



# Weed Control in Transition

## Local research in alternative materials

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# Weed Control in Transition



Factors impacting herbicide changes:

- Regulations/Environmental issues.
- Resistance- They no longer work.
- Economics- cost effective.
- Market concerns - pesticide fear.

2005

Grapes herbicide use in  
San Joaquin County

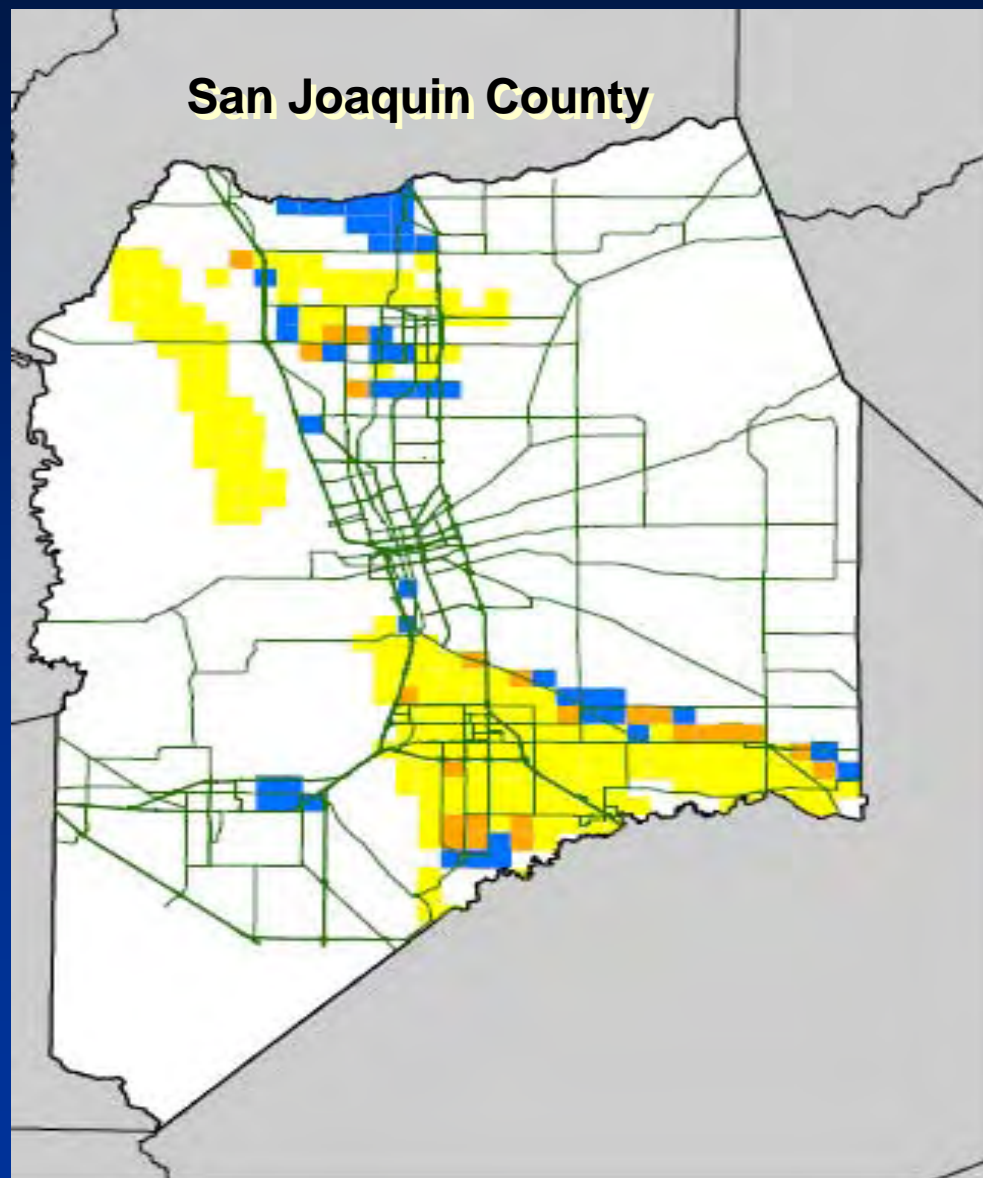
Diuron	13,700	Karmex
Flumioxazin	4,900	Chateau
Glyphosate	51,000	Roundup #1
Norflurazon	1,900	Solicam
Simazine	22,600	Princep
Oxyflourfen	31,000	Goal
Paraquat	22,000	Gramoxone
Oryzalin	4,800	Surflan
	<hr/>	
	151,900	

96,000 acres grapes SJC

# Regulations

- Water regulations in effect 2005  
Solicam, Karmex, Princep, Bromacil, prometron,  
and bentazon
- Volatile Organic Compounds regulations 2008:  
Goal, Treflan

**Legend:** **Yellow** represents leaching GWPAs; **Blue** represents runoff GWPAs, and **orange** indicates sections that have both runoff or leaching GWPAs.



# Mitigation management

## Groundwater/leaching

- Commodities that use irrigations methods that remain within 130% of ET are exempt.

## Surface water/runoff

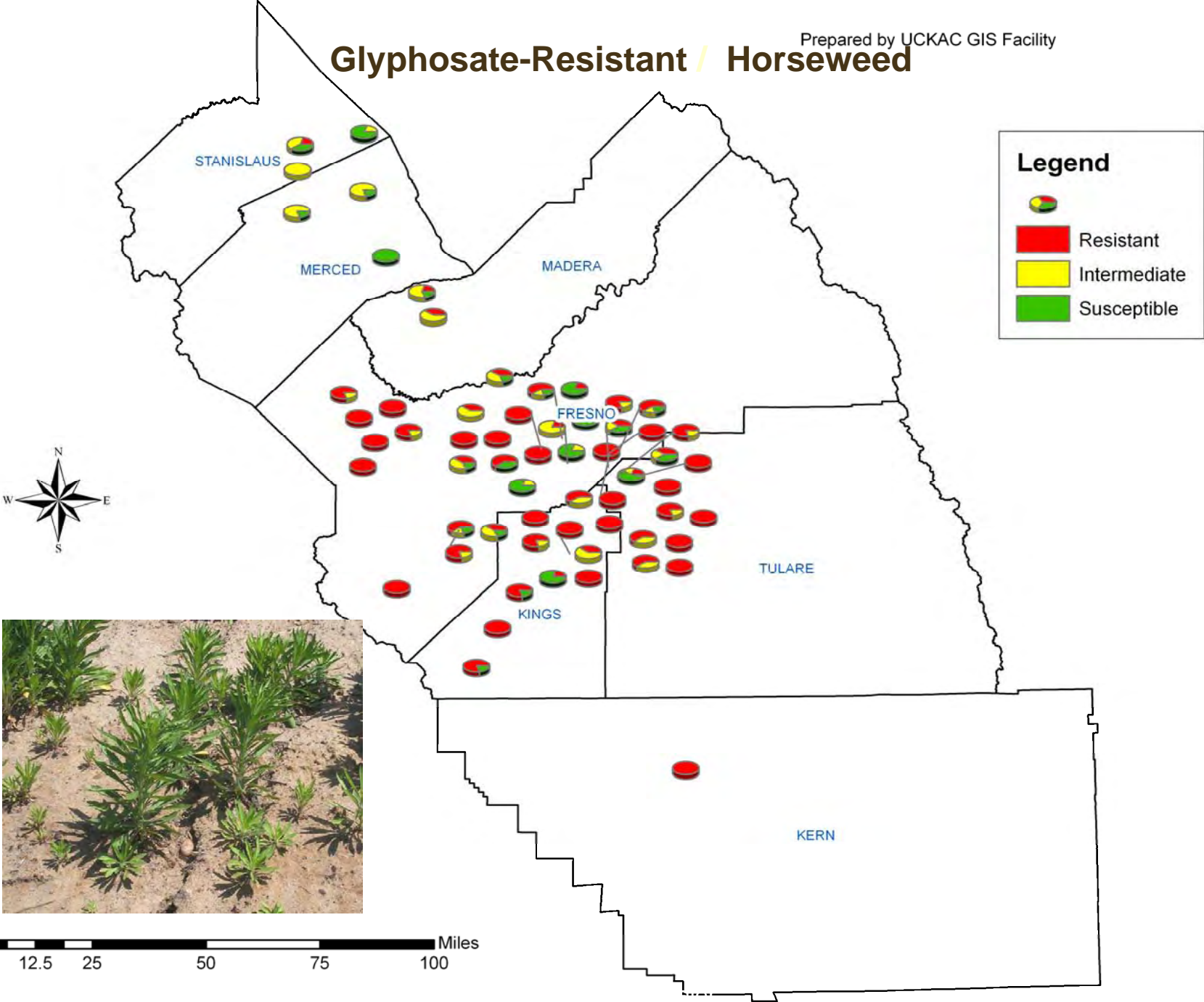
- Herbicide is applied to no more than 30% of acreage is exempt.



# Herbicide Resistant issues



# Glyphosate-Resistant / Horseweed



0 12.5 25 50 75 100 Miles



Glyphosate resistant ryegrass

03 26 2008 11:30

# Managing for Resistance

- Early detection- Not the same level of control
- Don't shave the rates- low rates induce resistant buildup
- Rotate chemistries- Don't go to the same well
- Tank mix combinations- different modes of actions





# Winter and Summer Weed Control Trial Results 2006

Some new options

Winter applied

Untreated

15  
I





Broad-spectrum Standard

**Roundup + Goal + Surflan**

**Application: January'06, Picture: April'06**



Chateau + Rely

10  
II

# NEW HERBICIDES – NEW USES

## Chateau

- Registered 2005
- Post control of small BL weeds, better when tank mixed with Roundup, Gramoxone, Rely or Goal
- Season long residual of Broadleaves and grasses
- Excellent control of horseweed, fleabane and mullein as well as crabgrass, witchgrass and barnyardgrass preemergence



**Matrix + Roundup**

2  
II

# NEW HERBICIDES – NEW USES

## Matrix (DPX-E9636)

- ✿ *Currently Not Registered in T&V- 2008*
- ✿ New chemistry
- ✿ Controls weeds post emergence but recommended with a foliar herbicide
- ✿ Season long preemergence control of BL weeds and grasses. Horseweed, fleabane and mullein
- ✿ Shows some promise for nutsedge control



## Rely

Post emergence control of most BL and grass weeds.

Effective controlling the tough weeds post horseweed, fleabane, filaree, chickweed, sowthistle, miner's lettuce and turkey mullein.

Valuable tank mix partner with all soil active herbicides.

Check

Matrix + Goal Tender





Matrix + Chateau

# NEW HERBICIDES – NEW USES

## Rage and Shark

✿ Shark – post emergence specific to BL weeds only

✿ Rage – combined product using shark and glyphosate

✿ Together act synergistically across broad spectrum of weeds and grasses

✿ Neither has soil residual properties

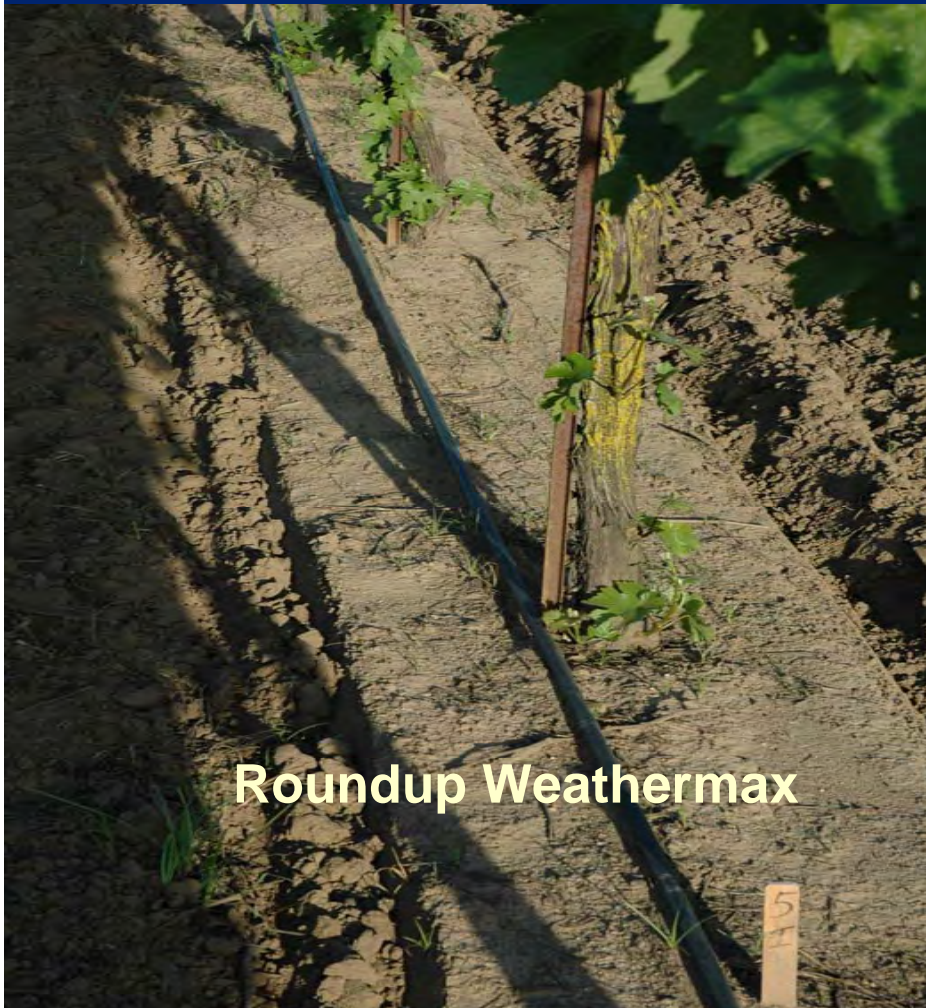
# NEW HERBICIDES – NEW USES

## PROWL H20

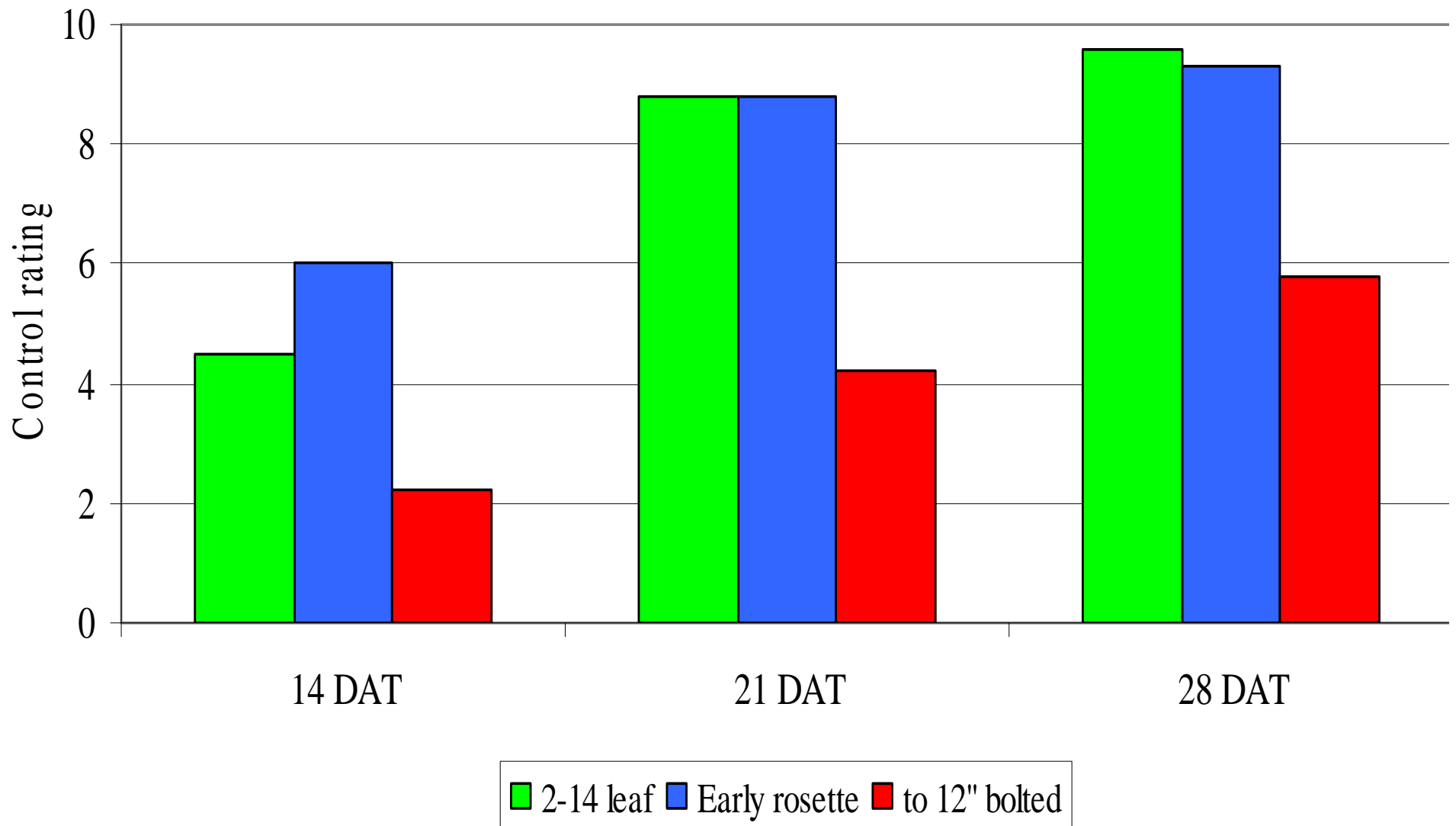
- ✿ Pre emergence for broadleaves and most grasses
- ✿ Will go head to head with Surflan for performance @ lower cost
- ✿ Tank mix with Roundup, Rely, Goal, Chateau.

V-10142

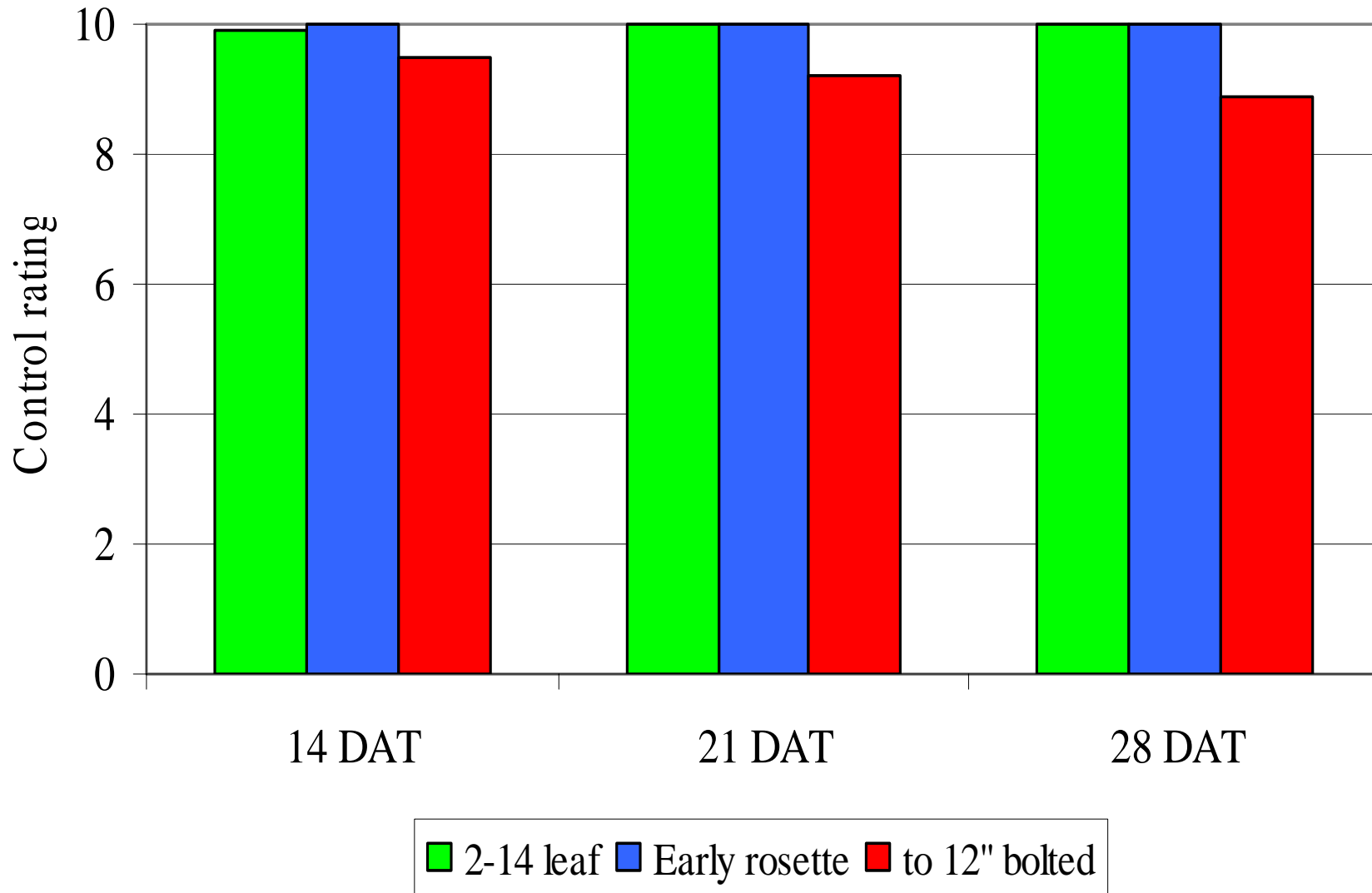
Experimental herbicide for nutsedge and other BL weed control  
Post /pre activity on nutsedge better than Roundup  
Too early to estimate registration timeline



# Horseweed control in grapes with Roundup- 2006 (by growth stage)



# Horseweed control in grapes with Rely- 2006 (by growth stage)



# Horse weed timing study

Rely was Excellent at all stages

100% control



# Horse weed timing study

Gramoxone good only when small

90-50-10% control



# Horse weed timing study

RU + Goal good at small stages

100-60-40% control



# Horse weed timing study

Goal + Chateau

15-10-0 Control





# GRAPE HERBICIDES

	<u>COST/UNIT</u>	<u>RATE</u>	<u>cost /rate</u>
➤ Chateau 51WG	<u>\$116/lb</u>	<u>6-12 oz</u>	58
➤ Goal Tender 4F	<u>\$210/gal</u>	<u>1-4 pts</u>	53
➤ Gramoxone Inteon 2EC	<u>\$41/gal</u>	<u>1-2 pts</u>	10
➤ Matrix 25WG	<u>\$17/oz</u>	<u>4 oz</u>	68
➤ Rely 1EC	<u>\$54/gal</u>	<u>1 gal</u>	54
➤ Roundup Weathermax 5.5SL	<u>\$47/gal</u>	<u>3-6 pts</u>	17
➤ Surflan 85WG	<u>\$21/lb</u>	<u>2.4-7.1 lb</u>	63
➤ Matran 2 (Clove Oil)	<u>\$72/gal</u>	<u>5-8% V/V</u>	72
➤ Acetic Acid 20-30%	<u>\$3.33/gal</u>	<u>15 gal</u>	50



# HERBICIDE TREATMENT COST

Lodi trials

6 months control

Treatment	Cost/Vineyard Acre	Winter Ann Weed Avg. % Control	Summer Weed Avg. % Control
Matrix + Gramoxone Inteon	\$25.01	100	17
Chateau	\$26.10	99	82
Roundup Weathermax +Surflan	\$32.15	88	86
Rely + Surflan	\$37.71	94	92
Gramoxone Inteon + Surflan	\$34.22	90	93
Chateau + Goal Tender	\$41.85	100	99
Matrix + Goal Tender	\$36.15	100	65
Roundup Weathermax + Surflan + Goal Tender	\$47.90	82	99
Matran 2 (Multiple Applications)	\$108	BL Good Control Grasses weak	BL Good Control Grasses weak 0
Acetic Acid (Multiple Applications)	\$75	BL Good Control; Grasses Weak	BL Good Control Grasses weak 0



# HERBICIDE TREATMENT COST

## Post Emergent Broadleaf Control

Application: Jan.16 & Feb. 28, 2006

Treatment	Rate Product/Acre	Cost/ Vineyard Acre	% Control (4 mo)						
			White Filaree	Hairy Fleabane	Sow Thistle	Henbit	Chick Weed	Miner Lettuce	Prickly Lettuce
Matrix + Rely	4.0 oz + 2 qt	\$31.35	100	100	97	100	100	100	100
Chateau + Goal Tender	12.0 oz + 1 qt	\$46.00	100	67	100	100	100	100	100
Chateau + Rely	12.0 oz + 2 qt	\$37.62	100	100	100	100	100	100	100
Chateau + Roundup Weathermax	12.0 oz + 23 fl oz	\$31.52	100	77	100	100	100	100	100
Gramoxone Inteon + Surflan	3 pt + 4.7 lb	\$37.65	85	73	83	40	100	100	100
Rely + Surflan	2.0 qt + 4.7 lb	\$41.48	74	82	93	100	100	100	100



# HERBICIDE TREATMENT COST

## Grass Control

Application: January 2006

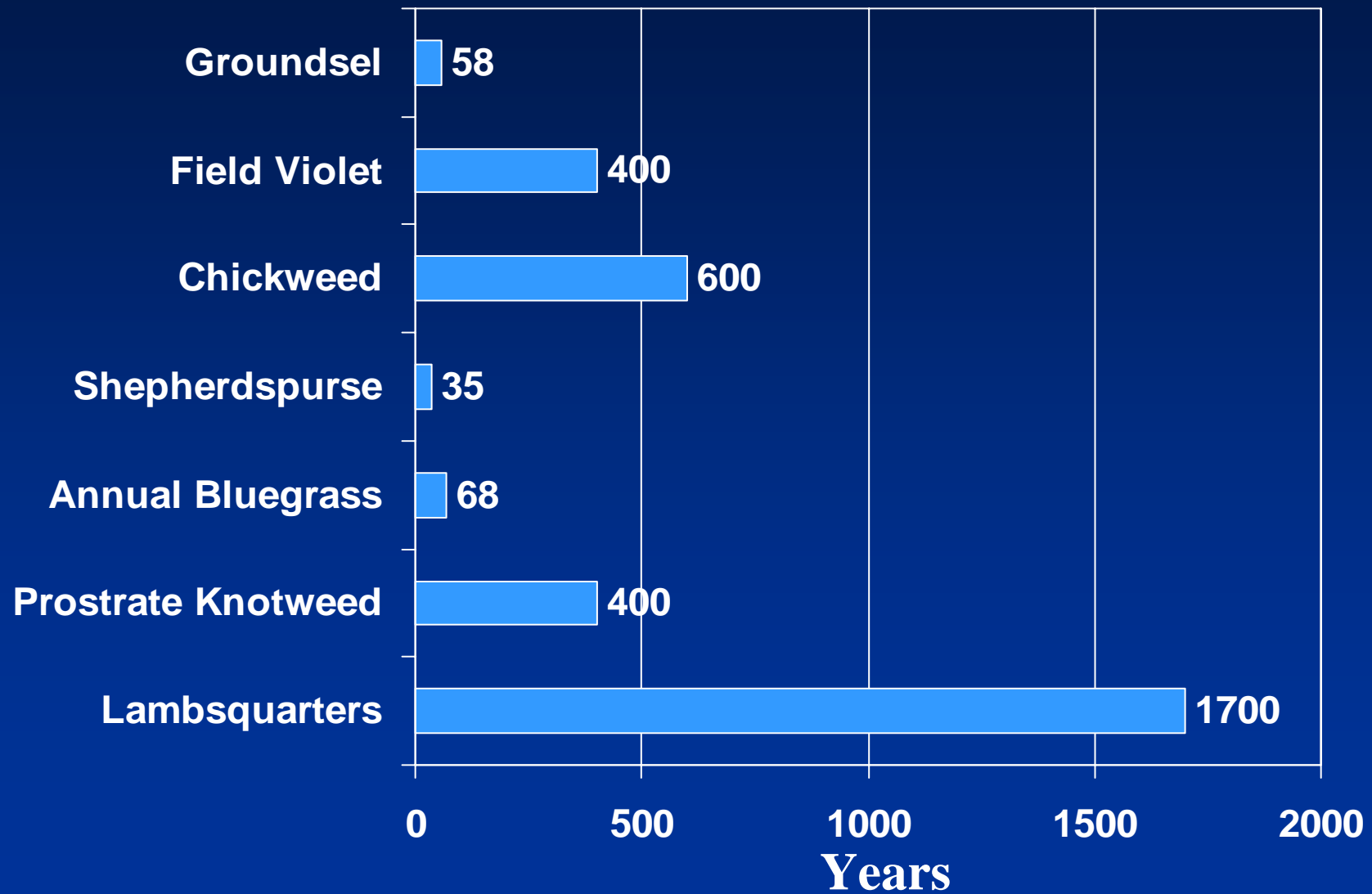
Treatment	Rate Product/Acre	Cost Per Vineyard Acre	% Control (4 MO)			
			WitchGrass (6.5 mo)	Barnyard Grass	Large Crabgrass	Annual Bluegrass
<b>Matrix + Rely</b>	4.0 oz + 2.0 qt	\$31.35	100	100	100	100
<b>Chateau + Goal Tender</b>	12.0 oz + 1.0 qt	\$46.00	100	97	96	100
<b>Chateau + Rely</b>	12.0 oz + 2.0 qt	\$37.62	100	98	94	100
<b>Chateau + Roundup Weathermax</b>	12.0 oz + 23.0 fl oz	\$31.52	100	95	94	100
<b>Gramoxone Inteon + Surflan</b>	3.0 pt + 4.7 lb	\$37.65	96	98	94	100
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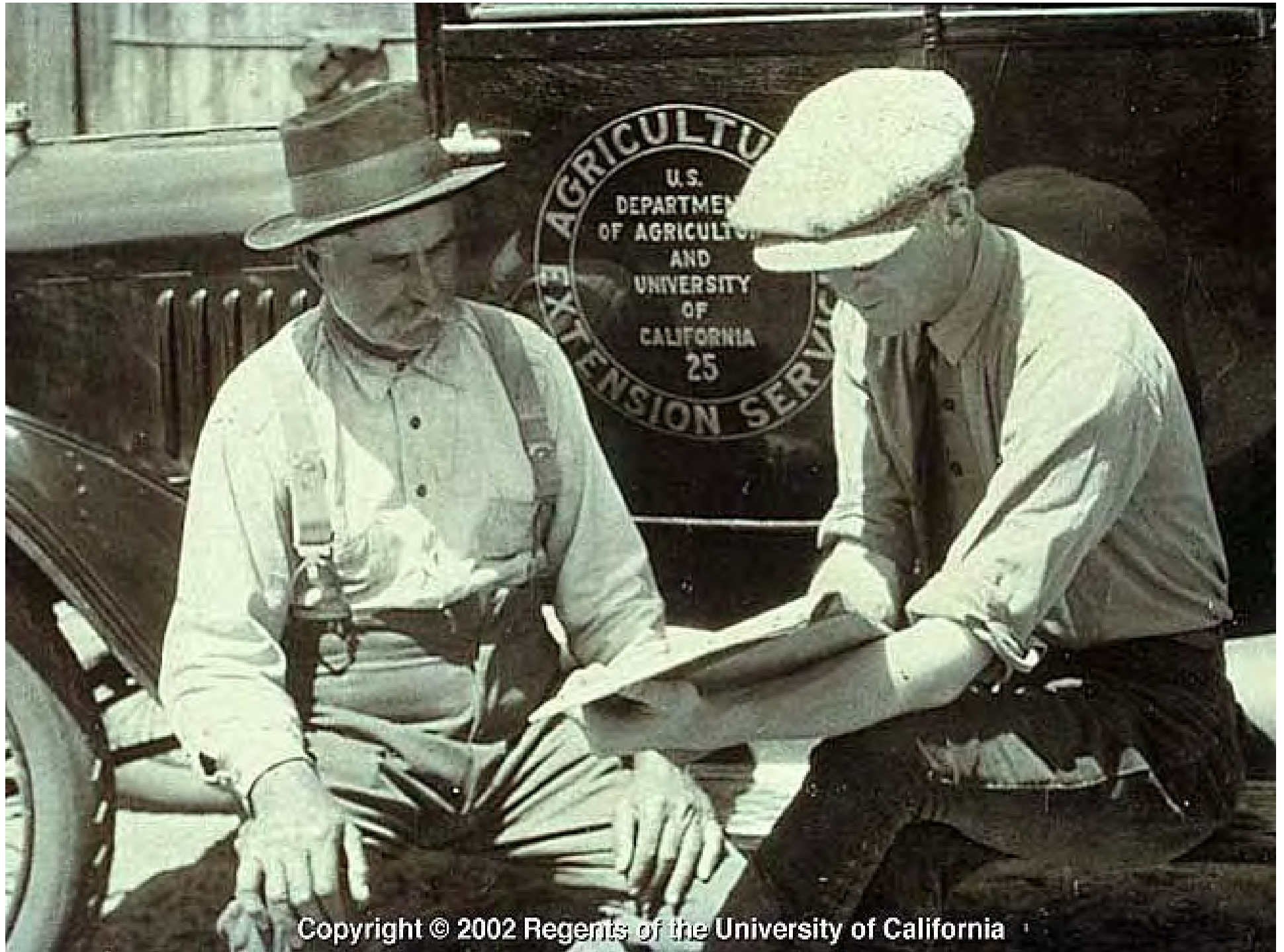
# Weed Control in Transition

Non chemical approach



# Longevity of Weed Seeds in Soil





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