

## RESPONSE OF SAW PALMETTO TO THREE HERBICIDES

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## ABSTRACT

Saw palmetto (*Serenoa repens* (Bartram) Small) can be controlled with herbicides. Garlon® 4E and Brush Killer® 800 were evaluated for effectiveness against saw palmetto when they were applied at three rates in April, June, and August. Oust® was tested at three rates in April only. Herbicides were most effective with April application, were least effective in June, and were intermediate in August. All rates of all chemicals applied in April except Oust® gave at least 40% topkill. Garlon® 4E applied at 3 gal/ ac in April gave the best results.

## INTRODUCTION

Saw palmetto occurs in the lower coastal plain, from Louisiana to South Carolina. It is most abundant in Florida where it is commonly seen covering approximately 5 million ac of long leaf pine (*P. palustris* Mill.) and slash (*Pinus o. Millottii* Engelm.) pine forest sites and pastures. Saw palmetto can hinder natural regeneration of pine and is a pest in pasture lands.

Control of saw palmetto has been partially achieved through repeated mechanical clearing and burning. Chemical control has been attempted with many chemicals, including TCA, amlitrol, endosulf, CIPC, MCP, maleic hydrazide, dalapon, erbon, 2,4-D amine, 2,4-D ester, 2,4,5-T ester, 2,4,5-TP, and combinations of the phenoxy esters (Grelen 1960; McCaleb et al., 1960; Nation 1950, 1951). Of these, dalapon, erbon, TCA, and the phenoxy herbicides have been the most active on saw palmetto. But dalapon activity is low and erbon, which had long-lasting residual effects, is no longer available. TCA gives only short-term crown control and has to be applied at high rates (65 to 110 lb/ac). The phenoxy herbicide 2,4,5-trichlorophenoxyacetic acid, which is no longer available, gave good but variable control. So, there are no acceptable chemical methods for saw palmetto control available. This research was conducted to determine: (1) efficacy of Garlon® 4E, Rush Killer® 600, and Oust® on saw palmetto, and (2) if time of year affected control. The results are reported in this paper.

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## MATERIALS AND METHODS

The study was conducted on the Wakulla District of the Apalachicola National Forest near Tallahassee, Florida. It is a typical flatwoods site with a mature overstory of long leaf pine and a moderate to dense understory of saw palmetto. The poorly-drained fine sand soil on the site belongs to the Talquin series and is a member of the sandy, siliceous, thermic family of Entic Hapludols.

The formulations tested were (1) Brush Killer® 800, (2) Garlon® 4E, and (3) Oust®. These herbicides were applied using water as the carrier. Treatments were applied at three times of the year.

**April Treatment.** Five clumps of mature palmetto were randomly selected for each treatment. Herbicide was applied with a hand pump sprayer. Brush Killer® 800 was applied at the rates of 0.5, 1.0, and 2.0 gal/ac of product, and Garlon® 4E was applied at 0.75, 1.5, and 3 gal/ac of product. Oust® was applied at the rates of 1.3, 2.6, and 5.3 lb/ac of product to plots 0.1 ac in size. Ten clumps of palmetto were randomly selected in each of the Oust® plots.

**June and August Treatments.** The two herbicides were each applied at three rates with three replications to 0.1 ac plots on June 13-14, and 18 more plots on P-23 August, for a total of 36 plots arranged in a complete randomized design. Spraying was done with a tractor-mounted boom sprayer. Brush Killer® 800 was applied at the same rates used in the April treatment and Garlon® 4E was applied at 0.5, 1.0, and 2.0 gal/ac of product.

**Evaluation.** Treatments were evaluated in August and November after application. Topkill was estimated to the nearest 5%. For each treatment time were submitted to analyses of variance. Significance was determined at the .05 level. When there was a significant F test, Duncan's Multiple Range Test was applied at the .05 probability level.

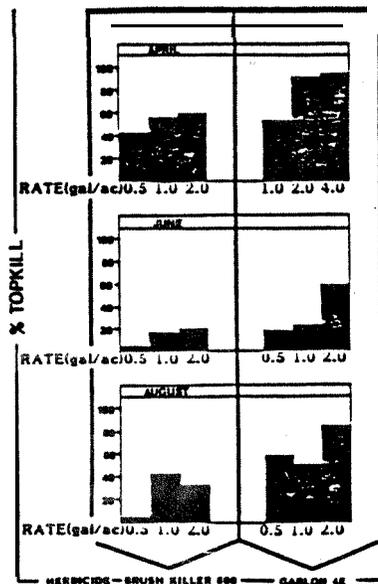


Figure 1. SAW PALMETTO TOPKILL (November 1979 evaluation)

## RESULTS AND DISCUSSION

Figure 1 illustrates results of the November evaluation of Garlon® 4E and Brush Killer® 800. The most effective treatment for all application dates was Garlon® 4E.

**April Treatment.** The Garlon® 4E treatments at 1.5 and 3.0 gal/ac were significantly better than either of the other treatments but were not different from each other. Oust® treatment did not kill my palmetto even at the highest rate tested.

**June Treatment.** Garlon® 4E at 3.0 gal/ac was significantly better than all other treatments. No significant difference exists among the means for the other treatments.

**August Treatment.** Garlon® 4E at 3.0 gal/ac was the best treatment. At 0.75 and 1.5 gal/ac, Garlon® 4E was not significantly different from Brush Killer® 800 at 1 and 2 gal/ac.

The August evaluation of the April and June application indicated that both 2 gal of Brush Killer<sup>®</sup>800 and 1.5 gal of Garlon<sup>®</sup>4E applied in April gave 99% topkill. In the June application, 2 gal of Brush Killer<sup>®</sup>800 gave 82% topkill, and 1 gal of Garlon<sup>®</sup>4E gave 85%. By November, only the highest rate of Garlon<sup>®</sup>4E was significantly different from the other treatments. When summer-long control is all that is required, Brush Killer<sup>®</sup>800 and Garlon<sup>®</sup>4E are equally effective, but only Garlon<sup>®</sup>4E effects season-long control.

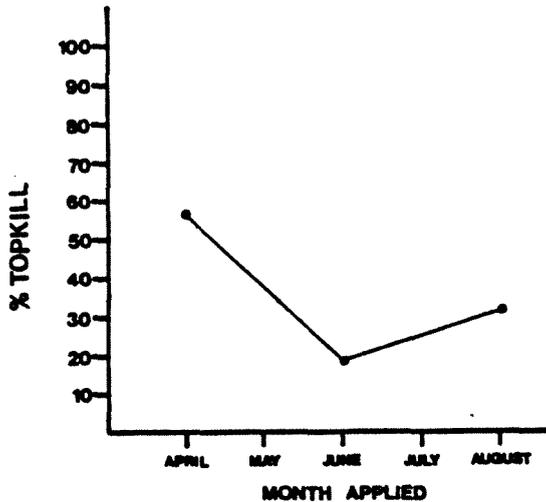


Figure 2. SEASONAL RESPONSE of SAW PALMETTO TO 2 GAL/AC OF BRUSH KILLER 800

Figure 2 plots the seasonal aspects of saw palmetto response to Brush Killer 800<sup>®</sup> at 2 gal/ac. These results are similar to those reported by Grelen (1960) for 2,4,5-T. But notwithstanding the drop in kill for the period May-June to some physiological factor related to flowering and fruiting. For the April application, the most effective in this study, palmetto was in flower. The summer drop in susceptibility to the chemicals may be due to dormancy, perhaps induced by water stress. Plants grew considerably August 25 to November 7, with some of the test plants in the June application adding as many as five new leaves.

This period of renewed growth was concurrent with an increase in susceptibility to herbicide as evidenced by the increased effectiveness of the August treatment over the June treatment. The seasonal response of saw palmetto to herbicides suggests that herbicide application should be restricted to the spring and fall.

#### LITERATURE CITED

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