

## Utah IPM/SA Mini-Grant Final Report for 2011

**Title:** Control of Buckhorn Plantain in Pastures, Forages, and Waste Areas in Wasatch County

**Project Leader:** Allan Sulser, USU/Wasatch County Extension

**Collaborators:** Ralph Whitesides, USU Extension  
Gary Maxfield, Private Landowner  
Hugh Barker, Private Landowner  
Quintin Lewis, Wasatch County Weed Supervisor

**Total Grant Award:** \$1583

**Location:** Heber City, Wasatch County, Utah

### Objectives:

1. Determine which herbicide will control buckhorn plantain in pasture and forage lands which will be the least cost for producers.
2. Establish a weed control demonstration site for landowners, producers, and the public to view the results.
3. Education and public awareness of best herbicide to control buckhorn plantain.
4. Provide the public, landowners, and producers with a fact sheet and powerpoint on the results of the project.

### Summary:

An field trial was conducted in 2011 to evaluate chemical control of Buckhorn Plantain with chlorsulfuron, metsulfuron, triclopyr, 2,4-D, and 2,4-D amine. The experiment was designed as randomized complete block with individual plots measuring 50 by 475 feet and treatments were replicated three times. Herbicides were applied when plantain was in the early rosette stage. All treatments were applied using a trailer mounted boomless sprayer pulled by an ATV at 3 mph. The sprayer used boombuster nozzles and was calibrated to delivered 11 gallon per acre; the spray width was approximately 25 feet. The objective of the trial was to determine which herbicide would be most productive and least cost for local producers.

### Results:

Treatment	36 DAT	68 DAT	99 DAT
	Plants per square foot (P ft <sup>2</sup> )	Plants per square foot (P ft <sup>2</sup> )	Plants per square foot (P ft <sup>2</sup> )
1-Control	12.1 a	34.5 a	24.0 a
2-Triclopyr	8.4 a	11.7 bc	11.6 ab

3-Chlorsulfuron	8.2 a	21.3 b	25.0 a
4-Metsulfuron	12.3 a	3.3 c	5.2 b
5-2, 4-D,	15.6 a	7.8 c	6.6 b
6-2,4-D, Amine	10.23 a	4.6 c	6.3 b

Table 1. DAT= Days after Treatment

Table 1 indicates number of plants per square foot 36, 68, and 99 days after treatment. The letter following the number explains significant difference. In column 1 all letters are “a” indicating no significant difference at this time. In column 2 and 3 the b’s and c’s indicate significant difference at the 68 and 99 days after treatment.

Table 2 indicates the percent of visual reduction in the plantain stand. Again the first measurement had no significant difference. It was not until the 68 and 99 days after treatment that significant difference was shown. The c’s in column 2 and the b’s in column 3 represent significant changes in the plantain stand.

Treatment	36 DAT	68 DAT	99 DAT
	% Visual Reduction in Stand	% Visual Reduction in Stand	% Visual Reduction in Stand
1-Control	0-a	0-a	0-a
2-Tricopyr	58% b	57% c	53% b
3-Chlorsulfuron	62% b	27% b	23% ab
4-Metsulfuron	63% b	73% c	57% b
5-2, 4-D	66% b	77% c	63% b
6-2,4-D, Amine	66% b	67% c	63% b

Table 2. Percent visual reduction of the Buckhorn Plantain stand.

Table 3 indicates the application rates and the total cost per acre for treating buckhorn plantain infested pastures. Based on the numbers during the study, Metsulfuron, 2 4-D, and 2, 4-D Amine showed significant differences at the 68 and 99 DAT (Days After Treatment) in all three categories; plants per square foot, percentage visual reduction in stand, and percentage visual injury. It should be noted that metsulfuron and chlorsulfuron showed some damage to the pasture grass especially at the 36 DAT stage. Estimates were 50% grass reduction for metsulfuron and 30% grass reduction for chlorsulfuron. Metsulfuron was the least cost at \$2.63 per acre, followed by the 2, 4-D, Amine and 2, 4-D which were both \$12.00 per acre. Results were analyzed using Student-Newman-Keuls, P=.05.

Treatment	Application Rates	Cost/Acre	Surfactant	Total/Acre
Tricopyr	2 pints/ acre	\$18.00	\$1.25	\$19.25

Chlorsulfuron	1/2 ounce/ acre	\$10.62	\$0.13	\$10.75
Metsulfuron	1/2 ounce/ acre	\$2.50	\$0.13	\$2.63
2, 4-D	4 pints/acre	\$12.00	n/a	\$12.00
2, 4-D, Amine	4 pints/acre	\$12.00	n/a	\$12.00

Table 3. Application rates and cost per acre.

**Problems:**

There was some disconnect with the University and myself. Data got reported in the wrong category and skewed the results. After the problems and disconnect was straightened out, things progressed nicely, this was the beginning of January 2012.

**Evaluation and Impact:**

- A. The project was evaluated on which chemicals delivered at the least cost. This could possibly affect hundreds of acres in Wasatch County especially on small farms and ranches of five to twenty acres. The total impact cannot be measured until the conclusion of the 2012 study to see if we can control plantain on a higher level with less cost.
- B. Knowledge and skills have not been measured at this time, plans include measuring at Annual Conference and other professional meetings where we will present using the extension evaluation and the Western SARE survey.
- C. We could become the Buckhorn Plantain professionals as very little research or knowledge is available. Most do not even know what plantain is or how to treat it. Most being the crop specialists in Utah and southern Idaho, other agents, and professional people that I made contact with.

**Educational Outreach:**

- A. Poster was developed and shared at Wasatch Conservation District, Wasatch Weed Management Cooperative, and at Annual Conference. It will be hung in the court house after annual conference. Fact sheet has been updated and submitted to fast tract at USU. Power point will be presented at Annual Conference and at other meetings where invited to present. Calls to the Wasatch County office and the County Weed manager have been answered with data produced.