



Control of Broadleaf Weeds in Pastures Using Non-2,4-D Containing Herbicides

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Findings

- Most herbicide treatments were effective in controlling pigweed.
- Chemical control of horsenettle was variable, as control ranged from 47 to 99%.
- Herbicides applied in August provided more effective control than applications made in June.

Introduction

Many herbicides used to control broadleaf weeds in pastures contain the phenoxy herbicide 2,4-D as an active ingredient. While this phenoxy herbicide kills many targeted broadleaf weeds in pastures, it may also damage non-targeted species such as cotton and tomatoes. Typical 2,4-D damage to these sensitive crops includes cupped leaves and bending or twisting (epinasty) of the main stem and leaf petioles. 2,4-D has been documented to affect non-target species for up to several miles from the target field. Due in part to the physical drift issue, several herbicides that do not contain 2,4-D have been developed for broadleaf weed control in pastures. This study was conducted in 2007 and 2008 to evaluate the effectiveness of several non-2,4-D containing herbicides in controlling horsenettle and pigweed in a perennial grass pasture.

Experimental Approach

A perennial pasture consisting primarily of bermudagrass at the Central Research Station in Baton Rouge, LA was chosen as the test site in both years of the study. The pasture was primarily infested with horsenettle and pigweed. The herbicides

used were: Surmount, PastureGard, Cimarron and a combination treatment of Remedy and Overdrive. Herbicide treatments were applied in either June, August, or a combination of June + August. A complete listing of herbicide treatments and rates can be found in Table 1. All herbicides were applied using a CO₂-powered backpack sprayer with a 10 ft. boom and calibrated to deliver 15 gallons per acre. Plot size was 10 ft. x 20 ft. Experimental design was a randomized complete block with three replications. For the June application date, both species were in a vegetative maturity stage. The horsenettle was about 6-10 inches tall while the pigweed was about 12-15 inches tall. For the August application date, the horsenettle was about 12-15 inches tall and many plants contained green seed pods. The pigweed was about 24-30 inches tall and fully headed. Visual control of horsenettle and pigweed was evaluated in late-October of each year. Data were analyzed using ANOVA and means separated using Fisher's Protected LSD (P=0.05).

Results and Discussion

The herbicide treatment x year interaction was significant (P<0.05), therefore data are presented for each individual year. The herbicide treatments were effective in controlling pigweed, as most treatments provided at least 80% control (Table 2). Only the Surmount and PastureGard treatments applied in June of 2007 provided less than 80% control. In most instances, the August and June + August treatments provided better control of pigweed than did the June treatments. These findings are similar to previous studies in pasture weed control in

Louisiana, which has shown that pigweed is a relatively easy weed to control with most broadleaf herbicides.

Horsenettle control was generally poorer and more variable than pigweed control (Table 2). The June applications were relatively poor, as horsenettle control ranged from 47 to 77%. The August and June + August treatments provided more consistent control of horsenettle than June applications. Surmount herbicide applied in June + August was especially effective, as it provided 99 and 98% control in 2007 and 2008, respectively. In most instances the Surmount and PastureGard treatments provided better horsenettle control than Cimarron and Remedy + Overdrive treatments (Table 2). Both Surmount and PastureGard herbicides contain fluoxypyr plus picloram or triclopyr as active ingredients.

In most instances, the June + August treatments provided more consistent control than did the June treatments. However, differences in control were similar for the August and June + August applications. It is therefore difficult to recommend the sequential (June followed by August) treatments for control of either horsenettle or pigweed, since the herbicide and application costs would double the cost of a single application. Results of this study suggest that pigweed can be controlled at any time during the summer months, while horsenettle is better controlled with late-summer herbicide applications. Additional research is needed with these non-2,4-D containing herbicides to determine if they will be suitable replacements for the more traditional phenoxy herbicides for control of broadleaf weeds in Louisiana pastures.

Table 1. Herbicide treatments and application rates used in study.

Herbicide	Active ingredients	Application rate/acre
Surmount	picloram + fluoxypyr	1 quart
PastureGard	triclopyr + fluoxypyr	1 quart
Cimarron	metsulfuron-methyl	0.33 ounces
Remedy + Overdrive	triclopyr + diflufenzopyr	8 ounces 4 ounces

Table 2. Broadleaf weed control with nonphenoxy herbicides in 2007 and 2008.

Treatment	Horsenettle		Pigweed	
	2007	2008	2007	2008
	-----% control ^a -----			
Surmount (June)	77	57	72	80
Surmount (August)	94	92	95	92
Surmount (June + August)	99	98	98	91
PastureGard (June)	70	50	75	85
PastureGard (August)	94	87	91	87
PastureGard (June + August)	93	90	98	80
Cimarron (June)	57	47	88	82
Cimarron (August)	82	68	96	98
Cimarron (June + August)	90	82	99	96
Remedy + Overdrive (June)	63	57	93	90
Remedy + Overdrive (August)	87	85	96	83
Remedy + Overdrive (June + August)	88	85	98	96
LSD (P=0.05)	10	17	15	13

^aVisual ratings were taken on 10/27 and 10/31 in 2007 and 2008, respectively.