

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18 Study Dir.: Sprague, Powell, Stiles
 Conducted: Isabella Co. Investigator: Christy Sprague

Planting Date: May-21-2018 **Row Spacing:** 30 IN
Variety: CZ 2312 LL **No. of Reps:** 4
Population: 148000 seeds/A **% OM:** 1.4
Soil Type: LS loamy sand **pH:** 4.9
Plot Size: 10 X 25 FT **Study Design:** Randomized Complete Block (RCB)

Tillage/Previous Crops: Soybean was no-tilled into soybean stubble.

Fertilizer:

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1	ERICA	horseweed	Conyza canadensis
2	CHEAL	lambsquarters, common	Chenopodium album
Crop	Code	Common Name	
1	GLXMA	Soybean	

Application Description

	A	B
Application Timing:	7 EPP	POST
Date Treated:	May-14-2018	Jul-10-2018
Time Treated:	2:00 PM	12:45 PM
% Cloud Cover:	20	10
Air Temp., Unit:	77 F	81 F
% Relative Humidity:	74	31
Wind Speed/Unit/Dir:	3 mph W	7 mph N
Soil Temp, Unit:	64 F	82 F
Leaf Moist/Dew Presence (Y/N):	4	5
Soil Moist:	3	5

Crop Stage at Each Application

	A	B
Crop 1 Name:	GLXMA	GLXMA
Height:		10-14 " (12)
Stage:		R1

Weed Stage at Each Application

	A	B
Weed 1 Name:	ERICA	ERICA
Height:	1 "	1-30 " (6)
Stage:	1-2L	5-50L
Weed 2 Name:	CHEAL	CHEAL
Height:		2-24 " (13)
Stage:		5-16L

Weed Density

	1	2
Date:	Jul-10-2018	Jul-10-2018
Weed Name:	ERICA	CHEAL
Density:	13 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	AIXR	11003	27 "	20 "	100 "	19 GPA	WATER	30 PSI

Comments: The horseweed (marestalk) in this trial is glyphosate-resistant (Group 9).

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code	ERICA	ERICA	ERICA	ERICA	CHEAL
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA	
Rating Date	Jun-6-2018	Jun-6-2018	Jun-21-2018	Jul-9-2018	Jul-9-2018
Rating Type	injury	control	control	injury	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	23 DA-A	23 DA-A	38 DA-A	56 DA-A	56 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	0	10	8	0	13
1	AMS		WG	17 lb/100 gal		A				0	
2	Sharpen	2.85	L	1 fl oz/a		A	6	96	95	0	73
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
2	MSO		L	1 % v/v		A					
2	AMS		WG	17 lb/100 gal		A					
2	Liberty	2.34	L	32 fl oz/a		B					
2	AMS		WG	17 lb/100 gal		B					
3	Metribuzin	75	WG	8 oz/a		A	11	100	100	0	83
3	Sharpen	2.85	L	1 fl oz/a		A					
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
3	MSO		L	1 % v/v		A					
3	AMS		WG	17 lb/100 gal		A					
3	Liberty	2.34	L	32 fl oz/a		B					
3	AMS		WG	17 lb/100 gal		B					
4	Zidua PRO	4.09	L	6 fl oz/a		A	10	100	100	0	100
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
4	MSO		L	1 % v/v		A					
4	AMS		WG	17 lb/100 gal		A					
4	Liberty	2.34	L	32 fl oz/a		B					
4	AMS		WG	17 lb/100 gal		B					
5	2,4-D ester	3.8	SL	1 pt/a		A	7	78	70	0	43
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
5	AMS		WG	17 lb/100 gal		A					
5	Liberty	2.34	L	32 fl oz/a		B					
5	AMS		WG	17 lb/100 gal		B					
6	Metribuzin	75	WG	8 oz/a		A	4	100	100	0	81
6	2,4-D ester	3.8	SL	1 pt/a		A					
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
6	AMS		WG	17 lb/100 gal		A					
6	Liberty	2.34	L	32 fl oz/a		B					
6	AMS		WG	17 lb/100 gal		B					
7	Liberty	2.34	L	32 fl oz/a		A	4	43	56	0	45
7	AMS		WG	17 lb/100 gal		A					
7	Liberty	2.34	L	32 fl oz/a		B					
7	AMS		WG	17 lb/100 gal		B					
8	Metribuzin	75	WG	8 oz/a		A	3	100	100	0	85
8	Liberty	2.34	L	32 fl oz/a		A					
8	AMS		WG	17 lb/100 gal		A					
8	Liberty	2.34	L	32 fl oz/a		B					
8	AMS		WG	17 lb/100 gal		B					

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code		ERICA	ERICA	ERICA	CHEAL
Crop Code	GLXMA			GLXMA	
Rating Date	Jun-6-2018	Jun-6-2018	Jun-21-2018	Jul-9-2018	Jul-9-2018
Rating Type	injury	control	control	injury	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	23 DA-A	23 DA-A	38 DA-A	56 DA-A	56 DA-A
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code						
9	Valor	51	WG	2 oz/a		A	8	87	70	0	63	81
9	2,4-D ester	3.8	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	Liberty	2.34	L	32 fl oz/a		B						
9	AMS		WG	17 lb/100 gal		B						
10	Valor	51	WG	2 oz/a		A	10	99	100	0	98	91
10	Metribuzin	75	WG	8 oz/a		A						
10	2,4-D ester	3.8	SL	1 pt/a		A						
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
10	AMS		WG	17 lb/100 gal		A						
10	Liberty	2.34	L	32 fl oz/a		B						
10	AMS		WG	17 lb/100 gal		B						
11	Authority MTZ	45	WG	16 oz/a		A	9	100	99	0	98	93
11	2,4-D ester	3.8	SL	1 pt/a		A						
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
11	AMS		WG	17 lb/100 gal		A						
11	Liberty	2.34	L	32 fl oz/a		B						
11	AMS		WG	17 lb/100 gal		B						
12	Authority MTZ	45	WG	16 oz/a		A	7	100	100	0	100	100
12	2,4-D ester	3.8	SL	1 pt/a		A						
12	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
12	AMS		WG	17 lb/100 gal		A						
12	Liberty	2.34	L	32 fl oz/a		B						
12	Warrant	3	L	3 pt/a		B						
12	AMS		WG	17 lb/100 gal		B						
LSD P=.05							11.1	16.9	14.8	.	13.1	20.2
Standard Deviation							7.7	11.7	10.3	0.0	9.1	14.0
CV							118.99	13.91	12.35	0.0	12.18	19.01

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code	ERICA	CHEAL	ERICA	CHEAL	ERICA
Crop Code	GLXMA				
Rating Date	Jul-24-2018	Jul-24-2018	Jul-24-2018	Aug-9-2018	Aug-9-2018
Rating Type	injury	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent
Trt-Eval Interval	14 DA-B	14 DA-B	14 DA-B	30 DA-B	30 DA-B
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	ERICA	CHEAL	ERICA	CHEAL	ERICA
1	Roundup PowerMax	4.5	SL	32 fl oz/a		A	0	10	25	0	0
1	AMS		WG	17 lb/100 gal		A					
2	Sharpen	2.85	L	1 fl oz/a		A	0	100	94	100	88
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
2	MSO		L	1 % v/v		A					
2	AMS		WG	17 lb/100 gal		A					
2	Liberty	2.34	L	32 fl oz/a		B					
2	AMS		WG	17 lb/100 gal		B					
3	Metribuzin	75	WG	8 oz/a		A	1	100	99	100	88
3	Sharpen	2.85	L	1 fl oz/a		A					
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
3	MSO		L	1 % v/v		A					
3	AMS		WG	17 lb/100 gal		A					
3	Liberty	2.34	L	32 fl oz/a		B					
3	AMS		WG	17 lb/100 gal		B					
4	Zidua PRO	4.09	L	6 fl oz/a		A	1	100	100	100	100
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
4	MSO		L	1 % v/v		A					
4	AMS		WG	17 lb/100 gal		A					
4	Liberty	2.34	L	32 fl oz/a		B					
4	AMS		WG	17 lb/100 gal		B					
5	2,4-D ester	3.8	SL	1 pt/a		A	1	97	93	91	86
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
5	AMS		WG	17 lb/100 gal		A					
5	Liberty	2.34	L	32 fl oz/a		B					
5	AMS		WG	17 lb/100 gal		B					
6	Metribuzin	75	WG	8 oz/a		A	0	100	98	100	95
6	2,4-D ester	3.8	SL	1 pt/a		A					
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A					
6	AMS		WG	17 lb/100 gal		A					
6	Liberty	2.34	L	32 fl oz/a		B					
6	AMS		WG	17 lb/100 gal		B					
7	Liberty	2.34	L	32 fl oz/a		A	0	99	94	95	86
7	AMS		WG	17 lb/100 gal		A					
7	Liberty	2.34	L	32 fl oz/a		B					
7	AMS		WG	17 lb/100 gal		B					
8	Metribuzin	75	WG	8 oz/a		A	0	100	98	100	94
8	Liberty	2.34	L	32 fl oz/a		A					
8	AMS		WG	17 lb/100 gal		A					
8	Liberty	2.34	L	32 fl oz/a		B					
8	AMS		WG	17 lb/100 gal		B					

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code		ERICA	CHEAL	ERICA	CHEAL	ERICA
Crop Code	GLXMA					
Rating Date	Jul-24-2018	Jul-24-2018	Jul-24-2018	Aug-9-2018	Aug-9-2018	Sep-21-2018
Rating Type	injury	control	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent	percent
Trt-Eval Interval	14 DA-B	14 DA-B	14 DA-B	30 DA-B	30 DA-B	30 DA-B
Number of Decimals	0	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code						
9	Valor	51	WG	2 oz/a		A	0	98	99	93	93	98
9	2,4-D ester	3.8	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	Liberty	2.34	L	32 fl oz/a		B						
9	AMS		WG	17 lb/100 gal		B						
10	Valor	51	WG	2 oz/a		A	0	100	99	100	96	100
10	Metribuzin	75	WG	8 oz/a		A						
10	2,4-D ester	3.8	SL	1 pt/a		A						
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
10	AMS		WG	17 lb/100 gal		A						
10	Liberty	2.34	L	32 fl oz/a		B						
10	AMS		WG	17 lb/100 gal		B						
11	Authority MTZ	45	WG	16 oz/a		A	0	100	100	100	100	100
11	2,4-D ester	3.8	SL	1 pt/a		A						
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
11	AMS		WG	17 lb/100 gal		A						
11	Liberty	2.34	L	32 fl oz/a		B						
11	AMS		WG	17 lb/100 gal		B						
12	Authority MTZ	45	WG	16 oz/a		A	1	100	100	100	100	100
12	2,4-D ester	3.8	SL	1 pt/a		A						
12	Roundup PowerMax	4.5	SL	32 fl oz/a		A						
12	AMS		WG	17 lb/100 gal		A						
12	Liberty	2.34	L	32 fl oz/a		B						
12	Warrant	3	L	3 pt/a		B						
12	AMS		WG	17 lb/100 gal		B						
LSD	P=.05						1.9	4.3	5.2	5.2	7.8	8.2
Standard Deviation							1.3	3.0	3.6	3.6	5.4	5.7
CV							389.87	3.29	3.94	3.99	6.36	6.41

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

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

Pest Code	CHEAL
Crop Code	
Rating Date	Sep-21-2018
Rating Type	control
Rating Unit	percent
Trt-Eval Interval	73 DA-B
Number of Decimals	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	0
1	AMS		WG	17 lb/100 gal		A	
2	Sharpen	2.85	L	1 fl oz/a		A	73
2	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
2	MSO		L	1 % v/v		A	
2	AMS		WG	17 lb/100 gal		A	
2	Liberty	2.34	L	32 fl oz/a		B	
2	AMS		WG	17 lb/100 gal		B	
3	Metribuzin	75	WG	8 oz/a		A	76
3	Sharpen	2.85	L	1 fl oz/a		A	
3	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
3	MSO		L	1 % v/v		A	
3	AMS		WG	17 lb/100 gal		A	
3	Liberty	2.34	L	32 fl oz/a		B	
3	AMS		WG	17 lb/100 gal		B	
4	Zidua PRO	4.09	L	6 fl oz/a		A	100
4	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
4	MSO		L	1 % v/v		A	
4	AMS		WG	17 lb/100 gal		A	
4	Liberty	2.34	L	32 fl oz/a		B	
4	AMS		WG	17 lb/100 gal		B	
5	2,4-D ester	3.8	SL	1 pt/a		A	62
5	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
5	AMS		WG	17 lb/100 gal		A	
5	Liberty	2.34	L	32 fl oz/a		B	
5	AMS		WG	17 lb/100 gal		B	
6	Metribuzin	75	WG	8 oz/a		A	92
6	2,4-D ester	3.8	SL	1 pt/a		A	
6	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
6	AMS		WG	17 lb/100 gal		A	
6	Liberty	2.34	L	32 fl oz/a		B	
6	AMS		WG	17 lb/100 gal		B	
7	Liberty	2.34	L	32 fl oz/a		A	53
7	AMS		WG	17 lb/100 gal		A	
7	Liberty	2.34	L	32 fl oz/a		B	
7	AMS		WG	17 lb/100 gal		B	
8	Metribuzin	75	WG	8 oz/a		A	75
8	Liberty	2.34	L	32 fl oz/a		A	
8	AMS		WG	17 lb/100 gal		A	
8	Liberty	2.34	L	32 fl oz/a		B	
8	AMS		WG	17 lb/100 gal		B	

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.

Glyphosate-resistant horseweed control in LibertyLink soybean

Trial ID: NTS07-18

Location: Isabella Co.

Investigator: Christy Sprague

Study Director: Sprague, Powell, Stiles

Pest Code	CHEAL
Crop Code	
Rating Date	Sep-21-2018
Rating Type	control
Rating Unit	percent
Trt-Eval Interval	73 DA-B
Number of Decimals	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
9	Valor	51	WG	2 oz/a		A	77
9	2,4-D ester	3.8	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	Liberty	2.34	L	32 fl oz/a		B	
9	AMS		WG	17 lb/100 gal		B	
10	Valor	51	WG	2 oz/a		A	87
10	Metribuzin	75	WG	8 oz/a		A	
10	2,4-D ester	3.8	SL	1 pt/a		A	
10	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
10	AMS		WG	17 lb/100 gal		A	
10	Liberty	2.34	L	32 fl oz/a		B	
10	AMS		WG	17 lb/100 gal		B	
11	Authority MTZ	45	WG	16 oz/a		A	100
11	2,4-D ester	3.8	SL	1 pt/a		A	
11	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
11	AMS		WG	17 lb/100 gal		A	
11	Liberty	2.34	L	32 fl oz/a		B	
11	AMS		WG	17 lb/100 gal		B	
12	Authority MTZ	45	WG	16 oz/a		A	100
12	2,4-D ester	3.8	SL	1 pt/a		A	
12	Roundup PowerMax	4.5	SL	32 fl oz/a		A	
12	AMS		WG	17 lb/100 gal		A	
12	Liberty	2.34	L	32 fl oz/a		B	
12	Warrant	3	L	3 pt/a		B	
12	AMS		WG	17 lb/100 gal		B	
	LSD P=.05						13.1
	Standard Deviation						9.1
	CV						12.25

Missing data estimates are included in columns: Average=1,4,7,12,13

Could not calculate LSD (% mean diff) for columns 4 because error mean square = 0.