

Managing Glyphosate Resistant Common Waterhemp with Different Systems and Herbicide Rates in LibertyLink Soybean in SE Minnesota in 2015.

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The objective of this trial was to evaluate systems for controlling glyphosate resistant waterhemp in southeastern Minnesota. The research site was a Lawler loam series with pH of 6.7, O.M. 2.8 % and soil test P and K levels of 34 ppm and 175 ppm, respectively. In the spring the field was disked and field cultivated once prior to planting. The previous crop was alfalfa/fallow/soybean. The soybean variety was Stine 22LD23 (LibertyLink) and was planted on May 5, 2015 at a depth of 1.5 inches in 30 inch rows at a rate of 135,000 seeds per acre. A randomized complete block design was used with three replications. Preemergence (PRE) treatments were applied with a tractor mounted sprayer delivering 15 gpa at 40 psi using TTI 110015 spray tips. POST applications for contact herbicides were made using TTI J60 spray tips delivering 15 gpa at 30 psi. Evaluations were taken May 27, June 10, June 19, June 23, June 30, July 8 and September 28. The center two rows of each plot were machine harvested on October 13, 2015. Application dates, environmental conditions, and weed stages can be found in Table 1. Performance ratings for common waterhemp, common lambsquarters, and grass control and crop injury can be found in Tables 2 through 5, respectively. (University of Minnesota Extension Regional Office, Rochester.)

Table 1. Application timing, plant stage, environmental conditions.

Date	5/5	6/5	6/16	6/23	6/24	7/2	7/4
Treatment	PRE	POST I	POST II	POST III	Cultivation	POST IV	Cultivation
Temperature (F)							
Air	55	68	72	74		71	
Soil	57	65.3	71.8	71.2		70.0	
Relative Humidity (%)	83	78	53	49		50	
Wind (mph)	20	12	0	9		6	
Soil Moisture	Normal	Normal	Normal	Normal		SLIWet	
Soybean							
Stage		V2	V4	V6		V8	
Height (inch)		5.0	11.0	14.5		19.0	
Common Lambsquarter							
Weed Density (ft ²)							
Height (inch)		3.6				2.6	
Common Waterhemp							
Weed Density (ft ²)							
Height (inch)		2.0	1.5	1.9		3.0	
Grass							
Weed Density (ft ²)							
Height (inch)		1.8	4.3	4.3		3.9	
Rainfall after each application (inch)							
Week 1	1.53	2.82	0.78	1.17		0.69	0.69
Week 2	1.06	0.28	1.17	1.15		0.30	1.25
Week 3	1.48	0.78	1.15	0.99		1.64	0.69

Table 2. Common waterhemp control in LibertyLink soybean in southeastern Minnesota in 2015.

Pest Code						Common Waterhemp							YIELD						
Rating Date						May-27-2015	Jun-10-2015	Jun-23-2015	Jun-30-2015	Jul-8-2015	Sep-28-2015	Oct-13-2015							
No.	Name	Rate	Unit	Stage	Code Description	Percent Control (%)							BU/A						
1	UNTREATED CHECK					0	c	0	e	0	e	0	g	0	f	0	f	9.8	j
PRE / POST II 5-5-15 / 6-6-15																			
12	SOA 14, 15 / 10 / 10					99	a	99	a	99	a	98	ab	98	ab	99	a	54.3	c-f
	PREFIX	2pt/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
14	SOA 14, 15 / 1, 14					99	a	78	d	99	a	99	a	98	ab	99	a	39.7	i
	VERDICT	5fl oz/a		PREPRE	A														
	COBRA	10fl oz/a		MIDPOWE	C														
	SELECT MAX	15fl oz/a		MIDPOWE	C														
	COC	1.5pt/a		MIDPOWE	C														
	AMS	17lb/100 gal		MIDPOWE	C														
PRE / POST II / POS IV 5-5-15 / 6-6-15 / 7-2-15																			
7	SOA 2, 14 / 10 / 10					99	a	98	a	99	a	94	cd	99	a	99	a	55.5	b-e
	ENLITE 2.8 OZ/A																		
	Classic	0.005lb ai/a		PREPRE	A														
	Harmony	0.015lb ai/a		PREPRE	A														
	VALOR SX	0.063lb ai/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
8	SOA 14, 15 / 10 / 10					99	b	73	d	98	a	92	de	97	abc	99	a	52.9	d-h
	VERDICT	5fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
9	SOA 5, 15 / 10 / 10					99	a	87	c	98	ab	95	bcd	97	abc	98	abc	53.5	g
	BOUNDARY	1.5pt/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
15	SOA 14, 15 / 14 / 1, 14					99	b	77	d	99	a	99	a	99	a	98	bcd	49.9	gh
	VERDICT	5fl oz/a		PREPRE	A														
	COBRA	10fl oz/a		MIDPOWE	C														
	COC	1.5pt/a		MIDPOWE	C														
	AMS	17lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
PRE / POST III 5-5-15 / 6-23-15																			
2	SOA 2, 14 / 10 / 10					99	a	99	a	99	a	99	a	99	a	99	a	59.1	ab
	AUTHORITY FIRST	6.4oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
3	SOA 2, 14 / 10 / 10					99	a	99	a	98	a	99	a	98	ab	99	a	54.2	c-f
	AUTHORITY FIRST	4oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
4	SOA 14, 15 / 10 / 10					99	a	99	a	99	a	98	ab	97	abc	99	ab	54.6	c-f
	FIERCE	3.75oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
5	SOA 14, 15 / 10 / 10					99	a	99	a	99	a	99	a	96	bcd	99	ab	54.0	c-f
	FIERCE	3.0oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
6	SOA 2, 14, 15 / 10 / 10					99	a	97	a	91	c	97	abc	96	bcd	97	de	60.0	a
	OPTILL PRO																		
	OPTILL	2oz/a		PREPRE	A														
	OUTLOOK	10fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
10	SOA 14, 15 / 10 / 10					99	a	99	a	97	ab	99	a	99	a	99	a	52.5	e-h
	AUTHORITY ELITE	32fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
11	SOA 14, 15 / 10 / 10					99	a	99	a	98	a	99	a	97	abc	99	a	56.6	a-d
	AUTHORITY ELITE	24fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
13	SOA 5, 15 / 1, 14, 15					99	a	94	ab	94	abc	99	a	99	a	99	a	49.3	h
	BOUNDARY	1.95pt/a		PREPRE	A														
	PREFIX	2pt/a		MIDPOWE	D														
	FUSION	10fl oz/a		MIDPOWE	D														
	NIS	0.5% v/v		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
PRE / CULTIVATION I 5-5-15 / 6-23-15																			
19	SOA 5, 15					99	a	91	bc	91	c	95	a-d	83	e	97	e	56.6	a-d
	BOUNDARY	1.95pt/a		PREPRE	A														
	CULTIVATION			EAPOWE	D														
PRE / CULTIVATION II / CULTIVATION II 5-5-15 / 6-23-15 / 7/4/15																			
20	SOA 5, 15					99	a	91	bc	90	c	96	abc	95	cd	98	bcd	56.4	a-e
	BOUNDARY	1.95pt/a		PREPRE	A														
	CULTIVATION			EAPOWE	D														
	CULTIVATION			LAPOWE	E														
POST I / POST II 6-5-2015 / 6-23-15																			
18	SOA 10 / 10					0	c	91	bc	83	d	98	abc	94	d	98	cd	57.7	abc
	LIBERTY 280	29fl oz/a		EAPOWE	B														
	AMS	8.5lb/100 gal		EAPOWE	B														
	LIBERTY 280	29fl oz/a		LAPOWE	D														
	AMS	8.5lb/100 gal		LAPOWE	D														
POST I / POST II 6-5-2015 / 7-2-15																			
16	SOA 10, 14, 15 / 10, 15					0	c	98	a	93	bc	86	f	99	a	98	abc	54.4	c-f
	LIBERTY 280	29fl oz/a		EAPOWE	B														
	AMS	8.5lb/100 gal		EAPOWE	B														
	PREFIX	2pt/a																	

Table 3. Common lambsquarters control in Liberty Link soybeans in southeastern, MN in 2015.

Pest Code	Rating Date	Common Lambsquarters										YIELD Oct-13-2015 Bu/A					
		May-27-2015		Jun-10-2015		Jun-23-2015		Jun-30-2015		Jul-8-2015			Sep-28-2015				
No. Name	Rate Unit	Stage	Code Description	Percent Control (%)													
1 UNTREATED CHECK				0	f	0	f	0	e	0	e	0	f	0	d	9.8	j
PRE / POST II 5-5-15 / 6-6-15																	
12 SOA 14, 15 / 10 / 10				97	e	93	abc	99	a	98	ab	96	ab	98	a	54.3	c-f
PREFIX	2pt/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	C														
AMS	8.5lb/100 gal	MIDPOWE	C														
14 SOA 14, 15 / 1, 14				98	abc	84	de	88	cd	77	d	75	e	76	c	39.7	i
VERDICT	5fl oz/a	PREPRE	A														
COBRA	10fl oz/a	MIDPOWE	C														
SELECT MAX	15fl oz/a	MIDPOWE	C														
COC	1.5pt/a	MIDPOWE	C														
AMS	17lb/100 gal	MIDPOWE	C														
AMS	17lb/100 gal	MIDPOWE	C														
PRE / POST II / POS IV 5-5-15 / 6-6-15 / 7-2-15																	
7 SOA 2, 14 / 10 / 10				98	bcd	99	a	99	a	97	ab	99	a	99	a	55.5	b-e
ENLITE 2.8 OZ/A																	
Classic	0.005lb ai/a	PREPRE	A														
Harmony	0.015lb ai/a	PREPRE	A														
VALOR SX	0.063lb ai/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	C														
AMS	8.5lb/100 gal	MIDPOWE	C														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
8 SOA 14, 15 / 10 / 10				97	de	82	e	99	a	93	bc	98	ab	98	a	52.9	d-h
VERDICT	5fl oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	C														
AMS	8.5lb/100 gal	MIDPOWE	C														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
9 SOA 5,15 / 10 / 10				98	bcd	88	cde	97	a	94	abc	98	a	98	a	53.5	d-g
BOUNDARY	1.5pt/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	C														
AMS	8.5lb/100 gal	MIDPOWE	C														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
15 SOA 14, 15 / 14 / 1, 14				98	abc	84	de	87	d	78	d	97	ab	96	ab	49.9	gh
VERDICT	5fl oz/a	PREPRE	A														
COBRA	10fl oz/a	MIDPOWE	C														
COC	1.5pt/a	MIDPOWE	C														
AMS	17lb/100 gal	MIDPOWE	C														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
PRE / POST III 5-5-15 / 6-23-15																	
2 SOA 2, 14 / 10 / 10				99	a	99	a	99	a	99	a	99	a	99	a	59.1	ab
AUTHORITY FIRST	6.4oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
3 SOA 2, 14 / 10 / 10				99	a	99	a	99	a	99	a	98	a	99	a	54.2	c-f
AUTHORITY FIRST	4oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
4 SOA 14, 15 / 10 / 10				99	a	98	a	98	a	98	ab	97	ab	98	a	54.6	c-f
FIERCE	3.75oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
5 SOA 14, 15 / 10 / 10				98	cd	96	ab	96	ab	98	ab	96	ab	98	a	54.0	c-f
FIERCE	3.0oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
6 SOA 2, 14, 15 / 10 / 10				99	a	99	a	99	a	98	ab	97	ab	99	a	60.0	a
OPTILL PRO																	
OPTILL	2oz/a	PREPRE	A														
OUTLOOK	10fl oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
10 SOA 14, 15 / 10 / 10				99	a	99	a	99	a	99	a	99	a	99	a	52.5	e-h
AUTHORITY ELITE	32fl oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
11 SOA 14, 15 / 10 / 10				99	a	99	a	99	a	99	a	98	ab	99	a	56.6	a-d
AUTHORITY ELITE	24fl oz/a	PREPRE	A														
LIBERTY 280	29fl oz/a	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
13 SOA 5, 15 / 1, 14, 15				99	ab	92	abc	91	bcd	91	c	88	c	91	b	49.3	h
BOUNDARY	1.95pt/a	PREPRE	A														
PREFIX	2pt/a	MIDPOWE	D														
FUSION	10fl oz/a	MIDPOWE	D														
NIS	0.5% v/v	MIDPOWE	D														
AMS	8.5lb/100 gal	MIDPOWE	D														
PRE / CULTIVATION I 5-5-15 / 6-23-15																	
19 SOA 5, 15				99	ab	90	bcd	87	d	93	bc	83	d	95	ab	56.6	a-d
BOUNDARY	1.95pt/a	PREPRE	A														
CULTIVATION		EAPOWE	D														
PRE / CULTIVATION I / CULTIVATION II 5-5-15 / 6-23-15 / 7/4/15																	
20 SOA 5, 15				99	ab	88	b-e	88	cd	94	abc	95	ab	97	a	56.4	a-e
BOUNDARY	1.95pt/a	PREPRE	A														
CULTIVATION		EAPOWE	D														
CULTIVATION		LAPOWE	E														
POST I / POST II 6-5-2015 / 6-23-15																	
18 SOA 10 / 10				0	f	98	a	87	d	98	ab	94	b	97	a	57.7	abc
LIBERTY 280	29fl oz/a	EAPOWE	B														
AMS	8.5lb/100 gal	EAPOWE	B														
LIBERTY 280	29fl oz/a	LAPOWE	D														
AMS	8.5lb/100 gal	LAPOWE	D														
POST I / POST II 6-5-2015 / 7-2-15																	
16 SOA 10, 14, 15 / 10, 15				0	f	99	a	94	abc	90	c	99	a	99	a	54.4	c-f
LIBERTY 280	29fl oz/a	EAPOWE	B														
AMS	8.5lb/100 gal	EAPOWE	B														
PREFIX	2pt/a	EAPOWE	B														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
WARRANT	3pt/a	LAPOWE	E														
17 SOA 10, 14, 15 / 10				0	f	99	a	97	ab	92	c	99	a	99	a	51.2	fgh
LIBERTY 280	29fl oz/a	EAPOWE	B														
AMS	8.5lb/100 gal	EAPOWE	B														
PREFIX	2pt/a	EAPOWE	B														
LIBERTY 280	29fl oz/a	LAPOWE	E														
AMS	8.5lb/100 gal	LAPOWE	E														
LSD P=.10 for weed control, P=.20 for yield				0.9		7.7		6.5		5.1		4.0		5.2		4.0	

Means followed by same letter or symbol do not significantly

Table 4. Grass control in Liberty Link soybeans in southeastern, MN in 2015.

Pest Code	Rating Date	Grass										Yield								
		May-27-2015		Jun-10-2015		Jun-23-2015		Jun-30-2015		Jul-8-2015		Sep-28-2015		Oct-13-15						
No.	Name	Rate	Unit	Stage	Code	Description	Percent Control (%)										Bu/A			
1	UNTREATED CHECK						0	d	0	i	0	f	0	f	0	f	0	c	9.8	j
PRE / POST II 5-5-15 / 6-6-15																				
12	SOA 14, 15 / 10 / 10						99	a	99	a	99	a	99	a	99	a	99	a	54.3	c-f
	PREFIX	2pt/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
14	SOA 14, 15 / 1, 14						98	ab	83	fg	99	a	97	abc	97	cde	99	a	39.7	i
	VERDICT	5fl oz/a		PREPRE	A															
	COBRA	10fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	SELECT MAX	15fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	COC	1.5pt/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	17lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
PRE / POST II / POS IV 5-5-15 / 6-6-15 / 7-2-15																				
7	SOA 2, 14 / 10 / 10						95	c	82	g	99	a	94	bcd	98	abc	99	a	55.5	b-e
	ENLITE 2.8 OZ/A																			
	Classic	0.005lb ai/a		PREPRE	A															
	Harmony	0.015lb ai/a		PREPRE	A															
	VALOR SX	0.063lb ai/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
	LIBERTY 280	29fl oz/a		LAPOWE	E	BEFORE R1														
	AMS	8.5lb/100 gal		LAPOWE	E	BEFORE R1														
8	SOA 14, 15 / 10 / 10						97	b	73	h	99	a	94	cd	99	ab	99	ab	52.9	d-h
	VERDICT	5fl oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
	LIBERTY 280	29fl oz/a		LAPOWE	E	BEFORE R1														
	AMS	8.5lb/100 gal		LAPOWE	E	BEFORE R1														
9	SOA 5, 15 / 10 / 10						99	a	98	a	99	a	98	ab	99	a	98	b	53.5	d-g
	BOUNDARY	1.5pt/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
	LIBERTY 280	29fl oz/a		LAPOWE	E	BEFORE R1														
	AMS	8.5lb/100 gal		LAPOWE	E	BEFORE R1														
15	SOA 14, 15 / 14 / 1, 14						98	ab	83	fg	81	e	70	e	98	abc	99	ab	49.9	gh
	VERDICT	5fl oz/a		PREPRE	A															
	COBRA	10fl oz/a		MIDPOWE	C	1-3 INCH WEEDS														
	COC	1.5pt/a		MIDPOWE	C	1-3 INCH WEEDS														
	AMS	17lb/100 gal		MIDPOWE	C	1-3 INCH WEEDS														
	LIBERTY 280	29fl oz/a		LAPOWE	E	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		LAPOWE	E	1-3 INCH WEEDS														
PRE / POST III 5-5-15 / 6-23-15																				
2	SOA 2, 14 / 10 / 10						99	a	92	cd	91	cd	99	a	98	abc	99	a	59.1	ab
	AUTHORITY FIRST	6.4oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
3	SOA 2, 14 / 10 / 10						98	a	87	ef	83	e	97	ab	98	bcd	99	a	54.2	c-f
	AUTHORITY FIRST	4oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
4	SOA 14, 15 / 10 / 10						98	a	94	bcd	95	ab	97	abc	97	de	98	b	54.6	c-f
	FIERCE	3.75oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
5	SOA 14, 15 / 10 / 10						99	a	90	de	88	d	97	ab	97	de	98	b	54.0	c-f
	FIERCE	3.0oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
6	SOA 2, 14, 15 / 10 / 10						99	a	97	ab	97	a	97	abc	98	bcd	99	ab	60.0	a
	OPTILL PRO																			
	OPTILL	2oz/a		PREPRE	A															
	OUTLOOK	10fl oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
10	SOA 14, 15 / 10 / 10						99	a	99	a	98	a	99	a	99	a	99	a	52.5	e-h
	AUTHORITY ELITE	32fl oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
11	SOA 14, 15 / 10 / 10						99	a	98	a	96	ab	99	a	99	ab	99	a	56.6	a-d
	AUTHORITY ELITE	24fl oz/a		PREPRE	A															
	LIBERTY 280	29fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
13	SOA 5, 15 / 1, 14, 15						98	a	99	a	97	a	98	a	99	a	99	a	49.3	h
	BOUNDARY	1.95pt/a		PREPRE	A															
	PREFIX	2pt/a		MIDPOWE	D	1-3 INCH WEEDS														
	FUSION	10fl oz/a		MIDPOWE	D	1-3 INCH WEEDS														
	NIS	0.5% v/v		MIDPOWE	D	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal		MIDPOWE	D	1-3 INCH WEEDS														
PRE / CULTIVATION I 5-5-15 / 6-23-15																				
19	SOA 5, 15						99	a	99	a	98	a	99	a	99	a	98	b	56.6	a-d
	BOUNDARY	1.95pt/a		PREPRE	A															
	CULTIVATION			EAPOWE	D	1-3 INCH WEEDS														
PRE / CULTIVATION I / CULTIVATION II 5-5-15 / 6-23-15 / 7/4/15																				
20	SOA 5, 15						99	a	99	a	97	ab	99	a	99	a	99	a	56.4	a-e
	BOUNDARY	1.95pt/a		PREPRE	A															
	CULTIVATION			EAPOWE	D	1-3 INCH WEEDS														
	CULTIVATION			LAPOWE	E	BEFORE R1														
POST / POST II 6-5-2015 / 6-23-15																				
18	SOA 10 / 10						0	d	96	abc	93	bc	97	ab	96	e	98	b	57.7	abc
	LIBERTY 280	29fl oz/a		EAPOWE	B	1-3 INCH WEEDS														
	AMS	8.5lb/100 gal																		

Table 5. Crop response to systems for controlling common waterhemp in soybean in 2015.

Rating Date						May-27-2015	Jun-10-2015	Jun-19-2015	Jun-23-2015	Jun-30-2015	Jul-8-2015	Oct-13-2015							
No.	Name	Rate	Unit	Stage	Code Description	Percent Injury (%)						YIELD Bu/A							
1	UNTREATED CHECK					0	d	0	c	0	e	0	c	0	d	0	c	9.8	j
PRE / POST II 5-5-15 / 6-6-15																			
12	SOA 14, 15 / 10 / 10					0	d	0	c	27	cd	15	b	0	d	8	b	54.3	c-f
	PREFIX	2pt/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
14	SOA 14, 15 / 1, 14					0	d	0	c	63	a	45	a	20	b	0	c	39.7	i
	VERDICT	5fl oz/a		PREPRE	A														
	COBRA	10fl oz/a		MIDPOWE	C														
	SELECT MAX	15fl oz/a		MIDPOWE	C														
	COC	1.5pt/a		MIDPOWE	C														
	AMS	17lb/100 gal		MIDPOWE	C														
PRE / POST II / POS IV 5-5-15 / 6-6-15 / 7-2-15																			
7	SOA 2, 14 / 10 / 10					0	d	0	c	27	cd	15	b	0	d	15	a	55.5	b-e
	ENLITE 2.8 OZ/A																		
	Classic	0.005lb ai/a		PREPRE	A														
	Harmony	0.015lb ai/a		PREPRE	A														
	VALOR SX	0.063lb ai/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
8	SOA 14, 15 / 10 / 10					0	d	0	c	30	bc	15	b	0	d	15	a	52.9	d-h
	VERDICT	5fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
9	SOA 5, 15 / 10 / 10					0	d	0	c	25	d	15	b	0	d	15	a	53.5	d-g
	BOUNDARY	1.5pt/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	C														
	AMS	8.5lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
15	SOA 14, 15 / 14 / 1, 14					0	d	0	c	63	a	45	a	20	b	15	a	49.9	gh
	VERDICT	5fl oz/a		PREPRE	A														
	COBRA	10fl oz/a		MIDPOWE	C														
	COC	1.5pt/a		MIDPOWE	C														
	AMS	17lb/100 gal		MIDPOWE	C														
	LIBERTY 280	29fl oz/a		LAPOWE	E														
	AMS	8.5lb/100 gal		LAPOWE	E														
PRE / POST III 5-5-15 / 6-23-15																			
2	SOA 2, 14 / 10 / 10					3	cd	0	c	0	e	0	c	10	c	0	c	59.1	ab
	AUTHORITY FIRST	6.4oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
3	SOA 2, 14 / 10 / 10					0	d	0	c	0	e	0	c	10	c	0	c	54.2	c-f
	AUTHORITY FIRST	4oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
4	SOA 14, 15 / 10 / 10					12	a	0	c	0	e	0	c	10	c	0	c	54.6	c-f
	FIERCE	3.75oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
5	SOA 14, 15 / 10 / 10					3	cd	0	c	0	e	0	c	10	c	0	c	54.0	c-f
	FIERCE	3.0oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
6	SOA 2, 14, 15 / 10 / 10					5	bc	0	c	0	e	0	c	10	c	0	c	60.0	a
	OPTILL PRO																		
	OPTILL	2oz/a		PREPRE	A														
	OUTLOOK	10fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
10	SOA 14, 15 / 10 / 10					8	ab	0	c	0	e	0	c	10	c	0	c	52.5	e-h
	AUTHORITY ELITE	32fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
11	SOA 14, 15 / 10 / 10					5	bc	0	c	0	e	0	c	10	c	0	c	56.6	a-d
	AUTHORITY ELITE	24fl oz/a		PREPRE	A														
	LIBERTY 280	29fl oz/a		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
13	SOA 5, 15 / 1, 14, 15					0	d	0	c	0	e	0	c	43	a	7	b	49.3	h
	BOUNDARY	1.95pt/a		PREPRE	A														
	PREFIX	2pt/a		MIDPOWE	D														
	FUSION	10fl oz/a		MIDPOWE	D														
	NIS	0.5% v/v		MIDPOWE	D														
	AMS	8.5lb/100 gal		MIDPOWE	D														
PRE / CULTIVATION I 5-5-15 / 6-23-15																			
19	SOA 5, 15					3	cd	0	c	0	e	0	c	0	d	0	c	56.6	a-d
	BOUNDARY	1.95pt/a		PREPRE	A														
	CULTIVATION			EAPOWE	D														
PRE / CULTIVATION I / CULTIVATION II 5-5-15 / 6-23-15 / 7/4/15																			
20	SOA 5, 15					3	cd	0	c	0	e	0	c	0	d	0	c	56.4	a-e
	BOUNDARY	1.95pt/a		PREPRE	A														
	CULTIVATION			EAPOWE	D														
	CULTIVATION			LAPOWE	E														
POST / POST II 6-5-2015 / 6-23-15																			
18	SOA 10 / 10					0	d	20	b	0	e	0	c	10	c	0	c	57.7	abc
	LIBERTY 280	29fl oz/a		EAPOWE	B														
	AMS	8.5lb/100 gal		EAPOWE	B														
	LIBERTY 280	29fl oz/a		LAPOWE	D														
	AMS	8.5lb/100 gal		LAPOWE	D														
POST / POST II 6-5-2015 / 7-2-15																			
16	SOA 10, 14, 15 / 10, 15					0	d	50	a	33	b	0	c	0	d	15	a	54.4	c-f
	LIBERTY 280	29fl oz/a		EAPOWE	B														
	AMS	8.5lb/100 gal		EAPOWE	B														
	PREFIX	2pt/a		EAPOWE	B														
	LIBERTY 280	29fl oz/a		LAPOWE															