

# Control of Tree Tobacco (*Nicotiana glauca*)

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## Introduction

Tree tobacco (*Nicotiana glauca*) is a native of Argentina. It is a slender, erect, 6-20 foot high shrub or small tree found in sandy or gravelly soils along riparian areas, roadsides, near cultivated areas, around old dwellings and ditch banks. It is a common weed throughout much of the southwest and is steadily expanding its range. It has bluish gray foliage and produces yellow tubular flowers from spring through summer. It is a prolific seed producer and is extremely toxic.



In early October 2003, we tested several mechanical and chemical control methods for control of tree tobacco in San Benito County, California. Treatments were made shortly before leaf drop.

Mechanical treatments included cutting and use of a weed wrench. Chemical treatments included three herbicides - Chopper® (imazapyr), Garlon 4® (triclopyr ester), and Roundup Max® (glyphosate). In addition, several herbicide application techniques were tested. Application methods included the following:

**Foliar.** Herbicides are applied to the entire plant canopy.

**Drizzle.** Developed in Hawaii, "drizzling" is a cost- and labor-efficient method of application that has been effective against many weed species. This method employs a spray gun fitted with an orifice disk and emits a fine jet stream to over 20 feet. Herbicides are applied in a waving fashion to distribute the large droplets randomly onto the plant surface.

**Cut stump.** The tree is cut down and herbicide is applied to the cut surface with a brush or sprayer. The herbicide should be applied shortly after the cut is made, so that the herbicide can be drawn down into the stump.

**Basal bark.** An oil soluble herbicide is mixed with an oil carrier and applied to the basal 12 to 18 inches of the tree. The tree is left standing.

## Materials & Methods

Individual trees were selected based on size and age. Trees were approximately the same age and size, each at least 1 year old with a woody trunk. Each treatment was replicated 10 times in a randomized block design with an individual tree serving as a replicate. In all, 260 trees were marked with plastic flagging, numbered with aluminum tags and GPS.

**Foliar.** We applied herbicide solutions spraying to wet using a CO<sub>2</sub> backpack sprayer and an 8002 nozzle at 20 p.s.i. We used the following rates in water:

- Roundup Max® - 1%, 2%, 3%, 4%
- Chopper® - 0.50%, 1%, 1.5%, 2% with 1% Hasten oil
- Garlon 4® - 0.50%, 1%, 2%, 3% with 1% Hasten oil

On average each tree was sprayed with 389 ml of herbicide solution.

**Drizzle.** We used a CO<sub>2</sub> backpack sprayer at 20 p.s.i. and a spray gun with an orifice disk nozzle. Trees were sprayed in a zigzag pattern to distribute droplets throughout the canopy. On average, it took 6 seconds to treat a tree (approximately 58 ml solution).



Spray pattern of a drizzle application.

We used the following rates:

- Roundup Max® - 10% and 20% in water
- Chopper® and Garlon 4® - 10% and 20% with 20% Hasten oil in water

**Cut stump.** We cut trees at 24 inches using loppers, then applied herbicide solution to the cut surface. We used a squirt bottle to wet the entire cambium, using an average of 19 ml of solution per tree.

- Roundup Max®, 50% in water
- Chopper® and Garlon 4®, 50% in 50% Hasten oil



**Basal bark.** Chopper® and Garlon 4® were tested at 20% in 50% Hasten oil and water. The solution was applied to the basal 18" of trunks using a squirt bottle. Trunks were sprayed to wet but not to runoff. We applied an average of 25 ml of solution to each tree.



A cut treatment right after treatment.

**Cut control.** We cut trees at 24 inches using loppers and left them untreated without an herbicide application.



A cut treatment six months after treatment. Note the numerous resprouts.



**Weed Wrench.** The weed wrench is a hand-operated steel tool designed to uproot woody plants. It has been proven to be effective in removing many brush and tree species. Using the large model, we manually removed as much of the root system as possible.

## Data

Trees were evaluated on May 20<sup>th</sup>, 2004. Treatments were evaluated based on percent canopy reduction, number of sprouts and overall mean vigor.

	Rate	Canopy % reduction	Overall mean vigor <sup>1</sup>	Sprouts	
				Number	Ht (m)
Foliar	Roundup Max®	1%	93.0 <sup>a</sup>	1.2 <sup>c</sup>	
		2%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
		3%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
		4%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
	Chopper®	0.50%	99.5 <sup>a</sup>	0.2 <sup>c</sup>	
		1%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
		1.50%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
		2%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
	Garlon 4®	0.50%	67.0 <sup>b</sup>	6.0 <sup>a,b</sup>	
		1%	90.0 <sup>a</sup>	4.5 <sup>b</sup>	
		2%	86.3 <sup>a</sup>	6.0 <sup>a,b</sup>	
		3%	91.3 <sup>a</sup>	3.4 <sup>b,c</sup>	
Drizzle	Roundup Max®	10%	99.0 <sup>a</sup>	0.8 <sup>c</sup>	
		20%	95.0 <sup>a</sup>	1.4 <sup>c</sup>	
	Chopper®	10%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
		20%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
	Garlon 4®	10%	89.0 <sup>a</sup>	4.9 <sup>a,b</sup>	
		20%	89.0 <sup>a</sup>	4.9 <sup>a,b</sup>	
Basal Bark	Imazapyr	20%	100.0 <sup>a</sup>	0.0 <sup>c</sup>	
	Garlon 4®	20%	97.0 <sup>a</sup>	1.4 <sup>c</sup>	
Cut Stump	Roundup Max®	50%	---	0.0	0.0
	Chopper®	50%	---	0.0	0.0
	Garlon 4®	50%	---	0.0	0.0
	Untreated		15.0 <sup>c</sup>	8.3 <sup>a</sup>	
	Weed Wrench		---	2.1	1.2
	Cut Control		---	4.0	3.3
	Untreated		15.0 <sup>c</sup>	8.3 <sup>a</sup>	
	Untreated		15.0 <sup>c</sup>	8.3 <sup>a</sup>	

<sup>1</sup>Vigor is a visual evaluation scale where 0 = dead, 10 = healthy.

## Results

A preliminary evaluation was performed in May 2004. Early results indicate that Roundup Max® appears to control tree tobacco either as a foliar spray, drizzle, or cut stump application. Chopper® also produced excellent control at all rates and in all application techniques. For Garlon 4®, only basal bark and cut stump treatments provided excellent control. In the mechanical treatments, the weed wrench was very effective when the entire root was extracted. Any roots that remained resprouted. In the cut treatment, 40% of the treatments resprouted, producing an average of 3 sprouts measuring 0.7 meters tall. Trees will be re-evaluated in 2005 to confirm the effectiveness of the treatments. To determine if timing of application is significant to herbicide effectiveness, the trial was replicated in Spring 2004 and will be evaluated in Spring 05.