

Control of Scotch broom (*Cytisus scoparius*)

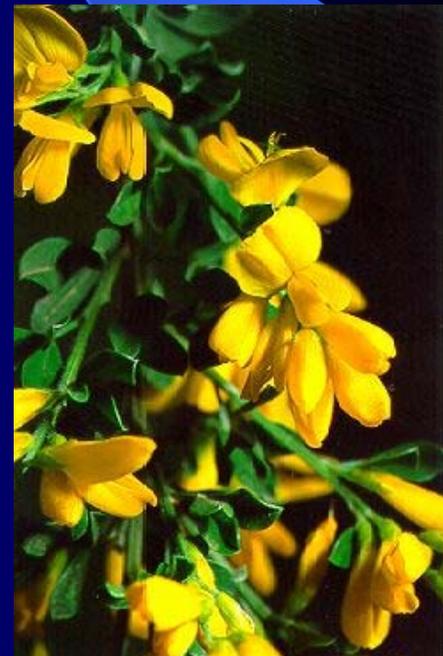
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Scotch Broom

- Native to British Isles and Europe
- Introduced to California in the mid-1800's
 - Used for landscape planting, mine tailing stabilization, and roadside erosion control
- Grows rapidly and forms dense stands
- Can grow to 12 feet tall, but is more commonly 3 to 6 feet high
- Out competes native plants
- Fuel Hazard



Distribution

- Found throughout the eastern US and western states.
- In CA, it is found throughout most of the coastal and foothill counties and is spreading. Estimated to infest more than 600,000 acres in California
- Increasing in forested areas, canyons, banks and disturbed sites.



USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>).

Goals



- To test multiple herbicides, at different rates and using different application techniques
- To determine if mechanical techniques are successful
- To determine if timing of application is significant to herbicide effectiveness



**The site is located in El Dorado
County, 5 miles north of Georgetown**



Methods

- Treatments were made in September 03 and May 04
- Treatments consisted on a single bush arranged in a complete randomized block design
- Each treatment was replicated 10 times
- Each bush was GPS, flagged, and marked with a metal tag.
- Tested 3 herbicides using multiple rates and application techniques
- Tested two mechanical treatments

Methods

Evaluations

- Fall treatments
 - 8 MAT
 - 12 MAT
 - 21 MAT
- Spring treatments
 - 3 MAT
 - 12 MAT



Treatments

- **Chemical**
 - **Herbicides**
 - Chopper® (imazapyr)
 - Garlon 4® (triclopyr ester)
 - Roundup® (glyphosate)
 - **Application techniques**
 - **Foliar**
 - **Drizzle**
 - **Basal Bark**

Treatments



- **Mechanical**
 - Lopping
 - Weed wrench
- **Untreated (control)**

Total of 19 treatments or 190 plants!

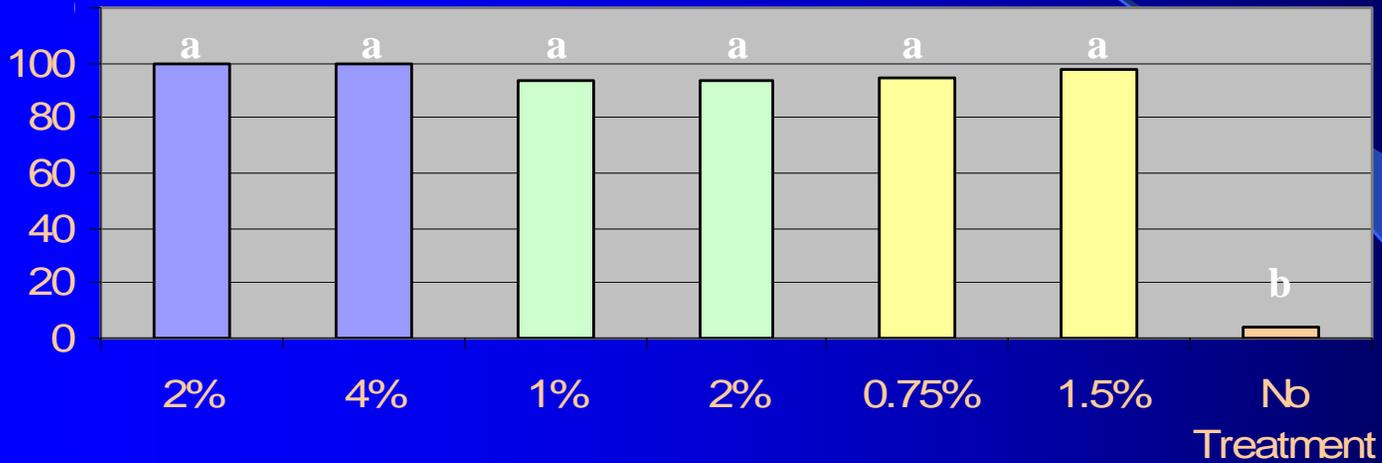
Foliar

- Shrubs were sprayed with a CO₂ backpack sprayer and a 8002 nozzle at 20 p.s.i.
- Treatments
 - Roundup[®]: 2%, 4%
 - Chopper[®]: 1%, 2%
 - Garlon 4[®]: 0.75%, 1.5%
- Chopper and Garlon 4 treatments were applied in 1% Hasten Oil[®] and water

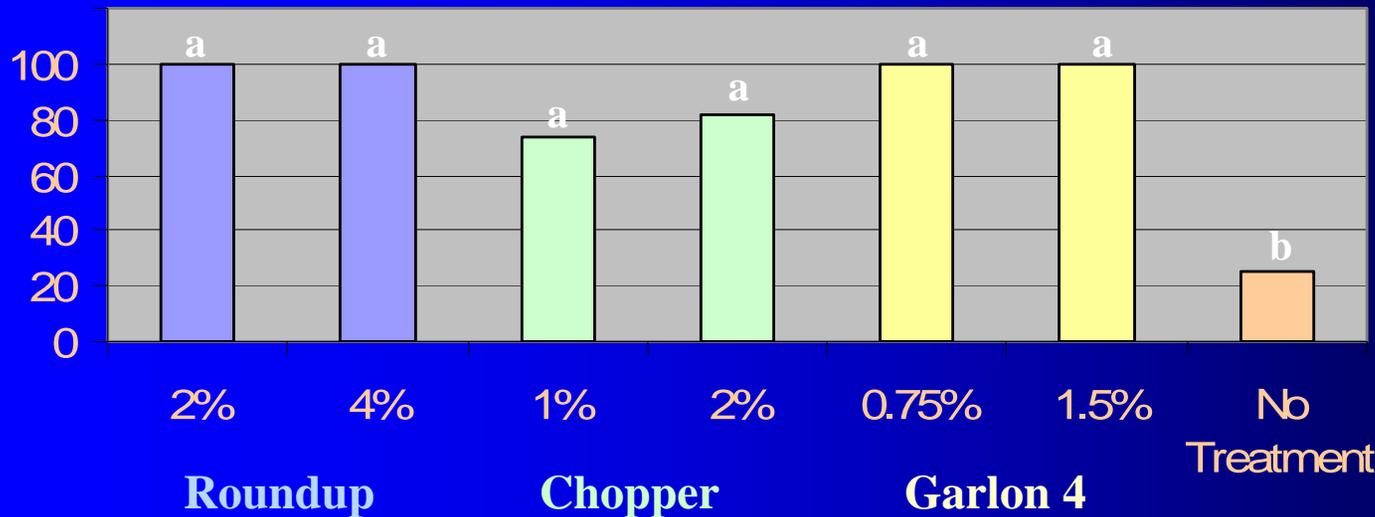


Foliar

% Canopy Reduction from Foliar Treatments



Fall
Application



Spring
Application

Drizzle

- Shrubs were sprayed with a CO₂ backpack sprayer and a spray gun fitted with an orifice disk at 20 p.s.i.
- Treatments
 - Roundup[®]: 10%, 20%
 - Chopper[®]: 10%, 20%
 - Garlon 4[®]: 10%, 20%
- Chopper and Garlon 4 treatments were applied in 20% Hasten Oil[®] and water



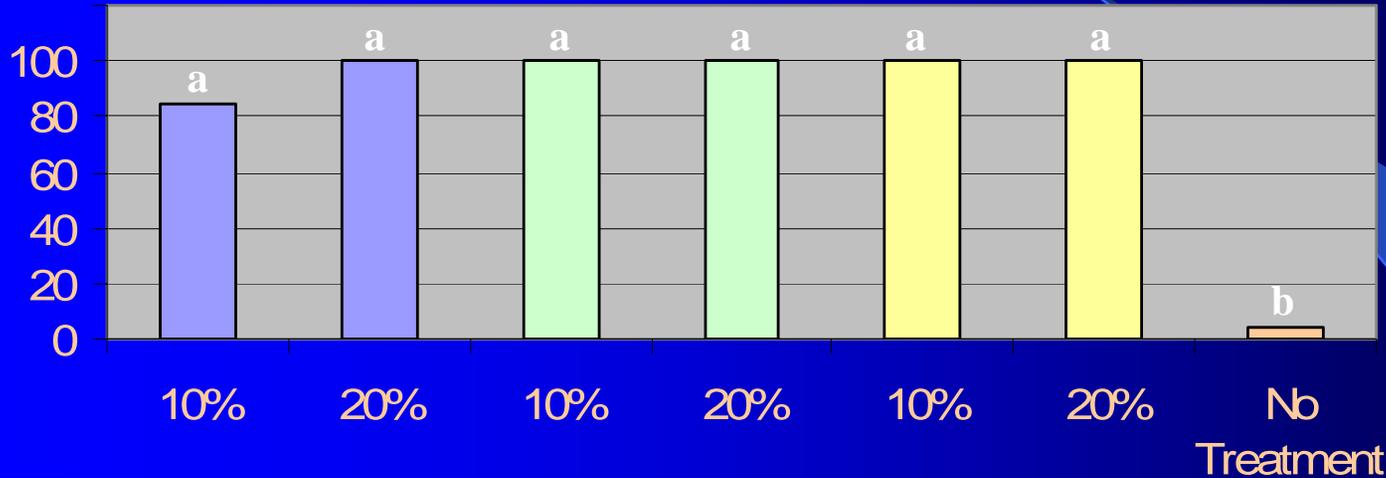
Drizzle



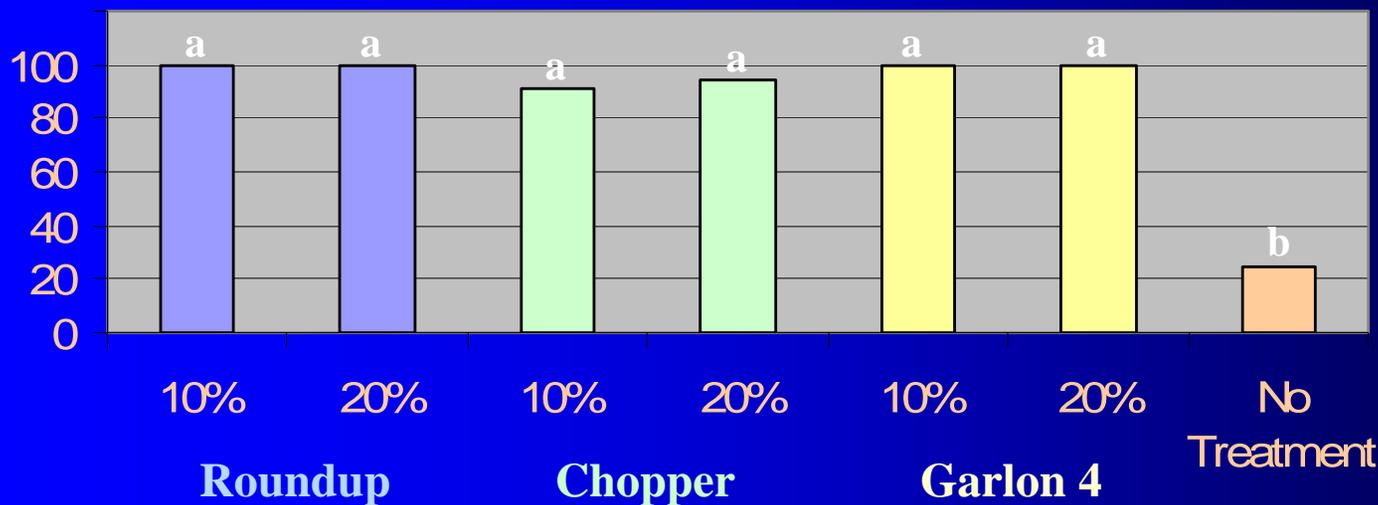
Herbicide was sprayed in a “W” pattern with each shrub taking 1 second to treat

Drizzle

% Canopy Reduction from Drizzle Treatments



Fall
Application



Spring
Application

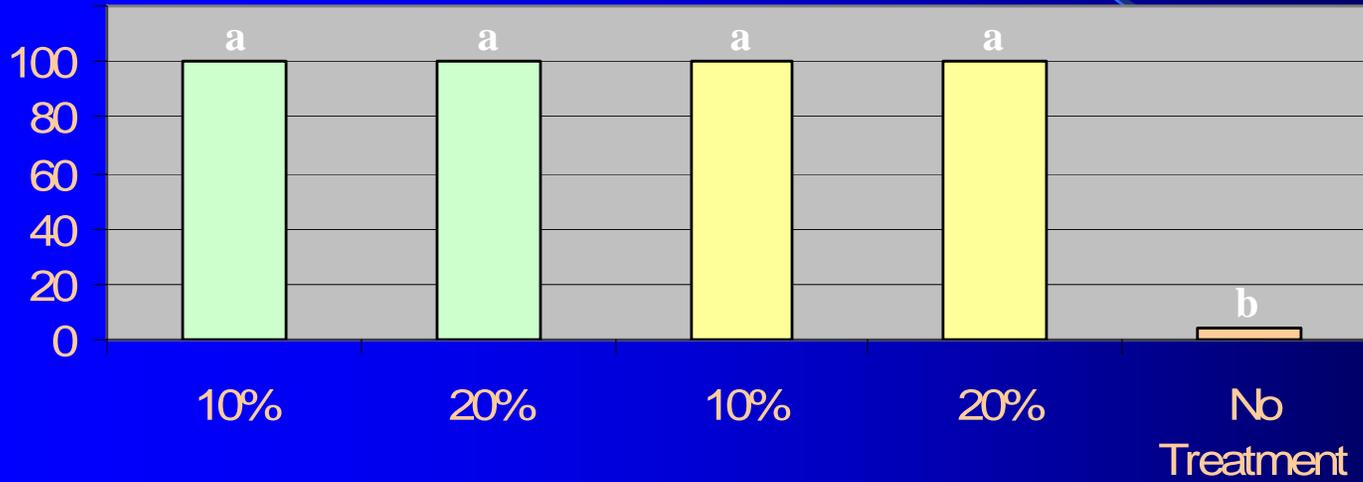
Basal Bark

- The basal 12” of each shrub were sprayed with a squirt bottle
- Treatments
 - Chopper[®]: 10%, 20%
 - Garlon 4[®]: 10%, 20%
- Chopper and Garlon 4 treatments were applied in 50% Hasten Oil[®] and water

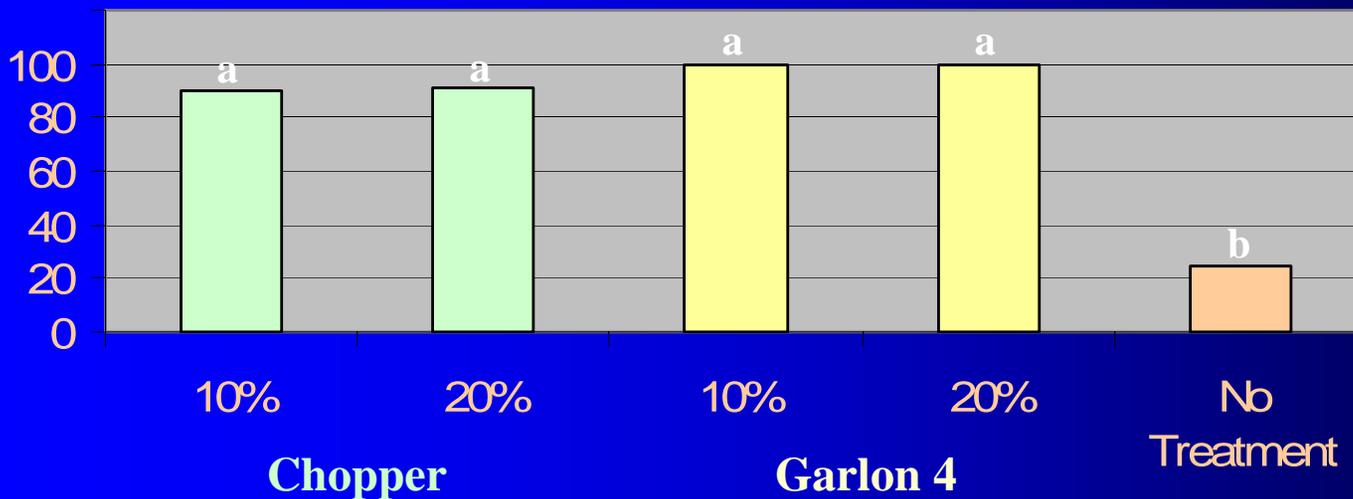


Basal Bark

% Canopy Reduction from Basal Bark Treatments



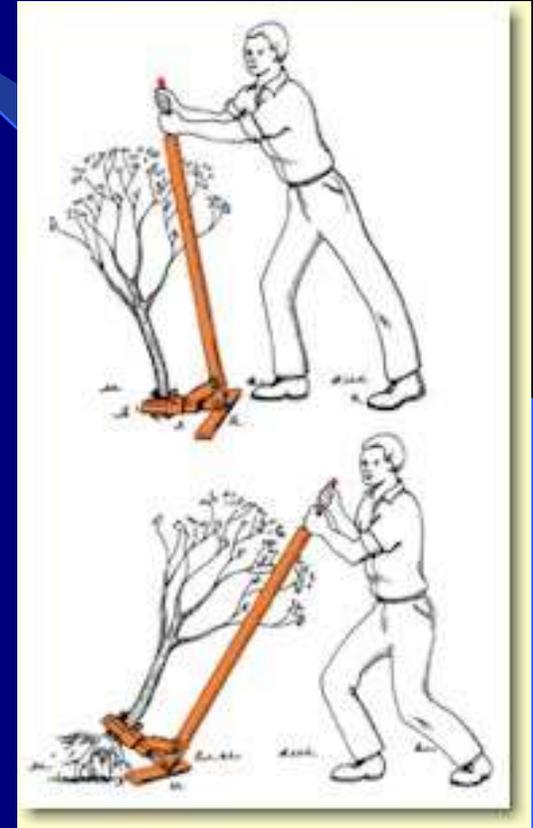
Fall Application



Spring Application

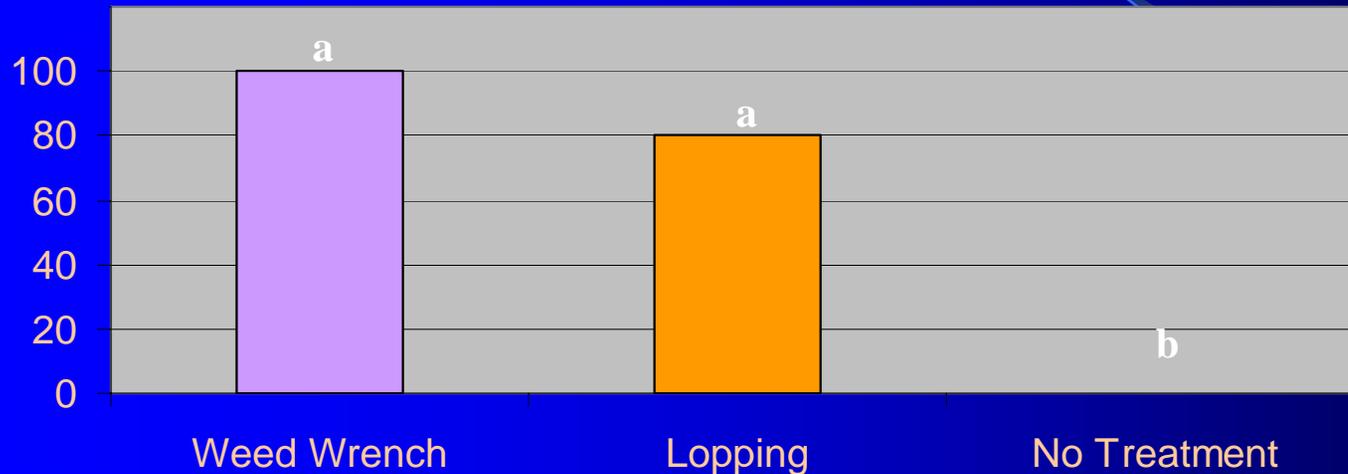
Mechanical

- Lopping
 - Shrubs were cut a few inches from ground level
- Weed Wrench
 - Shrubs were uprooted using a hand operated steel tool

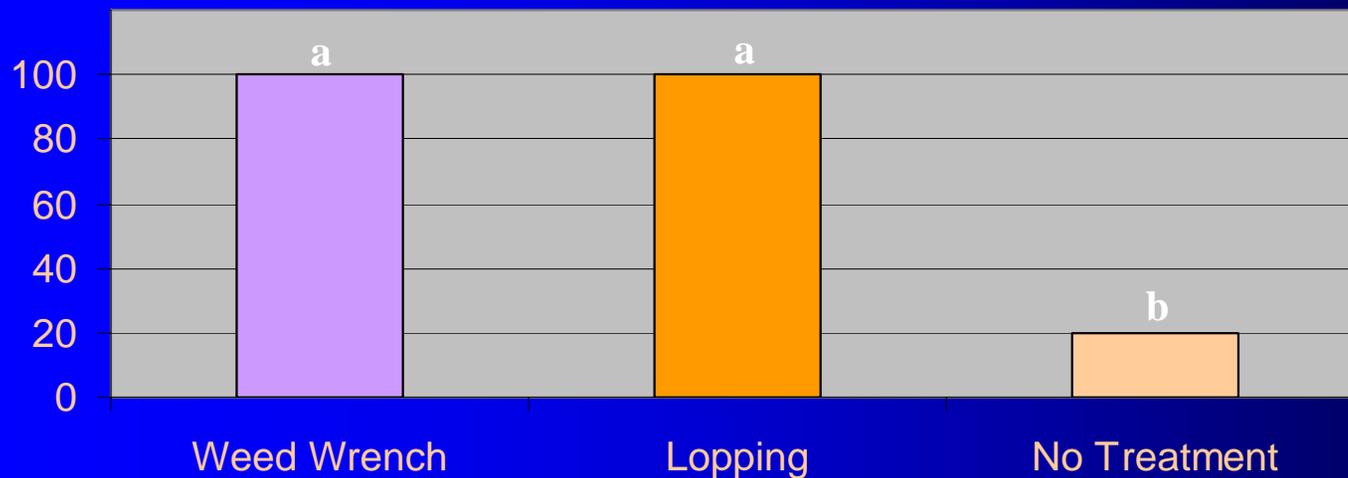


Mechanical

% Control from Mechanical Treatments



**Fall
Application**



**Spring
Application**

Results

	Foliar	Drizzle	Basal Bark
Roundup[®]	Fall Spring	↑Fall Spring	N/A
Chopper[®]	Fall	Fall Spring	Fall Spring
Garlon 4[®]	Fall Spring	Fall Spring	Fall Spring

Results

- Mechanical

- Weed wrench was very effective in fall and spring
- Lopping was moderately effective in the fall and very effective in the spring



Special Thanks...

- Joe Ditomaso, UC Davis
- Guy Kyser, UC Davis