	D: SBO	9-23	Stu	dy Dir.: S	Sprague, St	iles				
					r: Christy Sprague					
Planting Date: May-23-2023					Row Spacing: 30 IN					
Variety: Crystal G049					lo. of Reps 6 OM:	: 4 1.9				
Population:4.375 " spacingSoil Type:SCL sandy clay loam				о Ом. Н:	6.7					
Plot Size: 10 X 25 FT					Study Design: Randomized Comp			ete Block (R	CB)	
Tillage		s Crops: Sprii fertilizer:	ng chisel plo	w; spring	disk and so	il finished twic	e.			
					Crop	and Weed De	escription			
Weed		Common		ientific Na		_	-			
1 Crop	AMATI Code	J waterhemp Common		naranunus	tuberculatu	5				
1	BEAVE		lanc							
					Ap	plication Des	cription			
A	ation Tin		A PRE	B	eaf	C 6-8 leaf				
	ation Tin	ling:				Jul-11-2023				
Time 1	Treated:		3:45 PI	M 1:	1:55 PM 9:50 AM					
% Cloud Cover: 0					50 0 71 F 80 F					
Air Temp., Unit: 75 F % Relative Humidity: 37					41 49					
Wind Speed/Unit/Dir: 1 MPH NW					6 MPH NW 6 MPH SW					
	emp, Unit loist/Dew	:: · Presence (Y/N	69 F I): N	83 N	F	80 F N				
Soil M			5	5		5				
			_		Crop S	tage at Each	Applicatio	n		
Cron 1	1 Name:	A B BEAVP BEAN	C /P REAVP							
	ight:	1"	10-14 "	(12)						
	age:	2L	6-8L							
		А В	С		Weed S	tage at Each	Applicatio	on		
		A B		ATU						
Sta	1 Name:	AMATU AMA								
Sta Weed He	ight:	2-4	' (3) 8-14	l" (10)						
Sta Weed He		2-4								
Sta Weed He	ight:	2-4	' (3) 8-14		Ар	plication Equ	ipment			
Sta Weed He	ight: age: Spraye	2-4 2L-4 or Ground	' (3) 8-14 L (4L) 8-m Nozzle	anỳ Nozzle	Nozzle	Nozzle	Boom	Spray	0	Operation
Sta Weed He Sta Appl	ight: age: Spraye Type	2-4 2L-4 er Ground Speed	' (3) 8-14 L (4L) 8-m Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	Volume	Carrier WATER	Pressure
Sta Weed He Sta	ight: age: Spraye	2-4 2L-4 or Ground	' (3) 8-14 L (4L) 8-m Nozzle	anỳ Nozzle	Nozzle	Nozzle	Boom		Carrier WATER WATER	

The waternemp population at this location is glyphosate- (Group 9) and ALS- (Group 2) resistant. The lack of precipitation preceding and soon after sugarbeet planting high variability of waterhemp emergence and herbicide effectiveness in this trial. The replications were blocked from south to north and part of replication 1 and all of replication 2 were in a dry location in the field that resulted in overall poor waterhemp emergence, so control ratings were higher. There was a more consistent waterhemp population in replications 3 and 4.

Protocol ID: SB09-23 Location: Shiawassee County Trial Year: 2023 Study Director: Sprague, Stiles Sponsor Contact: Investigator: Christy Sprague

Rat Rat Pes Trt-	ing Date ing Type ing Unit/Min/Max t Code Eval Interval nber of Decimals				Jul-11-2023 control %, 0, 100 AMATU 27 DA-B 0	Jul-18-2023 control %, 0, 100 AMATU 7 DA-C 0	Aug-10-2023 control %, 0, 100 AMATU 30 DA-C 0	
	Treatment Name	Rate	Rate Unit	Appl Code	Appl Timing			
					0			
1	Roundup PowerMax 3 AMS Roundup PowerMax 3	17	fl oz/a lb/100 gal fl oz/a	B B C	2 leaf 2 leaf 6-8 leaf	0	0	0
2	AMS Dual Magnum	17	lb/100 gal pt/a		6-8 leaf PRE	88	89	70
	Dual Magnum Roundup PowerMax 3 AMS Boundup DowerMax 2	17	fl oz/a lb/100 gal		2 leaf 2 leaf 2 leaf			
3	Roundup PowerMax 3 AMS Dual Magnum	17 0.5	fl oz/a lb/100 gal pt/a	А	6-8 leaf 6-8 leaf PRE	87	86	68
	Warrant Roundup PowerMax 3 AMS Roundup PowerMax 3	30 17	pt/a fl oz/a lb/100 gal fl oz/a	B B B C	2 leaf 2 leaf 2 leaf 6-8 leaf			
4	AMS Dual Magnum Outlook	17 0.5	lb/100 gal pt/a fl oz/a		6-8 leaf PRE 2 leaf	92	88	71
	Roundup PowerMax 3 AMS Roundup PowerMax 3 AMS	17 20	fl oz/a lb/100 gal fl oz/a lb/100 gal	С	2 leaf 2 leaf 6-8 leaf 6-8 leaf			
5	Dual Magnum Dual Magnum Roundup PowerMax 3 AMS	0.5 1.3 30	pt/a pt/a fl oz/a lb/100 gal	A B B	PRE 2 leaf 2 leaf 2 leaf	90	94	88
	Dual Magnum Roundup PowerMax 3 AMS	1.3 20 17	pt/a fl oz/a lb/100 gal	C C C	6-8 leaf 6-8 leaf 6-8 leaf			
6	Dual Magnum Warrant Roundup PowerMax 3 AMS Warrant Roundup PowerMax 3	3 30 17 3 20	pt/a pt/a fl oz/a lb/100 gal pt/a fl oz/a	C C	PRE 2 leaf 2 leaf 2 leaf 6-8 leaf 6-8 leaf	85	88	79
7	AMS Dual Magnum Outlook Roundup PowerMax 3 AMS Outlook Roundup PowerMax 3 AMS	0.5 12 30 17 12 20	Ib/100 gal pt/a fl oz/a fl oz/a Ib/100 gal fl oz/a fl oz/a Ib/100 gal	A B B C C	6-8 leaf PRE 2 leaf 2 leaf 2 leaf 6-8 leaf 6-8 leaf 6-8 leaf	88	90	82
8	Dual Magnum Ethofumesate Dual Magnum Roundup PowerMax 3 Destiny HC AMS Ethofumesate Dual Magnum Roundup PowerMax 3 Destiny HC AMS	0.5 6 1 30 1.5 17 6 1 20 1.5	h) foo gal pt/a fl oz/a pt/a fl oz/a pt/a fl oz/a pt/a fl oz/a pt/a fl oz/a pt/a fl oz/a pt/a fl oz/a pt/a	A B B B B C C C C C	PRE 2 leaf 2 leaf 2 leaf 2 leaf 2 leaf 6-8 leaf 6-8 leaf 6-8 leaf 6-8 leaf 6-8 leaf	83	86	81

Michigan State University Waterhemp control with strategies using residual herbicides in sugarbeet Trial ID: SB09-23 Protocol ID: SB09-23 Location: Shiawassee County Trial Year: 2023 Study Director: Sprague, Stiles Sponsor Contact: Investigator: Christy Sprague

Rating Date Rating Type Rating Unit/Min/Max Pest Code Trt-Eval Interval Number of Decimals						Jul-11-2023 control %, 0, 100 AMATU 27 DA-B 0	Jul-18-2023 control %, 0, 100 AMATU 7 DA-C 0	Aug-10-2023 control %, 0, 100 AMATU 30 DA-C 0
	Treatment Name	Rate	Rate Unit	Appl Code	Appl Timing			
9	Ethofumesate Dual Magnum		fl oz/a pt/a	B B	2 leaf 2 leaf	87	91	77
	Roundup PowerMax 3	30	fl oz/a	В	2 leaf			
	Destiny HC AMS		pt/a lb/100 gal	B B	2 leaf 2 leaf			
	Ethofumesate	6	fl oz/a	С	6-8 leaf			
	Dual Magnum Roundup PowerMax 3		pt/a fl oz/a	C C	6-8 leaf 6-8 leaf			
	Destiny HC		pt/a	c	6-8 leaf			
	AMS	17	lb/100 gal	С	6-8 leaf			
10	Roundup PowerMax 3 AMS		fl oz/a lb/100 gal	B	2 leaf 2 leaf	0	91	65
	Ultra Blazer		fl oz/a	C	6-8 leaf			
	Roundup PowerMax 3		fl oz/a	С	6-8 leaf			
11	AMS Roundup PowerMax 3		lb/100 gal fl oz/a	C B	6-8 leaf 2 leaf	0	86	62
	AMS		lb/100 gal		2 leaf	0	00	02
	Ultra Blazer	16	fl oz/a	С	6-8 leaf			
	Warrant		pt/a fl oz/a	C C	6-8 leaf 6-8 leaf			
	Roundup PowerMax 3 AMS		lb/100 gal	-	6-8 leaf			
12	Ethofumesate	2	pt/a	В	2 leaf	71	97	75
	Roundup PowerMax 3		fl oz/a	B B	2 leaf			
	Destiny HC AMS		pt/a lb/100 gal		2 leaf 2 leaf			
	Ethofumesate		pt/a	С	6-8 leaf			
	Roundup PowerMax 3		fl oz/a	C	6-8 leaf			
	Destiny HC AMS		pt/a lb/100 gal	C C	6-8 leaf 6-8 leaf			
13			pt/a	Ā	PRE	66	99	82
	Roundup PowerMax 3		fl oz/a	В	2 leaf			
	AMS Ultra Blazer		lb/100 gal fl oz/a	Б С	2 leaf 6-8 leaf			
	Roundup PowerMax 3		fl oz/a	č	6-8 leaf			
11	AMS		lb/100 gal		6-8 leaf	65	96	02
14	Dual Magnum Roundup PowerMax 3		pt/a fl oz/a	A B	PRE 2 leaf	65	90	83
	AMS		lb/100 gal	В	2 leaf			
	Ultra Blazer Warrant		fl oz/a	C	6-8 leaf			
	Roundup PowerMax 3		pt/a fl oz/a	C C	6-8 leaf 6-8 leaf			
	AMS	17	lb/100 gal		6-8 leaf			
15	Ethofumesate Roundup PowerMax 3		pt/a fl oz/a	A B	PRE 2 leaf	60	93	77
	AMS		lb/100 gal		2 leaf			
	Ultra Blazer	16	fl oz/a	С	6-8 leaf			
	Roundup PowerMax 3 AMS		fl oz/a lb/100 gal	C	6-8 leaf 6-8 leaf			
16	Ethofumesate		pt/a	Ă	PRE	88	92	82
	Dual Magnum	1.33	pt/a	В	2 leaf			
	Roundup PowerMax 3 AMS		fl oz/a lb/100 gal	B	2 leaf 2 leaf			
	Dual Magnum	1.33	0	C	6-8 leaf			
	Roundup PowerMax 3	20	fl oz/a	С	6-8 leaf			
101	AMS P=.05	17	lb/100 gal	С	6-8 leaf	12.6	11.3	14.0
	ndard Deviation					8.9	8.0	9.8
CV						13.5	9.34	13.84