

# Evaluation of Foliar Applied Herbicides for Control of Christmas Senna<sup>1</sup>

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## Introduction

Christmas senna (*Senna pendula* (Willd.) Irwin & Barn. var. *glabrata* (Vogel) Irwin & Barn.) has been commonly cultivated as an ornamental in Florida at least since the 1940s (Bailey and Bailey 1947). It escapes from cultivation in central and southern Florida and has become a weed in natural areas and other sites. It was reported as a weed of canal banks, roadsides, and fencerows in 1977 (Orsenigo 1977) and has been observed in the wild in south Florida since the early 1970s (D. F. Austin, Florida Atlantic University, 1995 personal communication). It is noted as naturalized in south Florida and becoming weedy in the Bahamas and disturbed areas in South America (Irwin and Barneby 1982). It often becomes established in sunny openings and then clambers over adjacent vegetation (Austin 1998). It displaces native plants in both disturbed and undisturbed areas of Florida's tropical hammocks, coastal strands, and canal banks (M. Renda, The Nature Conservancy, 1996 personal communication). The purpose of this study was to evaluate herbicides for control of Christmas senna.

## Materials and Methods

### PLANT CULTURE

Christmas senna seeds were collected in January 2000 from plants growing along a roadside in Lee County, FL. In May 2000, seeds were removed from the pods, scarified, and germinated in moist petri dishes. Upon reaching a height of 4.0 to 8.0 cm (1.6 to 3.2 in), seedlings were planted in one-gallon containers of commercial topsoil in a plastic house at the UF/IFAS Center for Aquatic and Invasive Plants in Gainesville, Florida. Seedlings were allowed to grow from June 2000 through April 2001, during which time they were transplanted to 2.5-gallon containers. The plants were removed from containers and planted on two-foot centers at the IFAS Agronomy farm (Green Acres) near Citra, Florida in April 2001. Plants

were overhead irrigated every other day and weeds were controlled by tilling and spot spraying with a glyphosate containing herbicide. Plants grew vigorously and attained 1.5 to 3.0 meters in height.

### HERBICIDE APPLICATION

Herbicides were applied November 9-10, 2001. Weather during and immediately after herbicide application was clear, calm, and 78 F. Herbicides were applied on a spray-to-wet basis, which resulted in application of approximately 0.75 l of spray solution per plant. Each herbicide treatment (Table 1) was applied to 10 randomly assigned replicate plants. Induce (Helena Chemical), a nonionic fatty acid based surfactant, was added to spray solutions of Transline, Garlon 3A, and Escort. Water, containing no herbicide or adjuvant, was applied to experimental checks.

### EVALUATION

Final evaluation for herbicide efficacy was determined on July 10, 2002 (eight months post application) as percent of foliage that was defoliated or attached and completely necrotic. Foliage that contained any green tissue was not considered necrotic.

### Results and Discussion

All rates of Transline (0.750% to 0.125%), Garlon 3A at 1.0% and 0.5, Escort at 0.02 and .01 oz per gallon, Roundup Pro at 2.0%, 1.5%, and 1.0%, and Brush-B-Gon at 3.13% gave complete control of Christmas senna (Table 1). Plants were completely defoliated, woody plant parts were desiccated and brittle, and plants showed no indication of regrowth. In contrast, untreated plants were defoliated 56% by cold damage but were vigorously regrowing at the evaluation time in July. Roundup Pro at 0.5% resulted in excellent control with nine of ten replicate plants being 100% defoliated. Lower rates of Garlon 3A (0.25% and 0.063%) and Escort (0.025 oz/gal and

**Table 1.** Control (%defoliation) of Christmas senna eight months after foliar herbicide applications (all additions of Induce, an adjuvant, at 0.375%).

Treatment	% Defoliation
0.750% Transline + Induce	100
0.500% Transline + Induce	100
0.250% Transline + Induce	100
0.125% Transline + Induce	100
1.000% Garlon 3A + Induce	100
0.500% Garlon 3A + Induce	100
0.250% Garlon 3A + Induce	95
0.063% Garlon 3A + Induce	82
0.020 oz Escort/gal + Induce	100
0.010 oz Escort/gal + Induce	100
0.025 oz Escort/gal + Induce	91
0.012 oz Escort/gal + Induce	77
2.0% Roundup Pro	100
1.5% Roundup Pro	100
1.0% Roundup Pro	100
0.5% Roundup Pro	98
3.13% Brush-B-Gon	100
1.95% Roundup Super Concentrate	59
Untreated check	56

0.012 oz/gal) resulted in good to fair control. Roundup Super Concentrate at 1.95% provided no control of Christmas senna.

Transline contains the active ingredient clopyralid, which is known to have excellent herbicidal activity on other leguminous weeds such as kudzu. It is not registered in Florida but is scheduled to be registered in counties of western Florida (Scott Ditmarsen, Dow AgroSciences, 2003 personal communication).

Brush-B-Gon, is a dilute product of triclopyr (0.75 lb a.e./gal), which is packaged for homeowner use and available in small containers in retail garden supply stores. The dilution used in this study is that recommended on the Brush-B-Gon label. The concentration of active ingredient in this Brush-B-Gon dilution is in between the 1.0% and 0.5% dilutions of Garlon 3A, which is a concentrated (3 lb a.e./gal), commercial product.

Roundup Super Concentrate is a glyphosate containing product that is packaged for homeowners and available in retail garden supply stores. It is more concentrat-

1. The invasive characteristics of this plant have not been assessed using the IFAS Assessment of Non-Native Plants in Florida's Natural Areas.

**Foliar Applied Herbicides** *continued*

ed (3.7 lb a.e./gal) than Roundup Pro (3 lb a.e./gal), which is packaged for commercial applicators. The concentration of Roundup Super Concentrate used (1.95%) is between the two highest concentrations of Roundup Pro used and would be expected to perform as well based on herbicide rate. The lack of control observed with Roundup Super Concentrate compared to Roundup Pro may be related to adjuvants in the different formulations (proprietary information) but cannot be explained in this study.

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## FLEPPC Board Gets Down and Dirty



The most recent quarterly meeting of the FLEPPC Board of Directors took place at Fort Jefferson National Monument in the Dry Tortugas National Park, 70 miles west of Key West, Florida.

Following up on the 1995 exotic plant management plan that FLEPPC helped develop, board members spent several hours removing exotic *Agave* plants from Loggerhead Key. It was a prickly job and drew blood from several of us, but our time was well spent. During a sweep of the island, we pulled or treated *Agave* plants regrowing from an established population that was removed in the late 1990s along with Australian pines (*Casuarina equisetifolia*) (see article by Tony Pernas, et al, *Wildland Weeds*, Winter 2001). – Ed.



The tenacious Jonathan Taylor of the National Park Service organized the FLEPPC board member *agave* pull.

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