Alternative Roadside Weed Control in Santa Cruz County

Steve Tjosvold and Richard Smith, University of California Cooperative Extension
Email: satjosvold@ucdavis.edu and rifsmith@ucdavis.edu

The County of Santa Cruz maintains approximately 600 miles of public roads. Of those, approximately 340 miles are actively managed for weed control. The diverse and discontinuous vegetation in the country or mountains presents a challenge for the County Public Works Department suffering from budget constraints and personnel shortages. The Department goals are to: (1) maintain sufficient sight distances for drivers, pedestrians, and cyclists, (2) Prevent vegetation encroachment that might infringe on the safe use of the roadway and (3) Reduce fire hazard. Traditionally management has consisted of an initial mowing where necessary to reduce biomass, followed by a carefully timed Roundup® (glyphosate) application to the vegetation regrowth. A correctly timed application of glyphosate often eliminated the need for additional vegetation control measures for the remainder of the year.

Roundup®, however, has received considerable attention by groups and individuals questioning its safety in the environment. On May 17, 2005 the Santa Cruz County Board of Supervisors the Board of Supervisors established a moratorium on roadside spraying of herbicides on county maintained roadways. Mowing was left as the only viable option for roadside vegetation management. In a recent cost analysis by Public Works (October 2010), mowing was more than 275% the cost of a comparable glyphosate application.

French broom (*Genista monspessulana*) is one of the most common and important invasive weeds found growing on these roadways, as well as other areas of the central coastal area and other parts of California. It resprouts readily from the root crown and is a prodigious seed producer. In light of the budgetary constraints that the County faces, it is the intention of this research to evaluate the use of alternatives to Roundup®, especially those herbicides that are organic, biorational, or exhibit characteristics that could be used for vegetation management in a sustainable way.

The trial was established along Empire Grade Road near Bonny Doon, California. Plots were selected that had predominantly French broom, California blackberry (*Rubus ursinus*), perennial pea (*Lathyrus latifolius)*, and various other broadleaf and grass weeds. Each plot was 15 feet long by 5 feet wide (0.00172 acre). Treatments were applied on May 4, 2010. Applications were made with three passes of a wand with one 8005VS air induction nozzle applying the equivalent of 50 gallons of water per acre. Air temperatures peaked at 75º F on the day of application. Weed control evaluations were carried out 7, 14, 28, 56 and 112 days after application by rating the percent of weed control on the following scale: 0 = no weed control to 10 weed completely dead.

Treatments (Table 1) were selected to contain organic, biorational, and other herbicides that had the “caution” safety category and therefore meet the County of Santa Cruz IPM pesticide use policy without specific exemption. The exception was WeedPharm (acetic acid) which is labeled

with a “danger” category and Finale (glufosinate) which is labeled with a “warning” category. Roundup® was included as the former herbicide standard used by the County. Some treatments had contact activity and were effective by essentially desiccating weeds, while others had some systemic activity and therefore absorbed by weeds and resulted in weed control by other modes of action.

Table 1 Treatments in trial

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

Surfactants: Nufilm P, 0.25% v/v added to Greenmatch, WeedPharm, and Matran.
Dynamic added 0.25% v/v to Milestone VM Plus.

Roundup was found to be very effective in controlling French broom and other weeds. Its past use as the standard and effective product by the County was justified in this trial. Products that had locally systemic properties, Milestone and Finale were effective in killing some smaller French broom plants (basal diameters less than 9 mm) and inhibiting growth of larger plants. Organic and other contact herbicides do not kill French broom. French broom recovery occurred quickly and was demonstrated in almost all cases just 2 weeks after herbicide treatment. Of those that were contact herbicides Scythe and Matran desiccated foliage most effectively (Figures 1-4).

Figure 1. Overall vegetation control

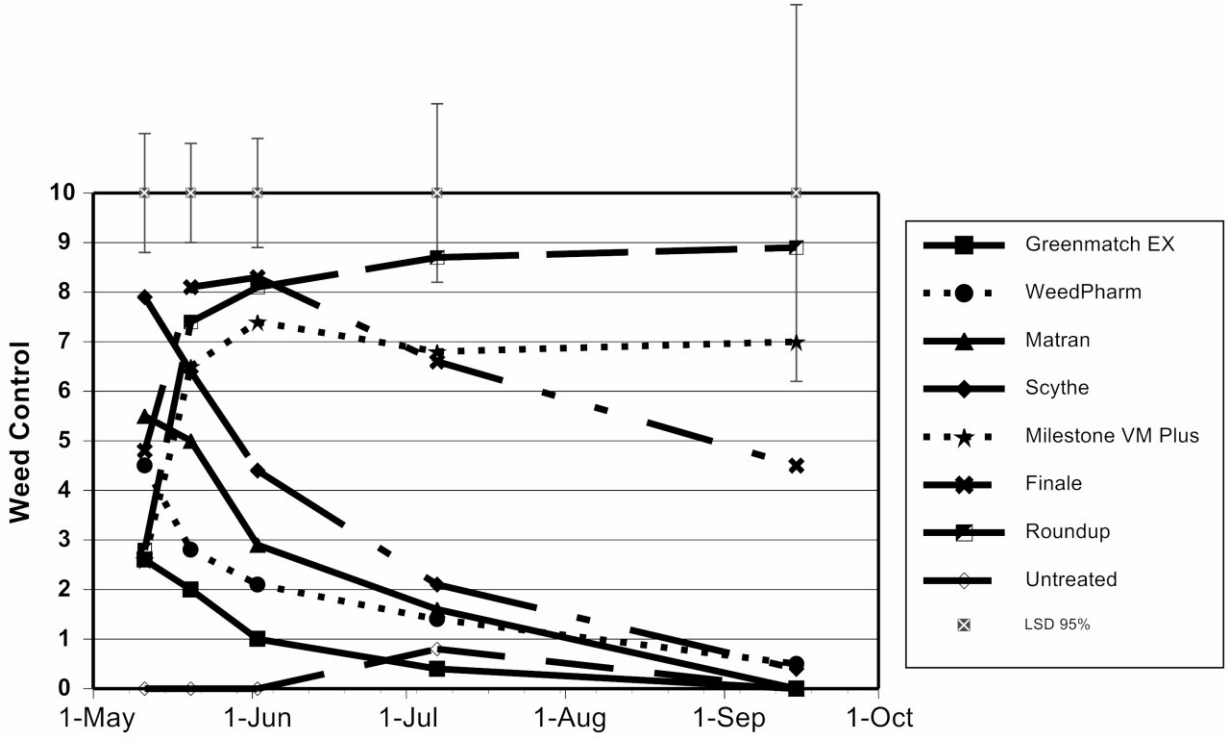

Figure 2. French broom control

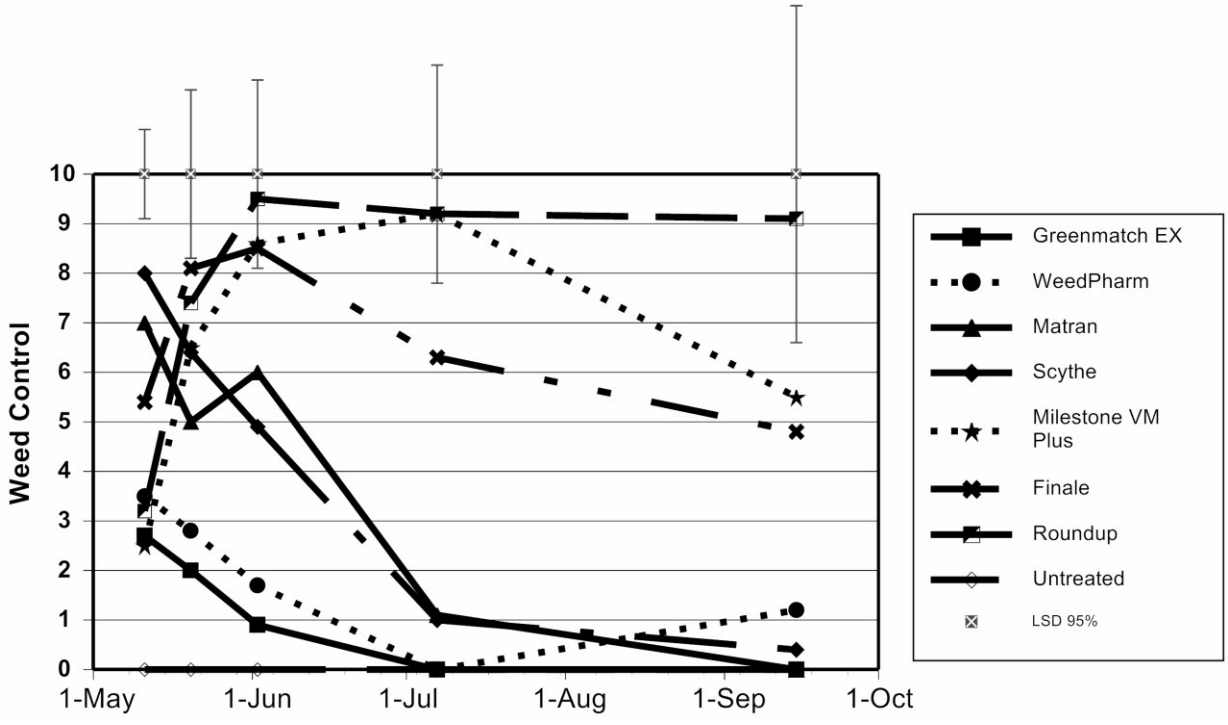

Figure 3. Blackberry control

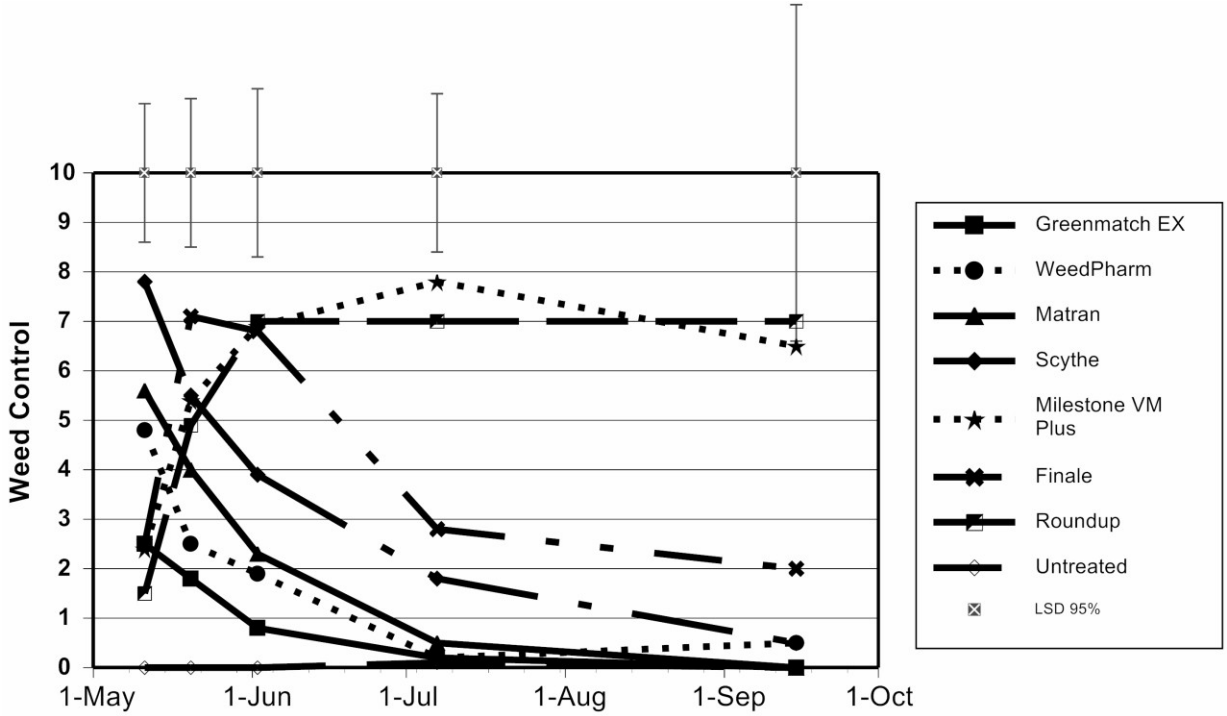

Figure 4. Perennial pea control

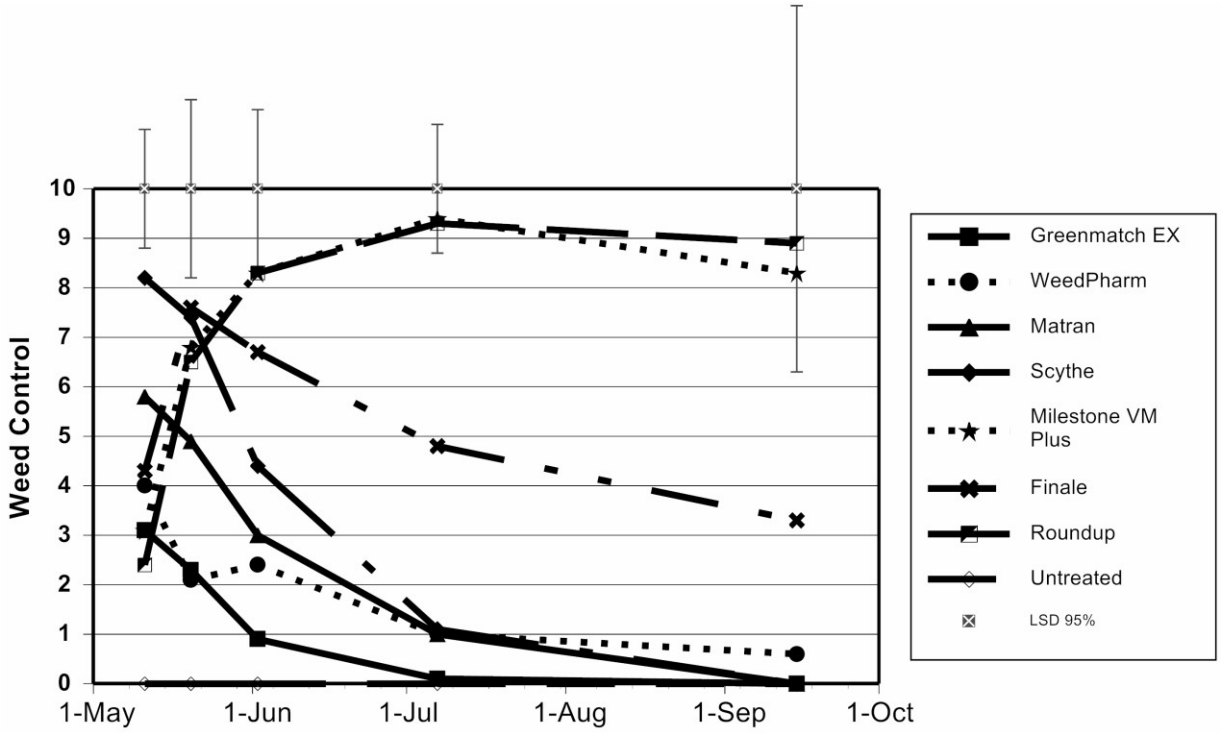

Figure 5. Grass control