

Table 1. List of treatments in 1999 Goal 2XL hardwood field trial

Treatment No.	Pre-emergent Rates (oz/A)	Post-emergent Rates (oz/A)
1	Goal + Gramoxone Extra (64 + 32)	-
2	Goal + Gramoxone Extra (128 + 32)	-
3	-	-
4	-	Goal (32)
5	-	Goal (64)
6	Goal + Gramoxone (64 + 32)	Goal (32)
7	Goal + Gramoxone (64 + 32)	Goal (64)
8	Goal + Gramoxone (128 + 32)	Goal (32)
9	Goal + Gramoxone (128 + 32)	Goal (64)

Table 2. Percent damage to crop species by species and time of observation in 1999 Goal/hardwood field study (all treatments included)

Species	Time of Observation			
	30 DAT	60 DAT	90 DAT	120 DAT
	----- percent -----			
Yellow Poplar	90 *	95 *	-	-
Sweetgum	0	0	0	0
Sycamore	0	0	0	0
Cherrybark Oak	0	0	0	0
Nuttall Oak	0	0	0	0

* freeze damage

Table 3. Average survival of crop species in 1999 Goal 2XL hardwood study.

Species	Treatment Number								
	1	2	3	4	5	6	7	8	9
	----- percent -----								
Yellow Poplar *	0	0	10	0	10	0	0	0	0
Sweetgum	65	40	30	50	80	90	30	60	70
Sycamore	80	90	10	30	80	20	50	60	30
Cherrybark Oak	90	100	60	100	90	100	100	80	90
Nuttall Oak	100	100	70	90	100	90	90	80	100

* extreme freeze damage

Table 4. Percent clear ground in 1999 Goal/hardwoods field study by time of observation

Treatment No.	Time of Observation			
	30 DAT	60 DAT	90 DAT	120 DAT
	----- percent -----			
1	98	85	40	20
2	100	87	60	20
3	50	49	5	5
4	60	50	25	25
5	50	49	25	25
6	99	90	30	15
7	99	92	50	25
8	100	96	50	35
9	99	92	50	35

FOURTH-YEAR TESTS OF DICAMBA TANK MIXTURES FOR FOREST SITE PREPARATION. L.R. Nelson and A.W. Ezell. Clemson University, Clemson, SC, and Mississippi State University, Starkville.

ABSTRACT

Herbicide treatments were installed during the 1999 growing season at two locations to determine the effectiveness of three-way tank mixtures for site brownout and for woody stem control. Study sites included a piedmont site near Abbeville, SC and an upper coastal plain site near Louisville, MS. Dominant hardwood species included sweetgum, water oak, and red maple in SC and sweetgum, red maple, red oak spp. and winged elm in MS. Herbicide treatments included various three-way mixtures of dicamba (Vanquish®) @ 2 qt prod/ac, imazapyr (Arsenal Applicators Concentrate®) @ 10-12 ozprod/ac, glyphosate (Accord®) @ 3 qt prod/ac, triclopyr (Garlon 4®) @ 2 qt prod/ac, fosamine (Krenite UT®) @ 4 qt prod/ac and primisulfuron-methyl + prosulfuron (Exceed®) @ 1 oz prod/ac. Treatments were applied with a CO₂ backpack-pole sprayer in mid-August. A randomized complete block design was used at both locations. Evaluations were conducted 8 WAT. Measurements included ocular estimates of percent foliar brownout

of hardwoods and understory grasses and forbs. Foliar brownout of hardwoods was measured on a per species basis in SC.

Herbicide treatments resulted in low levels of brownout of understory grass species at both sites. In Mississippi dicamba + glyphosate + imazapyr and dicamba + primisulfuron-methyl + prosulfuron + triclopyr provided 60 and 50 % brownout respectively. In South Carolina dicamba + primisulfuron-methyl + prosulfuron + glyphosate and dicamba + glyphosate + imazapyr provided 60 and 57 % brownout of grasses, respectively. Brownout of grasses was significantly lower with all other tank mixtures.

All treatments resulted in greater than 75 % brownout of broadleaf forbs in MS and SC. These included dicamba + primisulfuron-methyl + prosulfuron + imazapyr, dicamba + primisulfuron-methyl + prosulfuron + glyphosate, dicamba + glyphosate + imazapyr, dicamba + primisulfuron-methyl + prosulfuron + triclopyr, dicamba + fosamine and dicamba + fosamine + imazapyr.

Three treatments resulted in effective hardwood control in MS. Dicamba + Fosamine + imazapyr, dicamba + primisulfuron-methyl + prosulfuron + triclopyr and dicamba + glyphosate + imazapyr provided 77, 85 and 88 % brownout, respectively. All other treatments provided less than 60 % brownout. None of the treatments provided effective (>75 %) hardwood brownout in South Carolina.

TANK MIXTURES OF DICAMBA WITH IMAZAPYR, GLYPHOSATE, TRICLOPYR, AND FOSAMINE FOR WOODY STEM CONTROL. A.W. Ezell and L.R. Nelson, Mississippi State University, Starkville, and Clemson University, Clemson, S.C.

ABSTRACT

A total of nine herbicide mixes were applied to evaluate the efficacy on brownout and woody stem control in site preparation situations. All treatments included dicamba and were replicated three times at two locations (Mississippi and South Carolina). Overall, brownout was acceptable, but many woody species were not controlled exceptionally well by these treatments. Time of application could be an important factor. In Mississippi, Vanquish + Arsenal, Vanquish + Accord, and Vanquish + Arsenal + Krenite mixes gave best results. In South Carolina, the Vanquish + Arsenal, Vanquish + Arsenal + Garlon, Vanquish + Arsenal + Accord, and Vanquish + Arsenal + Krenite mixes gave best results.

INTRODUCTION

In a continuing effort to evaluate the use of dicamba in forestry site prep work various tank mixtures of Vanquish and other forestry herbicide were applied to a recently harvested area. Both woody stem control and brownout response will be evaluated.

METHODS

All 10 treatments were applied as per Novartis protocol (Table 1). Plot installation was in RCB design. Plot layout was a 25 ft. x 100 ft. linear plot marked with metal rebar center posts. Nylon string was stretched between the rebar and the sample area of 10 ft. x 80 ft. was centered in the treatment. All treatments were replicated 3 times with application completed in mid-August for both sites.

All woody stems in the sample area were tallied by species and height class prior to spray application. Plots were evaluated for percent brownout by vegetation class at 6 WAT. Plots were evaluated in November 1999 to determine woody stem control.

The study was installed at locations in both Mississippi and South Carolina. The Mississippi site is representative of upper coastal plain and the previous stand had been mixed pine hardwoods. The South Carolina site is representative of Piedmont and previous use had also been mixed pine and hardwoods.

RESULTS

The results of brownout evaluation were presented earlier. Overall, only treatments No. 6 and 7 gave good brownout on the grasses. This is partially due to the species present and coverage afforded by taller vegetation (especially broadleaf herbaceous). All treatments worked very well on broadleaves but Treatment 6 was best. In woody stems, Treatment 6 was best and Trt. 3 (Vanquish & Garlon 4), Trt. 5 (Vanquish & Arsenal & Garlon), and Trt. 7 (Vanquish & Arsenal & Finale) gave good brownout.

Woody stem control—Evaluation of the species present in sufficient numbers for statistical comparison provided results found in Tables 2 and 3. Overall, these treatments did not provide the level of control that would be most desirable. Fore red maple (*Acer rubrum*), only Treatment No. 1 (Vanquish/16 oz Arsenal) have good control. Green ash (*Fraxinus pennsylvanica*) was not controlled well by any of the treatments, but Trt. 4 (Vanquish/Garlon) and Trt. 5