

Comparison of different burndown herbicide options for glyphosate-resistant horseweed

Trial ID: NTS10-17 Study Dir.: Sprague, Powell, Stiles
 Conducted: Isabella Co. Investigator: Christy Sprague

Planting Date: May-19-2017 **Row Spacing:** 30 IN
Variety: Pioneer 28T24X **No. of Reps:** 4
Population: 150000 S/A **% OM:** 2.2
Soil Type: SL sandy loam **pH:** 7.2
Plot Size: 10 X 30 FT **Study Design:** Randomized Complete Block (RCB)

Tillage/Previous Crops: No-tilled into soybean stubble

Fertilizer:

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1	ERICA	horseweed	Conyza canadensis
2	POAAN	bluegrass, annual	Poa annua
3	TAROF	dandelion	Taraxacum officinale

Crop	Code	Common Name
1	GLXMA	Soybean

Application Description

	A	B
Application Timing:	7 EPP	POST
Date Treated:	May-10-2017	Jul-5-2017
Time Treated:	1:30 PM	1:15 PM
% Cloud Cover:	50	5
Air Temp., Unit:	63 F	80 F
% Relative Humidity:	31	40
Wind Speed/Unit/Dir:	4 mph W	4 mph W
Soil Temp, Unit:	58 F	79 F
Leaf Moist/Dew Presence (Y/N):	5	5
Soil Moist:	4	4

Crop Stage at Each Application

	A	B
Crop 1 Name:	GLXMA	GLXMA
Height:		9-11 " (10)
Stage:		V4

Weed Stage at Each Application

	A	B
Weed 1 Name:	ERICA	ERICA
Height:	.50-1 " (.75)	2-8 " (5)
Stage:	8-12L	boltin
Weed 2 Name:	POAAN	POAAN
Height:	1 "	
Stage:	flower	
Weed 3 Name:	TAROF	TAROF
Height:	12 "	
Stage:	flower	

Weed Density

	1	2	3
Date:	May-10-2017	May-10-2017	May-10-2017
Weed Name:	ERICA	POAAN	TAROF
Density:	13 FT2	5 FT2	2 FT2

Application Equipment

Appl	Sprayer Type	Ground Speed	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	Spray Volume	Carrier	Operation Pressure
A	CUB	3.8 MPH	AIXR	11003	24 "	20 "	100 "	19 GPA	WATER	30 PSI
B	CUB	3.8 MPH	TTI	11003	28 "	20 "	100 "	19 GPA	WATER	25 PSI

Comments: The horseweed population at this location is resistant to Group 2 (ALS-inhibiting) and Group 9 (glyphosate) herbicides.

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Pest Code	ERICA	POAAN	TAROF	ERICA	POAAN
Crop Code					
Rating Date	May-19-2017	May-19-2017	May-19-2017	May-31-2017	May-31-2017
Rating Type	control	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	9 DA-A	9 DA-A	9 DA-A	21 DA-A	21 DA-A
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*
1	Roundup PowerMax	4.5	SL	32 fl oz/a		A	20	81	15	20	98
1	AMS		WG	17 lb/100 gal		A					
1	XtendiMax	2.9	SL	22 fl oz/a		B					
1	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
1	Intact		L	0.5 % v/v		B					
2	XtendiMax	2.9	SL	22 fl oz/a		A	84	80	63	100	88
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
2	Intact		L	0.5 % v/v		A					
2	XtendiMax	2.9	SL	22 fl oz/a		B					
2	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
2	Intact		L	0.5 % v/v		B					
3	XtendiMax	2.9	SL	44 fl oz/a		A	88	76	65	100	92
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
3	Intact		L	0.5 % v/v		A					
3	XtendiMax	2.9	SL	22 fl oz/a		B					
3	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
3	Intact		L	0.5 % v/v		B					
4	2,4-D ester	4	SL	1 pt/a		A	84	74	74	100	98
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
4	AMS		WG	17 lb/100 gal		A					
4	XtendiMax	2.9	SL	22 fl oz/a		B					
4	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
4	Intact		L	0.5 % v/v		B					
5	Sharpen	2.85	L	1 fl oz/a		A	100	84	91	100	99
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
5	MSO		L	1 % v/v		A					
5	AMS		WG	17 lb/100 gal		A					
5	XtendiMax	2.9	SL	22 fl oz/a		B					
5	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
5	Intact		L	0.5 % v/v		B					
6	Elevore		L	1 fl oz/a		A	83	65	54	85	99
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
6	AMS		WG	17 lb/100 gal		A					
6	XtendiMax	2.9	SL	22 fl oz/a		B					
6	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
6	Intact		L	0.5 % v/v		B					
7	Liberty	2.34	L	43 fl oz/a		A	99	87	83	95	74
7	AMS		WG	8.5 lb/100 gal		A					
7	XtendiMax	2.9	SL	22 fl oz/a		B					
7	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
7	Intact		L	0.5 % v/v		B					

* Adjusted means

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Pest Code	ERICA	POAAN	TAROF	ERICA	POAAN
Crop Code					
Rating Date	May-19-2017	May-19-2017	May-19-2017	May-31-2017	May-31-2017
Rating Type	control	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	9 DA-A	9 DA-A	9 DA-A	21 DA-A	21 DA-A
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*
8	Metribuzin	75	WG	8 oz/a		A	91	48	36	100	87
8	XtendiMax	2.9	SL	22 fl oz/a		A					
8	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
8	Intact		L	0.5 % v/v		A					
8	XtendiMax	2.9	SL	22 fl oz/a		B					
8	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
8	Intact		L	0.5 % v/v		B					
9	Metribuzin	75	WG	8 oz/a		A	93	48	65	100	92
9	2,4-D ester	4	SL	1 pt/a		A					
9	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
9	AMS		WG	17 lb/100 gal		A					
9	XtendiMax	2.9	SL	22 fl oz/a		B					
9	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
9	Intact		L	0.5 % v/v		B					
10	Metribuzin	75	WG	8 oz/a		A	100	66	88	100	93
10	Sharpen	2.85	L	1 fl oz/a		A					
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
10	MSO		L	1 % v/v		A					
10	AMS		WG	17 lb/100 gal		A					
10	XtendiMax	2.9	SL	22 fl oz/a		B					
10	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
10	Intact		L	0.5 % v/v		B					
11	Metribuzin	75	WG	8 oz/a		A	84	54	69	99	95
11	Elevore		L	1 fl oz/a		A					
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
11	AMS		WG	17 lb/100 gal		A					
11	XtendiMax	2.9	SL	22 fl oz/a		B					
11	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
11	Intact		L	0.5 % v/v		B					
12	Metribuzin	75	WG	8 oz/a		A	94	84	30	100	96
12	Liberty	2.34	L	43 fl oz/a		A					
12	AMS		WG	8.5 lb/100 gal		A					
12	XtendiMax	2.9	SL	22 fl oz/a		B					
12	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
12	Intact		L	0.5 % v/v		B					
LSD P=.05							13.2	19.0	13.2	7.2	6.8
Standard Deviation							9.2	13.2	9.2	5.0	4.7
CV							10.79	18.75	15.05	5.48	5.09

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Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code	TAROF	GLXMA	ERICA	GLXMA	ERICA	GLXMA
Crop Code	May-31-2017	Jun-15-2017	Jun-15-2017	Jul-5-2017	Jul-5-2017	Jul-17-2017
Rating Date	control	injury	control	injury	control	injury
Rating Type	percent	percent	percent	percent	percent	percent
Rating Unit	21 DA-A	36 DA-A	36 DA-A	56 DA-A	56 DA-A	12 DA-B
Trt-Eval Interval	0	0	0	0	0	0
Number of Decimals						

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*	*
1	Roundup PowerMax	4.5	SL	32 fl oz/a		A	81	0	5	0	18	0
1	AMS		WG	17 lb/100 gal		A						
1	XtendiMax	2.9	SL	22 fl oz/a		B						
1	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
1	Intact		L	0.5 % v/v		B						
2	XtendiMax	2.9	SL	22 fl oz/a		A	73	0	100	0	82	0
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
2	Intact		L	0.5 % v/v		A						
2	XtendiMax	2.9	SL	22 fl oz/a		B						
2	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
2	Intact		L	0.5 % v/v		B						
3	XtendiMax	2.9	SL	44 fl oz/a		A	80	0	100	0	96	0
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
3	Intact		L	0.5 % v/v		A						
3	XtendiMax	2.9	SL	22 fl oz/a		B						
3	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
3	Intact		L	0.5 % v/v		B						
4	2,4-D ester	4	SL	1 pt/a		A	85	0	75	0	58	0
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
4	AMS		WG	17 lb/100 gal		A						
4	XtendiMax	2.9	SL	22 fl oz/a		B						
4	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
4	Intact		L	0.5 % v/v		B						
5	Sharpen	2.85	L	1 fl oz/a		A	89	0	96	0	93	0
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
5	MSO		L	1 % v/v		A						
5	AMS		WG	17 lb/100 gal		A						
5	XtendiMax	2.9	SL	22 fl oz/a		B						
5	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
5	Intact		L	0.5 % v/v		B						
6	Elevore		L	1 fl oz/a		A	79	6	71	0	60	0
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
6	AMS		WG	17 lb/100 gal		A						
6	XtendiMax	2.9	SL	22 fl oz/a		B						
6	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
6	Intact		L	0.5 % v/v		B						
7	Liberty	2.34	L	43 fl oz/a		A	81	0	53	0	49	0
7	AMS		WG	8.5 lb/100 gal		A						
7	XtendiMax	2.9	SL	22 fl oz/a		B						
7	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
7	Intact		L	0.5 % v/v		B						

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Pest Code	TAROF	GLXMA	ERICA	GLXMA	ERICA	GLXMA
Crop Code	May-31-2017	Jun-15-2017	Jun-15-2017	Jul-5-2017	Jul-5-2017	Jul-17-2017
Rating Date	control	injury	control	injury	control	injury
Rating Type	percent	percent	percent	percent	percent	percent
Rating Unit	21 DA-A	36 DA-A	36 DA-A	56 DA-A	56 DA-A	12 DA-B
Trt-Eval Interval	0	0	0	0	0	0
Number of Decimals						

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*	*
8	Metribuzin	75	WG	8 oz/a		A	77	0	100	0	99	0
8	XtendiMax	2.9	SL	22 fl oz/a		A						
8	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
8	Intact	L		0.5 % v/v		A						
8	XtendiMax	2.9	SL	22 fl oz/a		B						
8	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
8	Intact	L		0.5 % v/v		B						
9	Metribuzin	75	WG	8 oz/a		A	85	0	100	0	92	0
9	2,4-D ester	4	SL	1 pt/a		A						
9	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
9	AMS		WG	17 lb/100 gal		A						
9	XtendiMax	2.9	SL	22 fl oz/a		B						
9	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
9	Intact	L		0.5 % v/v		B						
10	Metribuzin	75	WG	8 oz/a		A	80	0	100	0	96	0
10	Sharpen	2.85	L	1 fl oz/a		A						
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
10	MSO	L		1 % v/v		A						
10	AMS		WG	17 lb/100 gal		A						
10	XtendiMax	2.9	SL	22 fl oz/a		B						
10	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
10	Intact	L		0.5 % v/v		B						
11	Metribuzin	75	WG	8 oz/a		A	84	4	95	0	88	0
11	Elevore	L		1 fl oz/a		A						
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
11	AMS		WG	17 lb/100 gal		A						
11	XtendiMax	2.9	SL	22 fl oz/a		B						
11	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
11	Intact	L		0.5 % v/v		B						
12	Metribuzin	75	WG	8 oz/a		A	92	0	100	0	94	0
12	Liberty	2.34	L	43 fl oz/a		A						
12	AMS		WG	8.5 lb/100 gal		A						
12	XtendiMax	2.9	SL	22 fl oz/a		B						
12	Roundup PowerMax	4.5	SL	32 fl oz/a		B						
12	Intact	L		0.5 % v/v		B						
LSD P=.05							12.6	2.4	9.0	.	11.7	.
Standard Deviation							8.7	1.7	6.3	0.0	8.1	0.0
CV							10.63	188.82	7.59	0.0	10.58	0.0

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Trial ID: NTS10-17 **Location: Isabella Co.**

Investigator: Christy Sprague
Study Director: Sprague, Powell, Stiles

Pest Code	ERICA	GLXMA	ERICA	ERICA	ERICA
Crop Code	Jul-17-2017	Aug-1-2017	Aug-1-2017	Aug-16-2017	Sep-21-2017
Rating Date	control	injury	control	control	control
Rating Type	percent	percent	percent	percent	percent
Rating Unit	12 DA-B	27 DA-B	27 DA-B	42 DA-B	78 DA-B
Trt-Eval Interval	0	0	0	0	0
Number of Decimals					

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*
1	Roundup PowerMax	4.5	SL	32 fl oz/a		A	71	0	84	97	96
1	AMS		WG	17 lb/100 gal		A					
1	XtendiMax	2.9	SL	22 fl oz/a		B					
1	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
1	Intact		L	0.5 % v/v		B					
2	XtendiMax	2.9	SL	22 fl oz/a		A	95	0	97	98	99
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
2	Intact		L	0.5 % v/v		A					
2	XtendiMax	2.9	SL	22 fl oz/a		B					
2	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
2	Intact		L	0.5 % v/v		B					
3	XtendiMax	2.9	SL	44 fl oz/a		A	100	0	100	100	99
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
3	Intact		L	0.5 % v/v		A					
3	XtendiMax	2.9	SL	22 fl oz/a		B					
3	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
3	Intact		L	0.5 % v/v		B					
4	2,4-D ester	4	SL	1 pt/a		A	82	0	95	99	99
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
4	AMS		WG	17 lb/100 gal		A					
4	XtendiMax	2.9	SL	22 fl oz/a		B					
4	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
4	Intact		L	0.5 % v/v		B					
5	Sharpen	2.85	L	1 fl oz/a		A	99	0	100	99	97
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
5	MSO		L	1 % v/v		A					
5	AMS		WG	17 lb/100 gal		A					
5	XtendiMax	2.9	SL	22 fl oz/a		B					
5	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
5	Intact		L	0.5 % v/v		B					
6	Elevore		L	1 fl oz/a		A	89	0	99	100	99
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
6	AMS		WG	17 lb/100 gal		A					
6	XtendiMax	2.9	SL	22 fl oz/a		B					
6	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
6	Intact		L	0.5 % v/v		B					
7	Liberty	2.34	L	43 fl oz/a		A	81	0	95	96	97
7	AMS		WG	8.5 lb/100 gal		A					
7	XtendiMax	2.9	SL	22 fl oz/a		B					
7	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
7	Intact		L	0.5 % v/v		B					

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	ERICA	GLXMA	ERICA	ERICA	ERICA
Pest Code					
Crop Code					
Rating Date	Jul-17-2017	Aug-1-2017	Aug-1-2017	Aug-16-2017	Sep-21-2017
Rating Type	control	injury	control	control	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	12 DA-B	27 DA-B	27 DA-B	42 DA-B	78 DA-B
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*
8	Metribuzin	75	WG	8 oz/a		A	99	0	100	100	100
8	XtendiMax	2.9	SL	22 fl oz/a		A					
8	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
8	Intact		L	0.5 % v/v		A					
8	XtendiMax	2.9	SL	22 fl oz/a		B					
8	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
8	Intact		L	0.5 % v/v		B					
9	Metribuzin	75	WG	8 oz/a		A	99	0	100	99	95
9	2,4-D ester	4	SL	1 pt/a		A					
9	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
9	AMS		WG	17 lb/100 gal		A					
9	XtendiMax	2.9	SL	22 fl oz/a		B					
9	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
9	Intact		L	0.5 % v/v		B					
10	Metribuzin	75	WG	8 oz/a		A	100	0	95	100	98
10	Sharpen	2.85	L	1 fl oz/a		A					
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
10	MSO		L	1 % v/v		A					
10	AMS		WG	17 lb/100 gal		A					
10	XtendiMax	2.9	SL	22 fl oz/a		B					
10	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
10	Intact		L	0.5 % v/v		B					
11	Metribuzin	75	WG	8 oz/a		A	98	0	100	100	99
11	Elevore		L	1 fl oz/a		A					
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
11	AMS		WG	17 lb/100 gal		A					
11	XtendiMax	2.9	SL	22 fl oz/a		B					
11	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
11	Intact		L	0.5 % v/v		B					
12	Metribuzin	75	WG	8 oz/a		A	96	0	100	100	98
12	Liberty	2.34	L	43 fl oz/a		A					
12	AMS		WG	8.5 lb/100 gal		A					
12	XtendiMax	2.9	SL	22 fl oz/a		B					
12	Roundup PowerMax	4.5	SL	32 fl oz/a		B					
12	Intact		L	0.5 % v/v		B					
LSD P=.05							6.4	.	6.5	3.4	5.2
Standard Deviation							4.5	0.0	4.5	2.3	3.6
CV							4.84	0.0	4.65	2.37	3.72

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