

Alternatives for Roadside Weed Control in Santa Cruz County

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Roadside Weed Control County of Santa Cruz

- 600 miles of public roads
- 340 miles of weed control mostly in diverse, discontinuous, vegetation on country and mountain roads



Roadside Weed Control County of Santa Cruz Goals

- Maintain sight distances for road safety
- Prevent vegetation encroachment into roadway and/or damaging road surface
- Reduce fire hazard
- Enhance safety for pedestrians and cyclists
- 8 foot right of way from edge of roadway, but usually a 4 to 5 foot swath managed

Sight Distance on Roadway



Encroachment into Roadway



Damage of Roadway



Encroachment into Roadway







French Broom

Genista monspessulana

- Common invasive weed in the central coastal and other parts of California.
- Resprouts readily from root crown.
- Prodigious seed production
>8000 seeds / year / plant

Often confused with Spanish Broom
(*Cytisus scoparius*)



Safety of Cyclists and Pedestrians



Vegetation Buffer for Fire Prevention



Graham Hill Road Fire 7/3/2001

Roadside Weed Control County of Santa Cruz Before 2005

- Ideally vegetation control included an initial mowing (where necessary) followed by one Roundup (glyphosate) application.
- A correctly timed application of Roundup eliminated the need for additional vegetation control measures for the remainder of the year.
- Historically, 100 miles mowed and 200 miles herbicide treated (both road shoulders).


No Herbicides Wanted



No Herbicides!

Board of Supervisors Herbicide Moratorium May 17, 2005

- Coincided with budget cutbacks in Public Works Department
- In 2005 mowing season 75 miles of roadway were mowed.
- In 2006 only approximately 45 miles of roadway were mowed.
- Currently, mowing limited to only roads with high safety concerns or complaints

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County of Santa Cruz

DEPARTMENT OF PUBLIC WORKS
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APPROVED AND FILED
BOARD OF SUPERVISORS
DATE: November 15, 2005
COUNTY OF SANTA CRUZ
SUSAN A. MAURIELLO
EX-OFFICIO CLERK OF THE BOARD
BY Thomas L. Bolich DEPUTY

AGENDA: NOVEMBER 15, 2005
November 2, 2005

SANTA CRUZ COUNTY BOARD OF SUPERVISORS
701 Ocean Street
Santa Cruz, California 95060

SUBJECT: MORATORIUM ON ROADSIDE SPRAYING OF HERBICIDES ON COUNTY MAINTAINED ROADWAYS, REPORT BACK

Members of the Board:

On May 17, 2005, your Board instituted a three-year moratorium on the use of herbicides for the control of roadside vegetation. Your Board also directed Public Works to estimate costs associated with ensuring roadside vegetation management without the use of herbicides, develop a vegetation management program to maintain safe sight distance in the vicinity of traffic signs, intersections and road curves, contact the Fire Chiefs Association to assess the potential of increased fire danger, continue to actively participate in the Integrated Pest Management Departmental Advisory Group (IPM DAG) and the continued efforts to assess the effectiveness of alternative vegetation management methods, and report back on today's agenda. It is important to note that since this moratorium went into effect on June 1, 2005, following the completion of our extensive 2005 herbicide spraying program, the initial effects of the moratorium may not be realized until late fall 2006, after next summer's growth season. Even then, the full effects of the moratorium may not be realized on some of our roadways until the invasive plant species that were widely controlled under the roadside spraying program gradually reestablish themselves in the roadway shoulders, overtake the preferable lower growing species.

How many mowings are needed to control vegetation?

French broom

Genista mospessulana

California Blackberry

Rubus ursinus.

Perennial Pea

Lathyrus latifolius



Evaluation of Mowing Frequency

2005- 2006

- Mowing timed at FB flowering but before seed maturation
- Mowing Treatments
 - Not mowed
 - One mow (25 Jan 2005)
 - Two mows (above + 12 Aug, 2005)
 - Three mows (above + 3 Jul, 2006)
- Empire Grade Road, Bonny Doon
- 3 replicated treatment plots (40 road-bank feet)
- Evaluation: French Broom Height and % Cover, and Total Vegetation % Cover of Area.

Side Mount Articulated Boom Flail Mower



Before and after mowing



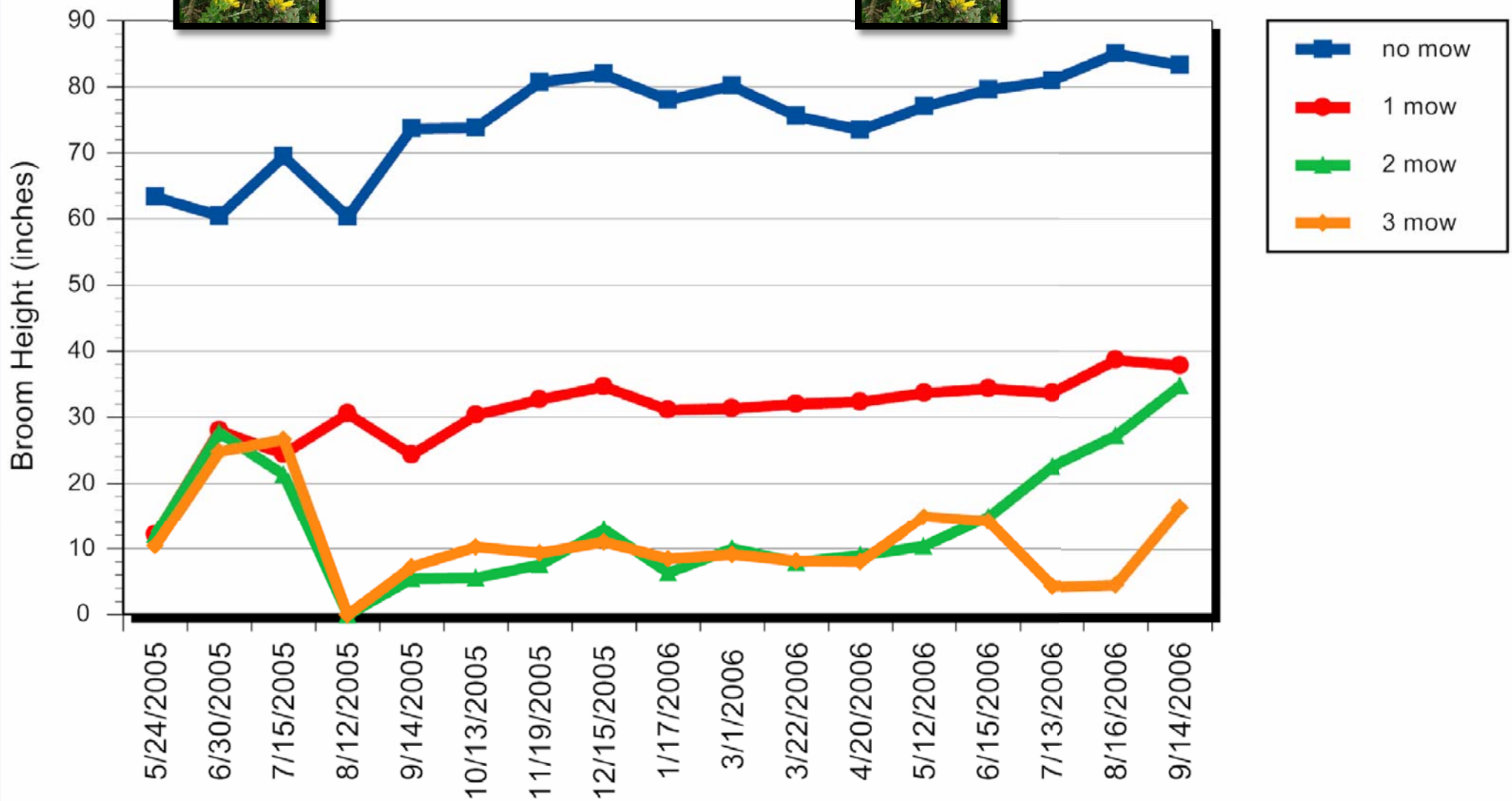
French Broom Height

1/25/2005

8/12/2005

7/3/2006

Mow Dates



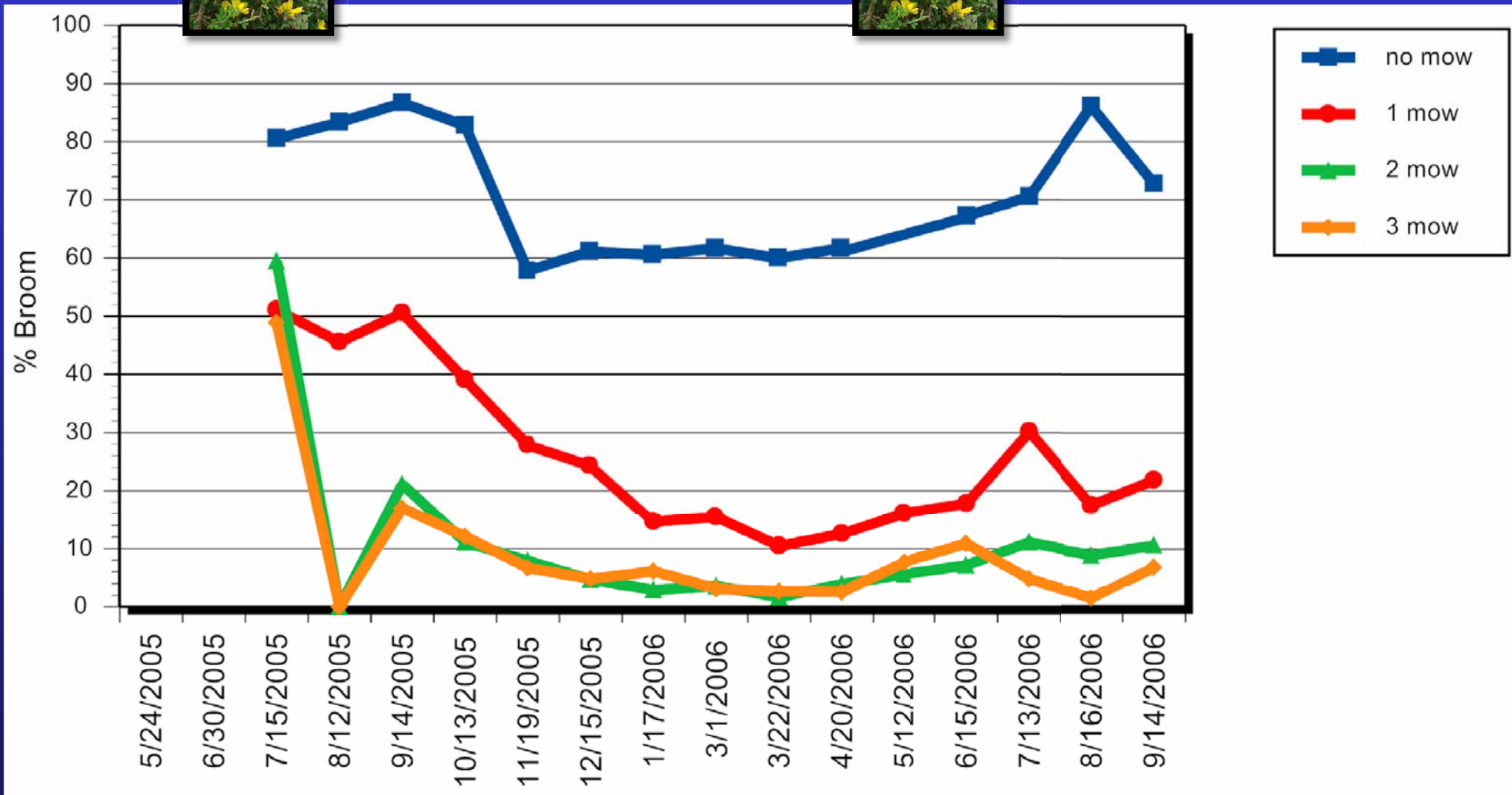
French Broom % Cover

1/25/2005

8/12/2005

7/3/2006

Mow Dates



Total Vegetation % Cover

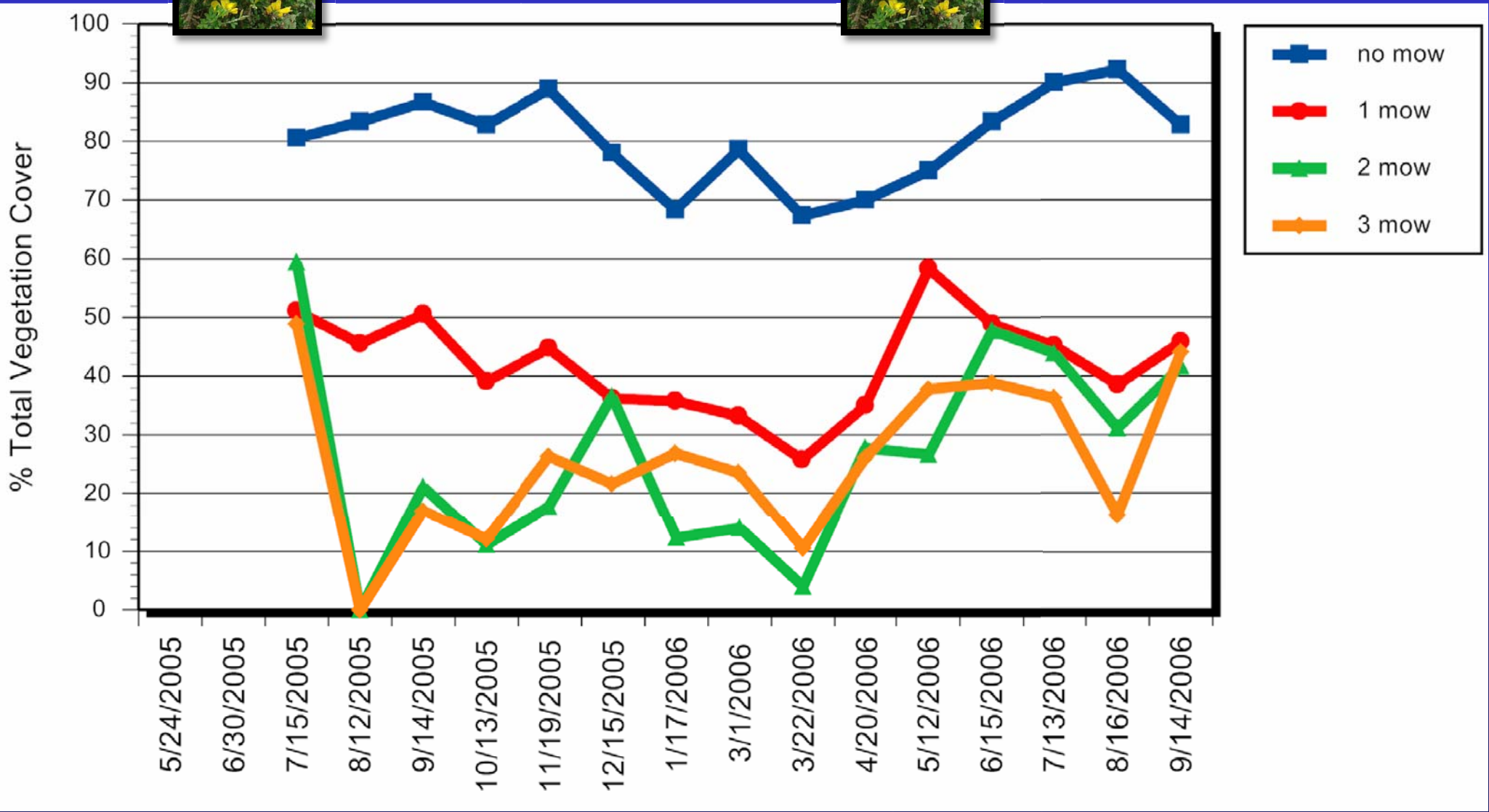
1/25/2005

8/12/2005

7/3/2006



Mow Dates



Conclusions: Mowing

- Even one mowing timed at flowering can reduce the coverage of French Broom
- As French broom is reduced, other species take its place and fill in the area.
- Mowing favors annuals or other low growing perennials.
- Multiple mowings may be needed to maintain FB height control and to push for elimination (perennial plants and seedlings)

Cost of Mowing versus Spraying One Mile of Roadside

	MOW	SPRAY
Personnel	\$ 240.63	\$ 25.85
Equipment	\$ 142.80	\$ 5.45
Herbicides (glyphosate)		\$ 135.46
Department overhead	\$150.04	\$ 26.79
Total	\$ 533.47	\$ 193.55

** Does not include equipment loading, herbicide mixing, or travel time
One side of road only
October, 2010, Estimate of County of Santa Cruz Public Works

Herbicide Trial

2010

- Empire Grade Road, Bonny Doon
- Organic and alternative herbicides to glyphosate
- Contact and systemic herbicides
- 5 plots (15 road-bank feet x 5 feet wide) per treatment with 3 measurements in each plot. Mowed January, 2010.
- Application: May 4, 2010. (75 °F., max. temp)
- Evaluated: Weed Control, 0 to 10 scale
- French Broom, California Blackberry, Perennial Pea, Grasses, and Total Vegetation Cover

Product Trade Name	Active Ingredient	lb a.i./A	Product/A	Safety Information
Greenmatch EX	lemongrass oil	15% v/v	7.5 gals	organic "caution"
Weed Pharm	acetic acid (20%)	100% v/v	50 gals	"danger"
Matran	clove oil	15% v/v	7.5 gals	organic "caution"
Scythe	pelargonic acid	9%	4.5 gals	"caution"
Milestone VM Plus	aminopyralid triclopyr	0.22 ae	9.0 qts	"caution"
Finale	glufosinate	3%	1.5 gals	"warning"
Roundup	glyphosate	2%	1.0 gal	"caution"
Untreated		---	---	

Surfactants: Nufilm P, 0.25% v/v added to GM,WP, and Mat. Dynamic added 0.25% v/v to Milestone



Application

May 4, 2010



Three passes of a one nozzle wand
with an 8005VS air induction nozzle

And After

Sept 17, 2010



Untreated

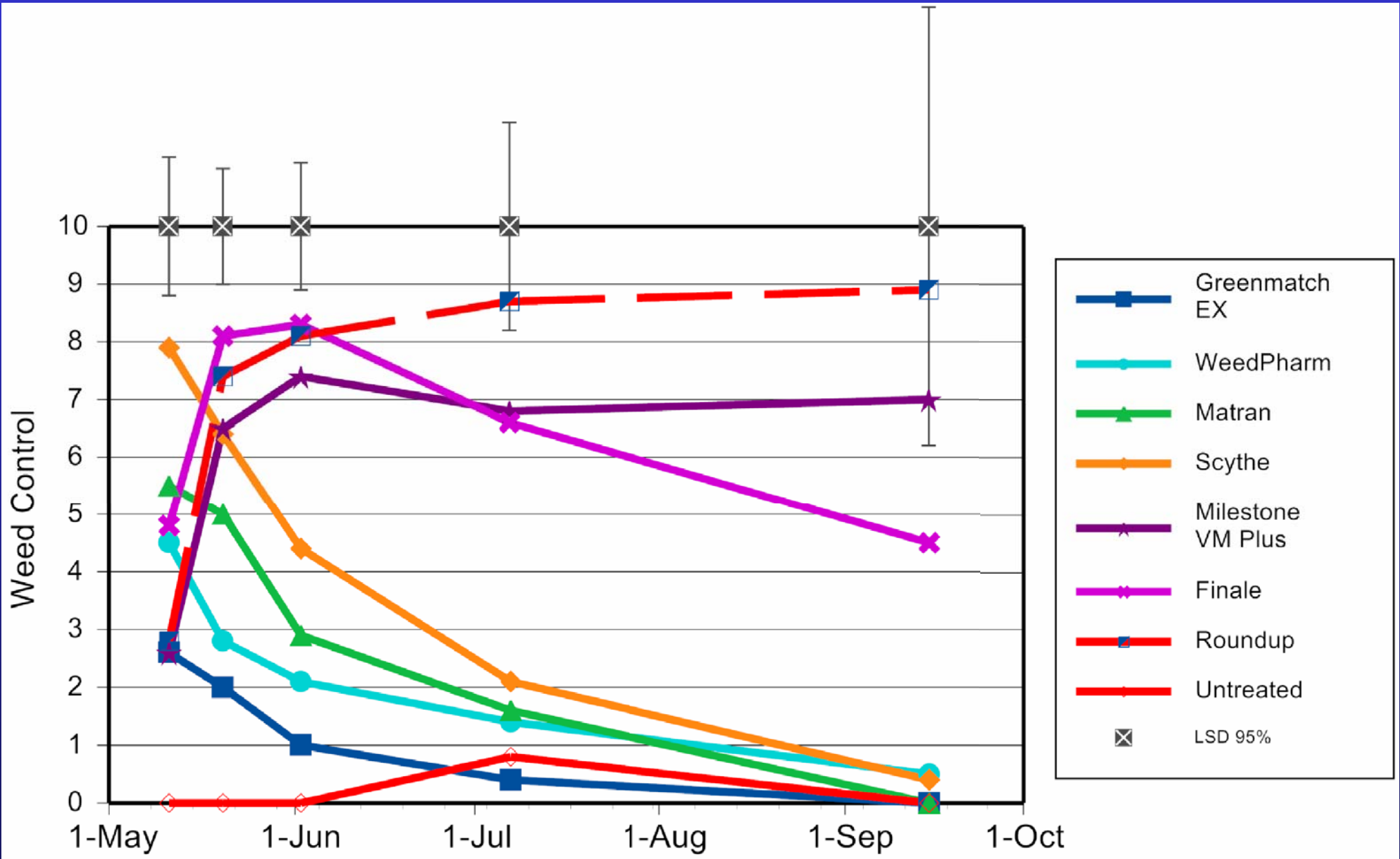


Finale



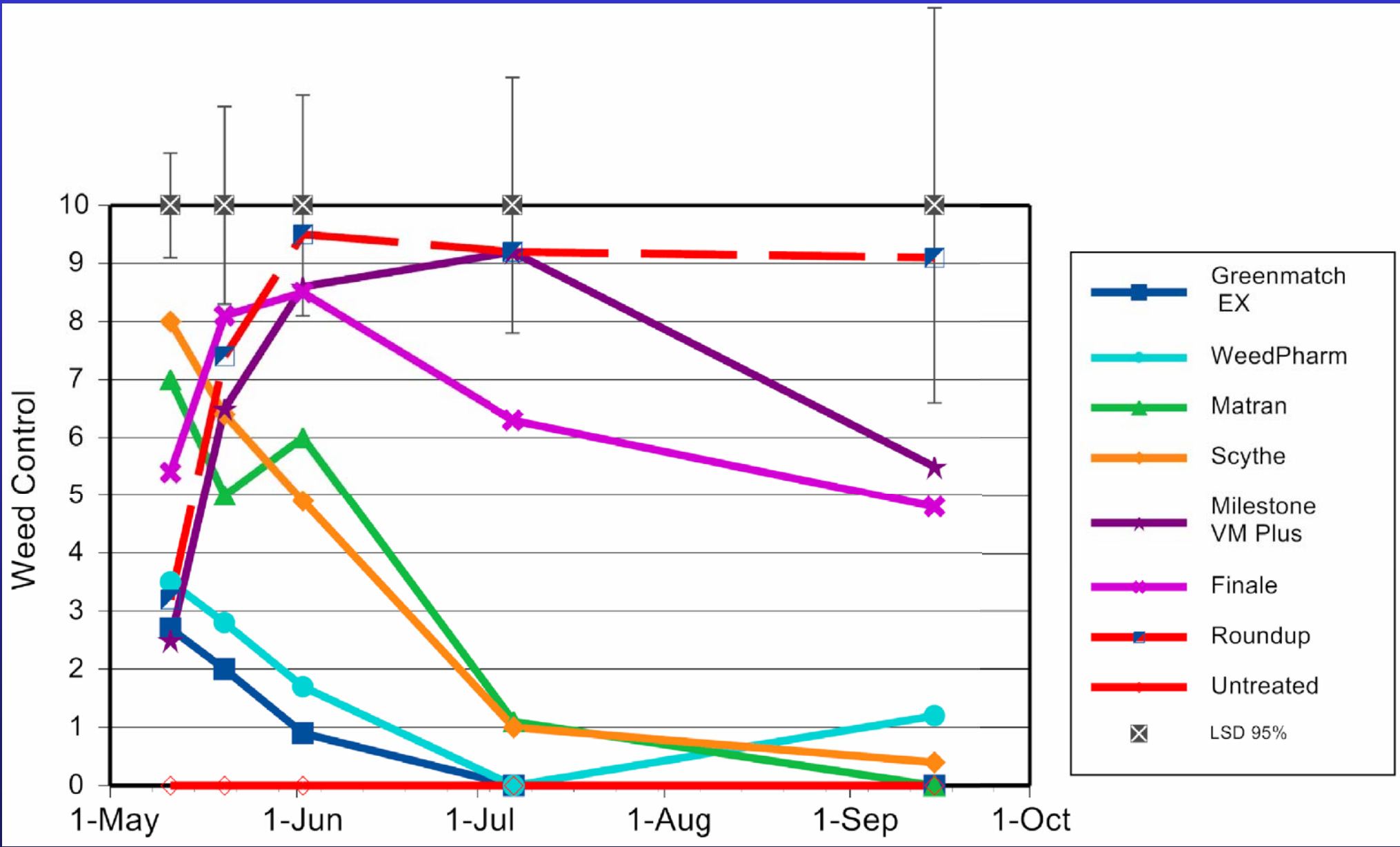
Roundup

Overall Vegetation



Application: May 4, 2010 No control=0

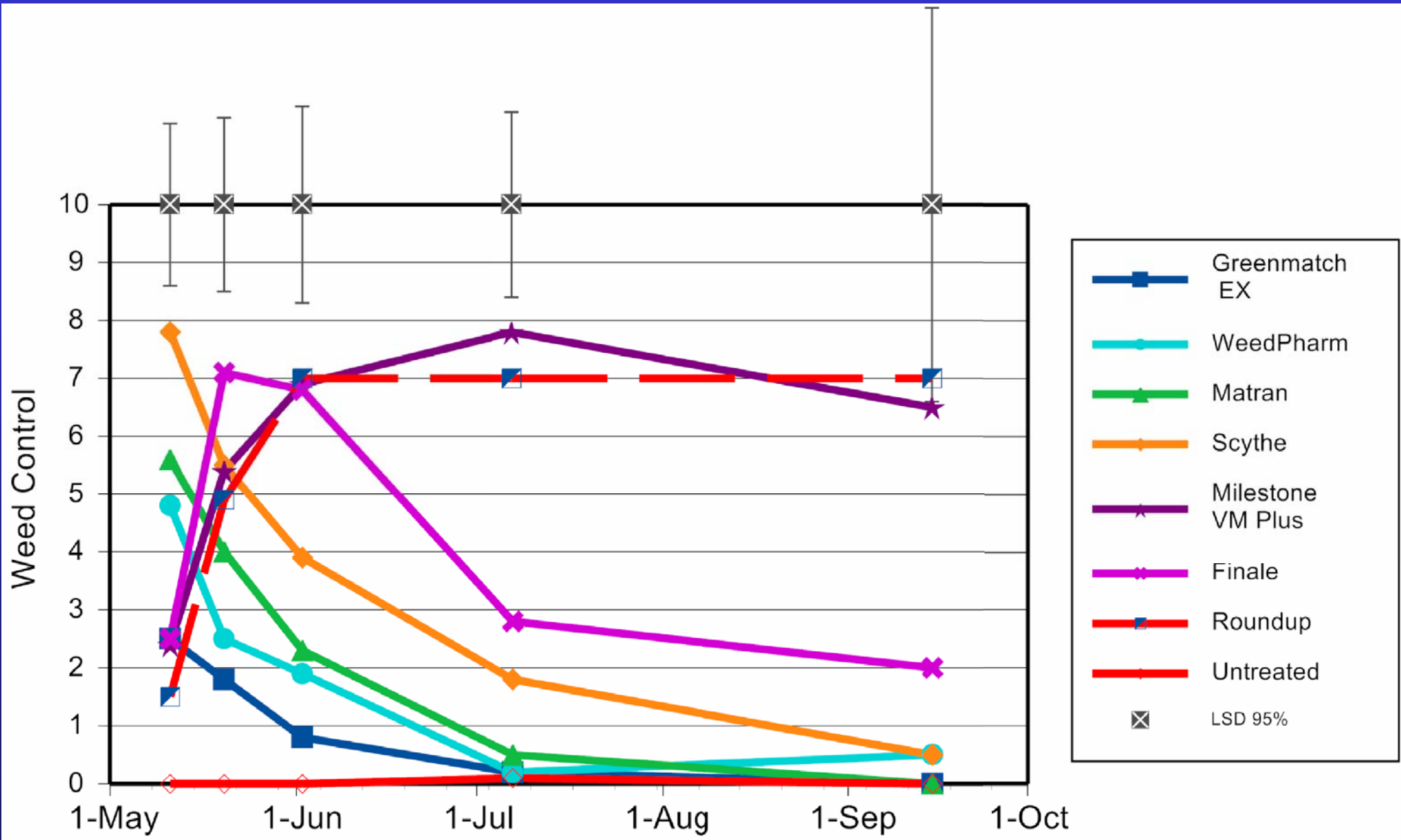
French Broom



Application: May 4, 2010

No control=0

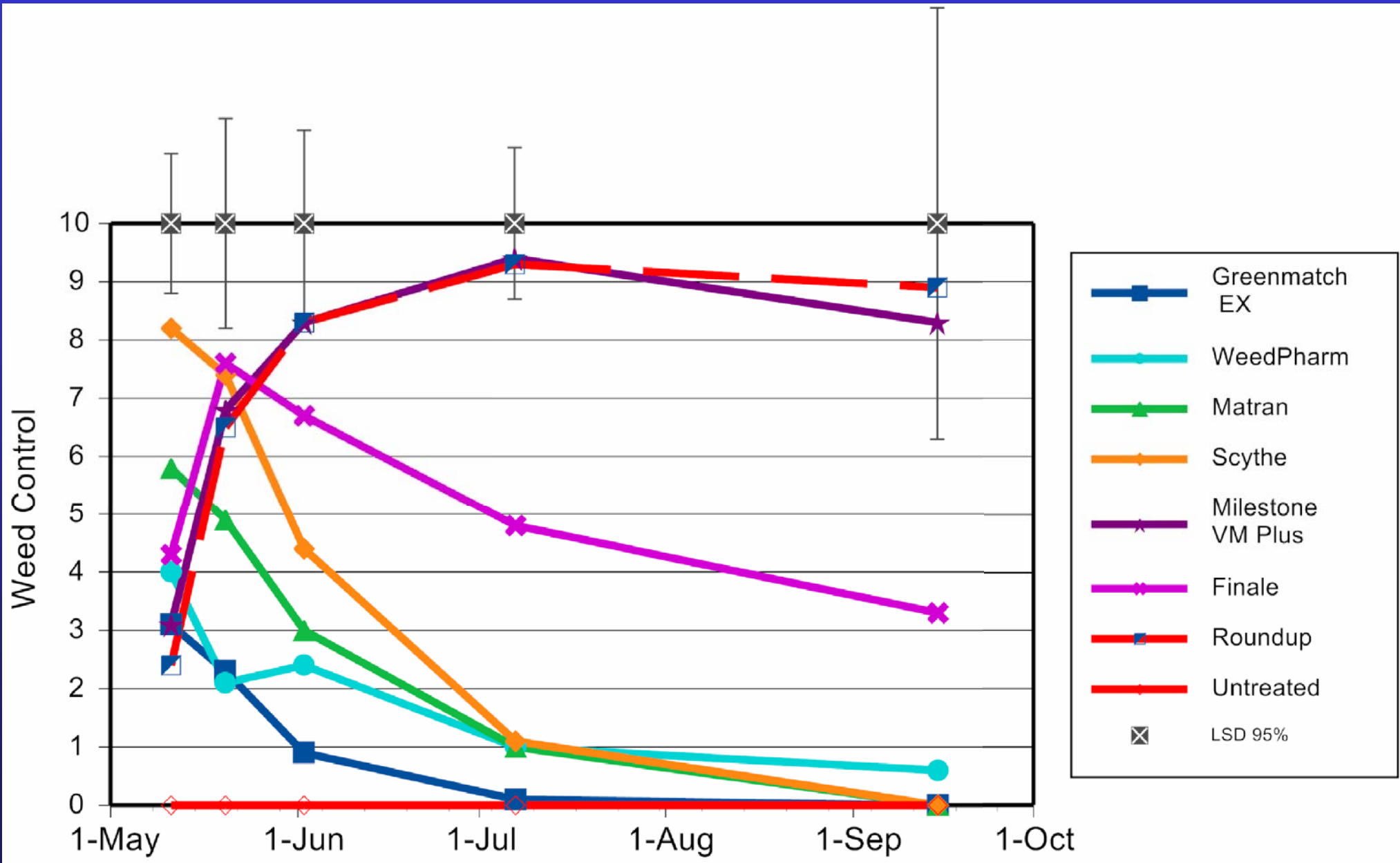
California Blackberry



Application: May 4, 2010

No control=0

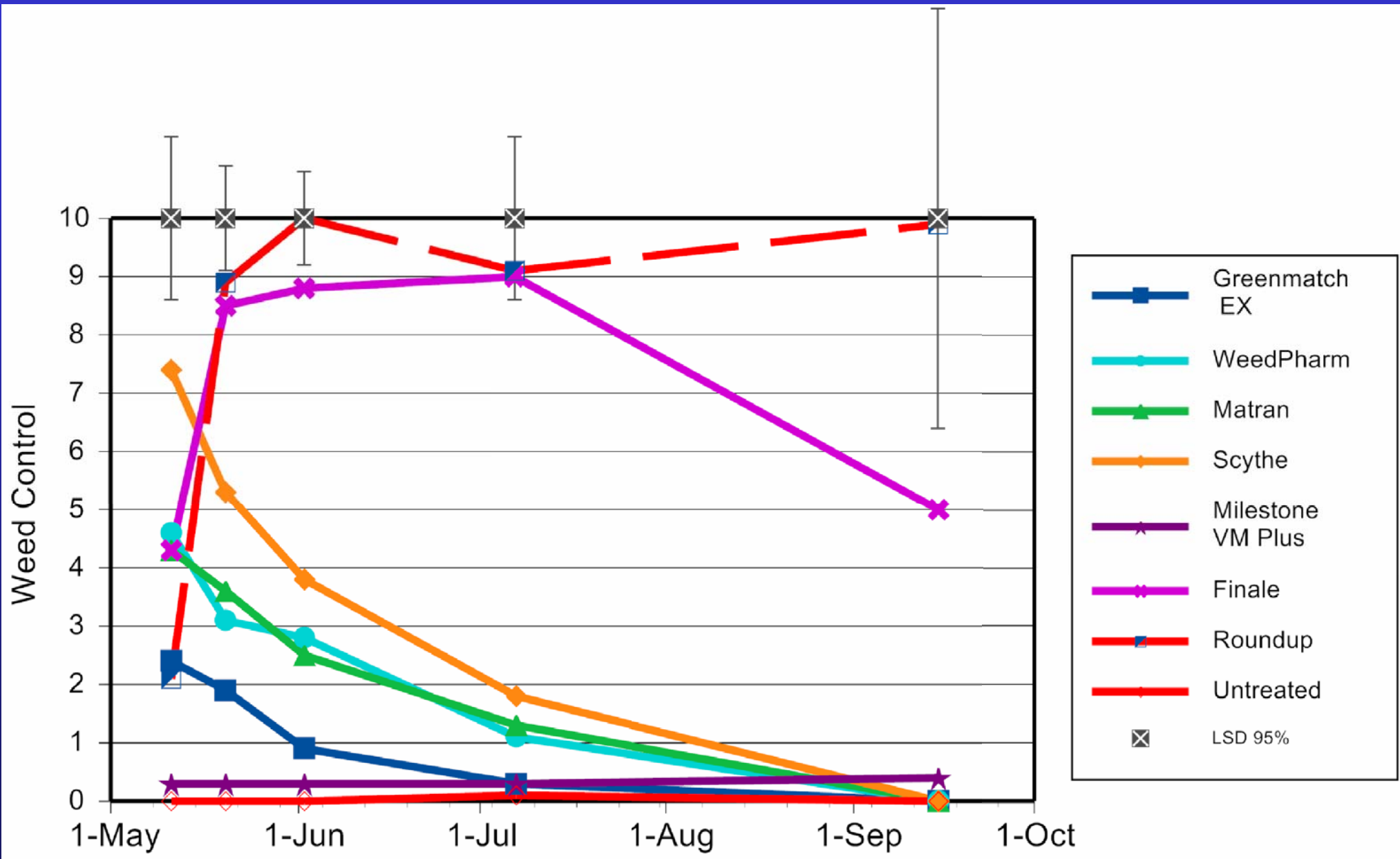
Perennial Pea



Application: May 4, 2010

No control=0

Grasses



Application: May 4, 2010

No control=0

Native Grasses identified in Milestone VM Treatment



Blue wild rye
Elymus glaucus



A bentgrass
Agrostis spp.

Conclusions: Herbicides

- Roundup very effective for FB control.
- Locally systemic herbicides, Milestone and Finale effective in killing some smaller FB and inhibiting regrowth.
- Organic and other contact herbicides do not kill FB. Plant recovery rate is dependent on how well the herbicide “burned”. Of those in this group, Scythe and Matran burns best.

Future

- Repeated applications of carefully timed alternative contact herbicides?
- Milestone VM repeated applications ?
- Milestone VM + overseeded native perennial CA grasses?

