applied in January followed by another application of DPX-E9636 25%WG 0.0625 lb ai/A applied in February, (9) Chateau 51%WG 0.375 lb ai/A + Goal Tender 4F 1.0 lb ai/A, (10) Chateau 51%WG 0.375 lb ai/A + Rely 1EC 1.0 lb ai/A (11) Chateau 51%WG 0.375 lb ai/A + Roundup Weathermax 5.5SL 1.0 lb ai/A, (12) Gramoxone Inteon 2EC 0.75 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (13) Rely 1EC 1.0 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (14) Roundup Weathermax 5.5SL 1.0 lb ai/A + Goal Tender 4F 1.0 lb ai/A + Surflan 85%DF 4.0 lb ai/A, (15) Untreated check and (16) DPXF9636 25%WG 0.0625 lb ai/A + Chateau 51%WG 0.375 lb ai/A + Goal Tender 4F 1.0 lb ai/A. Plots were 6 by 14 ft arranged in a randomized complete block design with three replications. Applications were made with a CO_2 backpack sprayer, 30 psi in 40 gpa. No Foam A (NIS) was added to all herbicide treatments at 0.25% V/V. Growth stages prior to the January 16th application were: grapes were dormant, annual bluegrass (*Poa annua*) = 1-3 tiller, 1-2 inch ht., hairy fleabane (*Conyza bonariensis*) = 8-20 lf, 2-8 inch diameter, whitestem filaree (*Erodium moschatum*) = 2-10 lf, 2-10 inch diameter, annual sowthistle (*Sonchus oleraceus*) = 6-20 lf, 4-10 inch diameter, miner's lettuce (*Claytonia perfoliata*) = 4-6 lf, 1-1.5 inch diameter, common chickweed, (*Stellaria media*) = 6-16 lf, .5-1.5 inch ht., prickly lettuce (*Lactuca serriola*) = 4-6 lf, 2-4 inch diameter, henbit (*Lamium amplexicaule*) = 4-8 lf, 1-2 inch ht., common groundsel (*Senecio vulgaris*) = 6-20 lf, 2-6 inch ht. and preemergence to the grass species; witchgrass (*Panicum capillare*), barnyardgrass (*Echinochloa crus-galli*) and large crabgrass (*Digitaria sanguinalis*). On February 28th, a second application of DPX-E9636 25%WG 0.0625 lb ai/A was applied to treatments # 7 and #8. There were no weeds present in treatment #7 prior to the application. In treatment #8, there were a few hairy fleabane and whitestem filaree plants present prior to application. These few plants were showing severe injury from the first DPX-E9636 application.

RAINFALL DATA: Weather Station: LODI.C (NCDC # 5032, Lodi, CA).
PRECIPITATION AMOUNT (INCHES) *Application Dates: 1/16/2006 & 2/28/2006

DATE	INCHES	DATE	INCHES
1/16/06*	0.0	2/28/05*	0.05
1/18/06	0.46	3/2/06	0.15
1/19/06	0.08	3/3/06	0.18
1/21/06	0.02	3/5/06	0.42
1/23/06	0.01	3/6/06	0.33
1/26/06	0.03	3/7/06	0.09
1/27/03	0.03	3/10-3/31/06	3.10
1/28/06	0.05	April Total	3.68
1/29/06	0.09		
1/30/09	0.19		
1/31/06	0.02		
2/1-2/27/06	1.21		

RESULTS & DISCUSSIONS:

All herbicide treatments showed no grape injury.

All postemergence herbicide treatments 23 DAT gave excellent (88-99%) burndown of the weeds that were present prior to application.

DPX-E9636 January 16th Application: 4 MAT, all tank mix combinations of DPX-E9636 with either; Goal Tender, Rely, Roundup Weathermax, Chateau, Karmex + Rely and Chateau + Goal Tender gave excellent (92-100%) season long control of common groundsel, prickly lettuce, miner's lettuce, common chickweed, whitestem filaree, hairy fleabane, annual bluegrass, annual sowthistle and henbit. 5 MAT, the above DPX-E9636 tank mixtures gave excellent preemergence control (90-100%) of large crabgrass, barnyardgrass and witchgrass. 6.5 MAT, the above combinations were still giving excellent control (90-100%) of witchgrass and barnyardgrass. However, DPX-E9636 tank mixed with Roundup Weathermax, Goal Tender or Rely showed a reduction in large crabgrass control which ranged from 37-78%. All DPX-E9636 combinations with Chateau were still giving 87-97% control of large crabgrass.

DPX-E9636 January 16th Application Followed by a February 28th Application: These split applications of DPX-E9636 tank mixed with Rely or Goal Tender performed quite similar to the single application made on January 16th. There was no enhancement in weed control by applying a split application of DPX-E9636 versus a single application.

Chateau January 16th Application: 4 MAT, Chateau + Rely (tank mix) gave excellent control of all weed species (94-100%) which included; common chickweed, common groundsel, prickly lettuce, miner's lettuce, whitestem filaree, hairy fleabane, annual bluegrass , annual sowthistle and henbit. Tank mix combinations of Chateau with either Goal Tender or Roundup Weathermax gave similar results as above except hairy fleabane control was only 67-77%. 5 MAT, tank mix combinations of Chateau with Goal Tender, Rely or Roundup Weathermax gave preemergence control of large crabgrass, barnyardgrass and witchgrass ranging from 84-99%. 6 MAT, all tank mix combinations gave 100% control of witchgrass. Chateau + Rely resulted in 70% large crabgrass control and 92% on barnyardgrass. Chateau + Goal Tender gave 78% barnyardgrass control with 93% on large crabgrass. The tank mix combination of Chateau + Roundup Weathermax gave 79% control of barnyardgrass and 87% control of large crabgrass.

Herbicide Standards January 16th Application: 4 MAT, a tank mix treatment of Roundup Weathermax + Goal Tender + Surflan gave excellent control (93-100%) of all weed species. Gramoxone Inteon tank mixed with Surflan gave excellent control of common groundsel, prickly lettuce, miner's lettuce, common chickweed and annual bluegrass with 40% control of henbit, 85% on whitestem filaree, hairy fleabane 73% and 83% control of annual sowthistle. Rely + Surflan (tank mixture) resulted in excellent control of all weed species except for 74% control of whitestem filaree, 83% annual bluegrass and 82% hairy fleabane control. 5 MAT, all of the above standards were giving excellent preemergence control (90-100%) of large crabgrass, witchgrass and barnyardgrass. 6.5 MAT, all of the standards were performing quite similar for controlling grasses; large crabgrass (69-75%), barnyardgrass (93-97%) and witchgrass (96-100%).

SUMMARY:

Looking at the July 12, 2006 data on the total number of newly germinated whitestem filaree plants per plot; the lowest numbers occurred in the treatments were the Chateau rate was 0.375 lb ai/A.

Overall, based on weed control data collected on all weed species 4, 6, and 6.5 MAT the average % weed control for each treatment were: 100% = Complete weed control, 0 = No weed control.

Treatment	Rate lb ai/Acre	Application Date	% Weed Control
1. DPX-E9636 + Chateau	0.0625 + .375	1/16	99.1
2. DPX-E9636 + Chateau + Goal Tender	0.0625 + .375 + .5	1/16	98.6
3. DPX-E9636 + Chateau + Goal Tender	0.0625 + .375 + .188	1/16	98.3
4. DPX-E9636 + Goal Tender	0.0625 + 1.0	1/16	97.1
+			
DPX-E9636	0.0625	1/28	
5. DPX-E9636 + Rely	0.0625 + 1.0	1/16	97.0
6. DPX-E9636 + Goal Tender	0.0625 + 1.0	1/16	96.9
7. Chateau + Rely	0.375 + 1.0	1/16	96.8
8. Roundup Weathermax+Goal Tender+Surflan	1.0 + 1.0 + 4.0	1/16	96.2
9. DPX-E9636 + Rely	0.625 + 1.0	1/16	96.2
+			
DPX-E9636	0.0625	1/28	
10. Chateau + Goal Tender	0.375 + 1.0	1/16	95.9
11. DPX-E9636 + Karmex + Rely	0.625 + 1.6 + 1.0	1/16	94.8
12. Chateau + Roundup Weathermax	0.375 + 1.0	1/16	94.7
13. DPX-E9636 + Roundup Weathermax	0.625 + 1.0	1/16	93.9
14. Rely + Surflan	1.0 + 4.0	1/16	90.9
15. Gramoxone Inteon + Surflan	0.75 + 4.0	1/16	87.2
16. Untreated Check	-	-	0.0

Table 1 – Summer Grass Control With Winter Postemergent Herbicides in Wine Grapes

			% Grass Control[1] – Months After Treatment (MO)							
	Rate	App[3]	Witch Grass	Barnyardgrass			Large Crabgrass			
Treatment[2]	lb ai/A	Time	6.5MO	4MO	5MO	6MO	4MO	5MO	6MO	6.5MO
DPX-E9636 + Goal Tender	0.0625 + 1.0	A	100	100	98	93	100	99	87	78
DPX-E9636 + Rely	0.0625 + 1.0	A	100	100	96	97	100	93	75	72
DPX-E9636 + Roundup[4]	0.0625 + 1.0	A	100	100	97	90	100	90	60	37
DPX-E9636 + Karmex + Rely	0.0625 + 1.6 + 1.0	A	97	100	100	94	100	90	63	47
DPX-E9636 + Chateau	0.0625 + 0.375	A	100	100	100	100	100	100	96	97
DPX-E9636 + Chateau + Goal Tender	0.0625 + 0.188 + 0.5	A	100	100	100	98	100	96	90	87
DPX-E9636 + Rely DPX-E9636	0.0625 + 1.0 0.0625	A A B	93	100	100	93	100	93	63	68
DPX-E9636 + Goal Tender DPX-E9636	0.0625 + 1.0 0.0625	A A B	97	100	100	95	100	96	80	68
Chateau + Goal Tender	0.375 + 1.0	A	100	97	87	79	96	91	93	93
Chateau + Rely	0.375 + 1.0	A	100	98	95	95	94	84	80	70
Chateau + Roundup	0.375 + 1.0	A	100	95	87	82	94	89	90	87
Gramoxone[5] + Surflan	0.75 + 4.0	A	96	98	96	90	94	90	85	71
Rely + Surflan	1.0 + 4.0	A	97	98	95	92	95	90	86	75
Roundup + Surflan + Goal Tender	1.0 + 4.0 + 1.0	A	100	100	100	96	97	90	82	69
Untreated Ck	-	-	0	0	0	0	0	0	0	0
DPX-E9636 + Chateau + Goal Tender	0.0625 + 0.375 + 0.5	A	98	100	100	99	100	99	97	97

[1] – 0 = No weed control, 100 = complete weed control.
[2] – No Foam A (NIS) added to all herbicide treatments at 0.25% V/V
[3] – Application (**A**) =Applied on 1/16/06; Application (**B**) = Applied on 2/28/06
[4] – Roundup Weathermax 5.5SL formulation
[5] – Gramoxone Inteon 2EC formulation

Table 2 – Broadleaf Weed Control with Winter Postemergent Herbicides in Wine Grapes

			…..……..% Control[1] – Months After Treatment (MO)…….							
	Rate	App[3]	Whitestem Filaree		Hairy Fleabane				Annual Sow Thistle	Henbit
Treatment[2]	lb ai/A	Time	2MO	4MO	2MO	3MO	4MO	6MO	4MO	3MO
DPX-E9636 + Goal Tender	0.0625 + 1.0	A	96	100	90	93	90	93	100	100
DPX-E9636 + Rely	0.0265 + 1.0	A	100	100	98	99	100	100	97	100
DPX-E9636 + Roundup[4]	0.0625 + 1.0	A	75	100	98	99	100	100	100	100
DPX-E9636 + Karmex + Rely	0.0625 + 1.6 + 1.0	A	100	100	97	100	97	97	100	100
DPX-E9636 + Chateau	0.0625 + .375	A	97	100	90	92	92	92	100	100
DPX-E9636 + Chateau + Goal Tender	0.0625 + 0.188 + 0.5	A	94	100	88	96	96	95	100	100
DPX-E9636 + Rely DPX-E9636	0.0625 + 1.0 0.0625	A A B	100	100	100	100	100	96	97	100
DPX-E9636 + Goal Tender DPX-E9636	0.0625 + 1.0 0.0625	A A B	96	100	83	99	100	100	100	100
Chateau + Goal Tender	0.375 1.0	A	98	100	67	65	67	80	100	100
Chateau + Rely	0.375 1.0	A	100	100	100	100	100	100	100	100
Chateau + Roundup	0.375 1.0	A	94	100	92	83	77	70	100	100
Gramoxone[5] + Surflan	0.75 + 4.0	A	88	85	57	57	73	78	83	40
Rely + Surflan	1.0 + 4.0	A	98	74	90	83	82	72	93	100
Roundup + Surflan + Goal Tender	1.0 + 4.0 + 1.0	A	97	100	91	88	93	93	100	100
Untreated Ck	-	-	0	0	0	0	0	0	0	0
DPX-E9636 + Chateau + Goal Tender	0.0265 0.375 + 0.5	A	100	100	90	90	84	90	100	100

[1] – 0 = No weed control, 100 = complete weed control

[2] – No Foam A (NIS) added to each herbicide treatment at 0.25% V/V

[3] – Application (**A)** = Applied on 1/16/06, Application (**B**) = Applied on 2/28/06

[4] – Roundup Weathermax 5.5SL formulation

[5] – Gramoxone Inteon 2EC formulation

Table 3 – Weed Control with Winter Postemergent Herbicides in Wine Grapes

			...……% Control[1] – Months After Treatment (MO)…….....						
	Rate	App[3]	Annual Bluegrass	Common Chickweed	Common Groundsel			Miner's Lettuce	Prickly Lettuce
Treatment[2]	lb ai/A	Time	4 MO	4 MO	2 MO	3 MO	4MO	4 MO	4 MO
DPX-E9636 + Goal Tender	0.0625 + 1.0	A	100	100	100	100	100	100	100
DPX-E9636 + Rely	0.0625 + 1.0	A	100	100	100	100	100	100	100
DPX-E9636 + Roundup[4]	0.0625 + 1.0	A	100	100	100	100	100	100	100
DPX-E9636 + Karmex + Rely	0.0625 + 1.6 + 1.0	A	100	100	100	100	100	100	100
DPX-E9636 + Chateau	0.0625 + 0.375	A	100	100	100	100	100	100	100
DPX-E9636 + Chateau + Goal Tender	0.0625 + 0.188 + 0.5	A	100	100	100	100	100	100	100
DPX-E9636 + Rely DPX-E9636	0.0625 + 1.0 0.0625	A A B	100	100	100	100	100	100	100
DPX-E9636 + Goal Tender DPX-E9636	0.0625 + 1.0 0.0625	A A B	100	100	100	100	100	100	100
Chateau + Goal Tender	0.375 + 1.0	A	100	100	90	100	100	100	100
Chateau + Rely	0.375 + 1.0	A	100	100	100	100	100	100	100
Chateau + Roundup	0.375 + 1.0	A	100	100	100	100	100	100	100
Gramoxone[5] + Surflan	0.75 + 4.0	A	100	100	-	-	-	100	100
Rely + Surflan	1.0 + 4.0	A	83	100	100	45	33	100	100
Roundup + Surflan + Goal Tender	1.0 + 4.0 + 1.0	A	98	100	100	100	100	100	100
Untreated Ck	-	A	0	0	0	0	0	0	0
DPX-E9636 + Chateau + Goal Tender	0.0625 + 0.375 + 0.5	A	100	100	100	100	100	100	100

[1] – 0 – No weed control, 100 = complete weed control
[2] – No Foam A added to each herbicide treatment at 0.25% V/V
[3] – Application (**A**) = applied on 1/16/06, Application (**B**) = Applied on 2/28/06
[4] – Roundup Weathermax 5.5SL formulation
[5] – Gramoxone Inteon 2EC formulation