

Waterhemp control systems with various soil-applied (PRE) herbicides in soybean

Trial ID: SOY21-25
 Conducted: Shiawassee Co. (Morrice)

Study Dir.: Sprague, Stiles
 Investigator: Christy Sprague

Planting Date: May-20-2025	Row Spacing: 30 "
Variety: P23Z82E	No. of Reps: 4
Population: 150000 S/A	% OM: 2.6
Soil Type: SCL sandy clay loam	pH: 6.1
Plot Size: 10 X 25 FT	Study Design: Randomized Complete Block (RCB)

Tillage/Previous Crops: Spring disked followed by soil finisher and cultipacker.

Fertilizer:

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1	AMATU	tall waterhemp	Amaranthus tuberculatus
2	ANGR	annual grass	mostly foxtail and I. crabgrass
3	CHEAL	common lambsquarters	Chenopodium album
Crop	Code	Common Name	
1	GLXMA	Soybean	

Application Description

	A	B
Application Timing:	PRE	POST
Date Treated:	May-20-2025	Jul-2-2025
Time Treated:	12:00 PM	10:10 AM
% Cloud Cover:	91	0
Air Temp., Unit:	51 F	77 F
% Relative Humidity:	65	62
Wind Speed/Unit/Dir:	5 MPH E	4 MPH WSW
Soil Temp, Unit:	55 F	80 F
Leaf Moist/Dew Presence (Y/N):	N	N
Soil Moist:	5	5

Crop Stage at Each Application

	A	B
Crop 1 Name:	GLXMA	GLXMA
Height:		10-12 " (11)
Stage:		V5

Weed Stage at Each Application

	A	B
Weed 1 Name:	AMATU	AMATU
Height:		2-16 " (8)
Stage:		4-18L
Weed 2 Name:	ANGR	ANGR
Height:		2-10 " (6)
Stage:		2-6L
Weed 3 Name:	CHEAL	CHEAL
Height:		2-12 " (4)
Stage:		4-16L

Weed Density

	1	2	3
Date:	Jul-2-2025	Jul-2-2025	Jul-2-2025
Weed Name:	AMATU	ANGR	CHEAL
Density:	8 FT2	1 FT2	1 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	18.0 "	20.0 "	100.0 "	19 GAL/AC	WATER	30 PSI
B	CUB	3.8 MPH	AIXR	11003	30.0 "	20.0 "	100.0 "	19 GAL/AC	WATER	30 PSI

Comments: Waterhemp is glyphosate (Group 9) and ALS (Group 2) resistant.

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Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date					Jun-23-2025	Jun-23-2025	Jul-1-2025	Jul-1-2025	Jul-16-2025	Jul-16-2025	Jul-30-2025
Rating Type					injury	control	injury	control	injury	control	injury
Rating Unit					%	%	%	%	%	%	%
Crop Type, Code					C, GLXMA		C, GLXMA		C, GLXMA		C, GLXMA
Pest Code						AMATU		AMATU		AMATU	
Treatment Appl. Interval					34 DA-A	34 DA-A	42 DA-A	42 DA-A	14 DA-B	14 DA-B	28 DA-B
Number of Decimals					0	0	0	0	0	0	0
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Appl Timing						
1	Valor EZ	2 fl oz/a	A	PRE		0	96	2	89	0	100
	Liberty Ultra	24 fl oz/a	B	POST							0
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
2	Valor EZ	2 fl oz/a	A	PRE	2	88	3	85	0	100	0
	Enlist One	2 pt/a	B	POST							
	Liberty Ultra	24 fl oz/a	B	POST							
	MSO	0.5 % v/v	B	POST							
	AMS	17 lb/100 gal	B	POST							
3	Valor EZ	2 fl oz/a	A	PRE	2	94	1	89	0	99	0
	Enlist Duo	4.75 pt/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
4	Untreated				0	0	0	0	0	0	0
5	Valor EZ	2 fl oz/a	A	PRE	0	88	0	78	0	99	0
	Warrant	3 pt/a	B	POST							
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
6	Valor EZ	2 fl oz/a	A	PRE	1	84	2	81	0	100	0
	Warrant	3 pt/a	B	POST							
	Enlist One	2 pt/a	B	POST							
	Liberty Ultra	24 fl oz/a	B	POST							
	MSO	0.5 % v/v	B	POST							
	AMS	17 lb/100 gal	B	POST							
7	Valor EZ	2 fl oz/a	A	PRE	3	87	0	84	0	100	0
	Warrant	3 pt/a	B	POST							
	Enlist Duo	4.75 pt/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
8	Metribuzin	8 oz/a	A	PRE	0	98	0	84	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
9	Convintro (SC500)	4.1 fl oz/a	A	PRE	4	92	0	84	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
10	Convintro (SC500)	4.1 fl oz/a	A	PRE	7	94	0	89	0	100	0
	Mauler	6 fl oz/a	A	PRE							
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
11	Boundary	2 pt/a	A	PRE	6	100	3	94	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
12	Zidua SC	4 fl oz/a	A	PRE	3	100	2	95	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							
13	Dual II Magnum	2 pt/a	A	PRE	1	100	3	99	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST							
	Roundup PowerMax 3	30 fl oz/a	B	POST							
	AMS	17 lb/100 gal	B	POST							

Missing data estimates are included in columns: Average=1,3,7

Could not calculate LSD (% mean diff) or mean separation letters for columns 5,7 because error variance is 0.

Mean separation letters are 'na' (not applicable) when error variance is 0

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 Study Director: Sprague, Stiles Sponsor Contact:
 Investigator: Christy Sprague

Rating Date					Jun-23-2025	Jun-23-2025	Jul-1-2025	Jul-1-2025	Jul-16-2025	Jul-16-2025	Jul-30-2025	
Rating Type					injury	control	injury	control	injury	control	injury	
Rating Unit					%	%	%	%	%	%	%	
Crop Type, Code					C, GLXMA		C, GLXMA		C, GLXMA		C, GLXMA	
Pest Code						AMATU		AMATU		AMATU		
Treatment Appl. Interval					34 DA-A	34 DA-A	42 DA-A	42 DA-A	14 DA-B	14 DA-B	28 DA-B	
Number of Decimals					0	0	0	0	0	0	0	
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Appl Timing							
14	Warrant	3 pt/a	A	PRE		3	88	3	76	0	98	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
15	Outlook	18 fl oz/a	A	PRE		7	100	8	97	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
16	BroadAxe XC	26 fl oz/a	A	PRE		3	100	4	100	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
17	Authority Edge	9 fl oz/a	A	PRE		5	100	8	100	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
18	Valor EZ	2 fl oz/a	A	PRE		8	99	4	96	0	100	0
	Metribuzin	6 oz/a	A	PRE								
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
19	Fierce EZ	6 fl oz/a	A	PRE		6	99	5	96	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
20	Fierce MTZ	16 fl oz/a	A	PRE		6	99	0	97	0	100	0
	Liberty Ultra	24 fl oz/a	B	POST								
	Roundup PowerMax 3	30 fl oz/a	B	POST								
	AMS	17 lb/100 gal	B	POST								
LSD P=.05						4.6	9.9	5.0	11.0	.	1.3	.
Standard Deviation						3.2	7.0	3.5	7.8	0.0	0.9	0.0
CV						98.3	7.77	157.62	9.07	0.0	0.97	0.0

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Rating Date					Jul-30-2025	Jul-30-2025	Jul-30-2025	Oct-10-2025
Rating Type					control	control	control	control
Rating Unit					%	%	%	%
Crop Type, Code								
Pest Code					AMATU	ANGR	CHEAL	AMATU
Treatment Appl. Interval					28 DA-B	28 DA-B	28 DA-B	100 DA-B
Number of Decimals					0	0	0	0
Trt No.	Treatment Name	Rate	Unit	Appl Code	Appl Timing			
1	Valor EZ	2 fl oz/a	A	PRE		100	100	99
	Liberty Ultra	24 fl oz/a	B	POST				100
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
2	Valor EZ	2 fl oz/a	A	PRE		100	99	100
	Enlist One	2 pt/a	B	POST				
	Liberty Ultra	24 fl oz/a	B	POST				
	MSO	0.5 % v/v	B	POST				
	AMS	17 lb/100 gal	B	POST				
3	Valor EZ	2 fl oz/a	A	PRE		99	100	100
	Enlist Duo	4.75 pt/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
4	Untreated					0	0	0
5	Valor EZ	2 fl oz/a	A	PRE		94	95	100
	Warrant	3 pt/a	B	POST				94
	Liberty Ultra	24 fl oz/a	B	POST				
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
6	Valor EZ	2 fl oz/a	A	PRE		100	96	100
	Warrant	3 pt/a	B	POST				
	Enlist One	2 pt/a	B	POST				
	Liberty Ultra	24 fl oz/a	B	POST				
	MSO	0.5 % v/v	B	POST				
	AMS	17 lb/100 gal	B	POST				
7	Valor EZ	2 fl oz/a	A	PRE		100	100	100
	Warrant	3 pt/a	B	POST				
	Enlist Duo	4.75 pt/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
8	Metribuzin	8 oz/a	A	PRE		100	100	100
	Liberty Ultra	24 fl oz/a	B	POST				
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
9	Convintro (SC500)	4.1 fl oz/a	A	PRE		95	98	99
	Liberty Ultra	24 fl oz/a	B	POST				96
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
10	Convintro (SC500)	4.1 fl oz/a	A	PRE		96	100	100
	Mauler	6 fl oz/a	A	PRE				98
	Liberty Ultra	24 fl oz/a	B	POST				
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
11	Boundary	2 pt/a	A	PRE		100	100	100
	Liberty Ultra	24 fl oz/a	B	POST				
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
12	Zidua SC	4 fl oz/a	A	PRE		100	100	100
	Liberty Ultra	24 fl oz/a	B	POST				
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				
13	Dual II Magnum	2 pt/a	A	PRE		100	100	100
	Liberty Ultra	24 fl oz/a	B	POST				99
	Roundup PowerMax 3	30 fl oz/a	B	POST				
	AMS	17 lb/100 gal	B	POST				

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Rating Date	Jul-30-2025	Jul-30-2025	Jul-30-2025	Oct-10-2025
Rating Type	control	control	control	control
Rating Unit	%	%	%	%
Crop Type, Code				
Pest Code	AMATU	ANGR	CHEAL	AMATU
Treatment Appl. Interval	28 DA-B	28 DA-B	28 DA-B	100 DA-B
Number of Decimals	0	0	0	0
Trt Treatment	Rate	Appl	Appl	
No. Name	Rate Unit	Code	Timing	
14 Warrant	3 pt/a	A	PRE	90
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	95
15 Outlook	18 fl oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
16 BroadAxe XC	26 fl oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
17 Authority Edge	9 fl oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
18 Valor EZ	2 fl oz/a	A	PRE	100
Metribuzin	6 oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
19 Fierce EZ	6 fl oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
20 Fierce MTZ	16 fl oz/a	A	PRE	100
Liberty Ultra	24 fl oz/a	B	POST	100
Roundup PowerMax 3	30 fl oz/a	B	POST	100
AMS	17 lb/100 gal	B	POST	100
LSD P=.05	4.7	3.6	0.9	5.3
Standard Deviation	3.3	2.6	0.6	3.7
CV	3.54	2.71	0.67	3.98

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