



# Control of Buckhorn Plantain in Irrigated Pastures



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Wasatch County, Utah State University Extension

IPM/Western SARE Grant

2011





# Buckhorn Plantain

*Plantago Lanceolata* (PLALA)

Perennial, stout fibrous rootstock.

Leaves basal, 3 to several veined, narrow  
4-12" long.

Flowering stalks, several up to 18" tall,  
bearing dense spike.

Seeds, 4/fruit, 1/16" long



# Problem pasture in Wasatch County Fall 2010



# Problem Pasture In Wasatch County Fall 2010



Hay field, after plowing, spraying,  
and 2 years of rye grass hay.



# What the plots looked like at start.

Fall 2010



# Pasture for plots, 1200 South Mill Road, Heber City, Utah



# Buckhorn Plantain

- Trail was on +/- 12 acre irrigated pasture heavily infested.
- Randomized complete block, replicated three times.
- Plot size 50 feet X 475 feet.
- Trailer mounted boomless sprayer pulled by ATV @ 3 MPH.
- 11 gallon per acre, approx. 25 foot width.
- Grazed Intermittently by 1-6 Horses



# Buckhorn Plantain Trial

## Environmental Data

- Application Date: May 4, 2011
- Time: 11:15 am – 3:10 pm
- Air Temperature: 47 – 52 F
- Wind Speed: 3 to 5 MPH
- Cloud Cover 0 %
- Counts June 10, July 12, and August 9, 2012
- ¼ Meter Circle 10 tosses in each plot.

# Herbicides Used

- Escort--metsulfuron methyl-ai
- Garlon 3A--triclopyr-ai
- Telar XP--chlorsulfuron-ai
- Weedmaster-- dimethylamine salt of dicamba-ai
- 2,4-D, Amine-- dimethylamine salt of 2, 4-dichlorophenoxyacetic acid-ai
- Control– no herbicide used

# Buckhorn Plantain Trial



June 10, 2011

Escort--metsulfuron  
methyl-ai



August 10, 2011



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# Buckhorn Plantain Trial



June 10, 2011



August 10, 2011

Weedmaster--  
dimethylamine salt of  
dicamba-ai



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# Buckhorn Plantain Trial



June 10, 2011



August 10, 2011

2,4-D, Amine-- dimethylamine  
salt of 2, 4 dichlorophenoxyacetic  
acid-ai



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# Buckhorn Plantain Trial



June 10, 2011



August 10, 2011

Telar XP--chlorsulfuron-ai



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# Buckhorn Plantain Trial



June 10, 2011



August 10, 2011

Garlon 3A--triclopyr-ai



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# Buckhorn Plantain Trial



June 10, 2011



August 10, 2011

**Control— no herbicide used**



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# Buckhorn Plantain Trial

Herbicide	Rate oz/ac	Cost/Acre~
Chlorsulfuron(Telar)	½ oz (0.5)*	\$10.75
Metsulfuron(Escort)	½ oz (0.5)*	\$2.63
Triclopyr(Garlon 3A)	2 pints*	\$19.25
2,4-D(Weedmaster)	4 pints	\$12.00
2,4-D, Amine (Weedestroy 64)	4 pints	\$12.00

\*added surfactant at 0.25% v/v

~purchased from local farm supply



COOPERATIVE EXTENSION

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# Raw Data, 1/9/2012

1/9/2012 (Plantain RW012011)

Utah State University

Buckhorn Plantain RW012011, Allan Sulser,

Trial ID: Plantain RW012011      Protocol ID: Plantain RW012011  
 Location: Heber City              Study Director:  
 Project ID:                              Investigator: Corey Ransom  
    Sponsor:  
    Contact:

Rating Date	6/10/2011	6/10/2011	6/10/2011	7/12/2011	7/12/2011	7/12/2011	8/9/2011	8/9/2011	8/9/2011			
Rating Type	Count	health	walk thr	Count	health	walk thr	Count	health	walk thr			
Number of Subsamples	1	1	1	1	1	1	1	1	1			
Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4	5	6	7	8	9
1	Untreated			12.10 a	10.00 a	10.00 a	34.50 a	10.00 a	10.0 a	23.97 a	10.00 a	10.0 a
2	Garlon 3A NIS	2 pt/a 0.25 % v/v		8.37 a	4.20 b	4.20 b	11.73 bc	5.67 b	4.3 c	11.60 ab	8.47 ab	4.7 b
3	Telar NIS	0.5 oz/a 0.25 % v/v		8.17 a	3.80 b	3.80 b	21.33 b	6.47 b	7.3 b	25.03 a	8.87 ab	7.7 ab
4	Escort NIS	0.5 oz/a 0.25 % v/v		12.33 a	3.67 b	3.67 b	3.30 c	1.53 c	2.7 c	5.20 b	7.50 bc	4.3 b
5	Weedmaster 2,4-D Amine	4 pt/a 4 pt/a		15.60 a	3.37 b	3.37 b	7.77 c	2.53 c	2.3 c	6.60 b	6.23 c	3.7 b
6	2,4-D Amine			10.23 a	3.43 b	3.43 b	4.60 c	2.20 c	3.3 c	6.27 b	6.57 c	3.7 b
LSD (P= .05)				8.105	1.865	1.865	10.398	1.619	2.46	10.951	1.248	3.40
Standard Deviation				4.455	1.025	1.025	5.716	0.890	1.35	6.020	0.686	1.87
CV				40.02	21.6	21.6	41.2	18.81	27.08	45.91	8.64	33.01
Bartlett's X2				7.793	1.13	1.13	5.653	1.968	6.96	5.988	5.742	1.689
P(Bartlett's X2)				0.168	0.889	0.889	0.341	0.742	0.138	0.307	0.219	0.793
Replicate F				9.564	1.035	1.035	9.563	7.852	0.818	9.806	3.614	0.048
Replicate Prob(F)				0.0048	0.3904	0.3904	0.0048	0.0089	0.4687	0.0044	0.0659	0.9537
Treatment F				1.197	19.183	19.183	13.238	40.219	15.127	6.856	13.225	5.752
Treatment Prob(F)				0.3769	0.0001	0.0001	0.0004	0.0001	0.0002	0.0050	0.0004	0.0093

Rating Type  
Count = count

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.



# Results 2011

Treatment	36 DAT*	68 DAT*	99 DAT*
	Plants per square foot		
1-Control	12.1 a	34.5 a	24.0 a
2-Garlon	8.4 a	11.7 bc	11.6 ab
3-Telar	8.2 a	21.3 b	25.0 a
4-Escort	12.3 a	3.3 c	5.2 b
5-Weed	15.6 a	7.8 c	6.6 b
6-2,4-D, Am	10.23 a	4.6 c	6.3 b

\*Days After Treatment

# Results 2011

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

\*Days After Treatment

# Results 2011

Treatment	36 DAT*	68 DAT*	99 DAT*
	Plant Health---%		
	Visual Injury		
1-Control	0-a	0-a	0-a
2-Garlon	58 b	43 b	15 ab
3-Telar	62 b	35 b	11 ab
4-Escort	63 b	85 c	25 bc
5-Weed	66 b	78 c	38 c
6-2,4-D, Am	66 b	78 c	34 c

\*Days After Treatment

# Results 2011

Treatment	Cost/Acre	Surfactant	Total/Acre
Tricopyr	\$18.00	\$1.25	\$19.25
Chlorsulfuron	\$10.62	\$0.13	\$10.75
Metsulfuron	\$2.50	\$0.13	\$2.63
2, 4-D	\$12.00	n/a	\$12.00
2, 4-D, Amine	\$12.00	n/a	\$12.00

# Buckhorn Plantain 2012 Trial Plans

- Telar 1.0 oz /A + NIS 0.25% v/v
- Escort 1.0 oz/A + NIS 0.25% v/v
- 2,4-D amine 4 pints/A + NIS 0.25% v/v
- Dicamba (Banvel) 1 quart /A + NIS 0.25% v/v
- Telar 1.0 oz/A + dicamba 8 oz/A + NIS 0.25% v/v
- Escort 1.0 oz/A + dicamba 8 oz/A + NIS 0.25% v/v
- Telar 1.0 oz/A + 2,4-D 16 oz/A + NIS 0.25% v/v
- Escort 1.0 oz/A + 2,4-D 16 oz/A + NIS 0.25% v/v
- Untreated control
- Plot Size 10' wide by 30' long in an area of 90' X 120'
- 4 Replications





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# Questions?

