

**Herbicide-resistant waterhemp control in sugarbeet**

Trial ID: SB07-17 Study Dir.: Sprague, Powell, Stiles  
 Conducted: Isabella Co. Investigator: Christy Sprague

**Planting Date:** May-18-2017 **Row Spacing:** 30 IN  
**Variety:** Crystal G515MP **No. of Reps:** 4  
**Population:** 4.25 " spacing **% OM:** 2.8  
**Soil Type:** SL sandy loam **pH:** 6.8  
**Plot Size:** 10 X 25 FT **Study Design:** Randomized Complete Block (RCB)

**Tillage/Previous Crops:** Spring disked and culti-mulched  
**Fertilizer:**

**Crop and Weed Description**

Weed	Code	Common Name	Scientific Name
1	AMATU	waterhemp, tall	Amaranthus tuberculatus
Crop	Code	Common Name	
1	BETVU	Sugarbeet	

**Application Description**

	A	B	C	D
<b>Application Timing:</b>	PRE	2-leaf	+14 d-B	+14 d-C
<b>Date Treated:</b>	May-19-2017	Jun-7-2017	Jun-21-2017	Jul-11-2017
<b>Time Treated:</b>	9:00 AM	8:30 AM	3:15 PM	10:45 AM
<b>% Cloud Cover:</b>	85	0	65	50
<b>Air Temp., Unit:</b>	44 F	57 F	76 F	85 F
<b>% Relative Humidity:</b>	78	77	43	81
<b>Wind Speed/Unit/Dir:</b>	7.5 mph N	2 mph N	4 mph SSW	4 mph E
<b>Soil Temp, Unit:</b>	50 F	48 F	79 F	76 F
<b>Leaf Moist/Dew Presence (Y/N):</b>	3	5	5	4
<b>Soil Moist:</b>	2	2	5	3

**Crop Stage at Each Application**

	A	B	C	D
<b>Crop 1 Name:</b>	BETVU	BETVU	BETVU	BETVU
<b>Height:</b>		2 "	3 "	8 "
<b>Stage:</b>		4L	6-8L	10L

**Weed Stage at Each Application**

	A	B	C	D
<b>Weed 1 Name:</b>	AMATU	AMATU	AMATU	AMATU
<b>Height:</b>		0.5 "	0.5-1 " (0.75)	0.5-2 " (1)
<b>Stage:</b>		1L	4-6L	6-24L

**Weed Density**

**1**  
**Date:** Jul-11-2017  
**Weed Name:** AMATU  
**Density:** 74 FT<sup>2</sup>

**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	26 "	20 "	100 "	19 GPA	WATER	30 PSI
C	CUB	3.8 MPH	AIXR	11003	24 "	20 "	100 "	19 GPA	WATER	30 PSI
D	CUB	3.8 MPH	AIXR	11003	26 "	20 "	100 "	19 GPA	WATER	30 PSI

**Comments:** Sugarbeet injury was not evaluated due to poor sugarbeet growth. The trial was destroyed after the August evaluation.

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Study Director: Sprague, Powell, Stiles

Pest Code	AMATU	AMATU	AMATU	AMATU	AMATU	AMATU
Rating Date	Jun-7-2017	Jun-15-2017	Jul-5-2017	Jul-17-2017	Aug-1-2017	Aug-16-2017
Rating Type	control	control	control	control	control	control
Rating Unit	percent	percent	percent	percent	percent	percent
Trt-Eval Interval	19 DA-A	8 DA-B	14 DA-C	6 DA-D	21 DA-D	36 DA-D
Number of Decimals	0	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate Unit	Appl Code	*	*	*	*	*	*
1	Ethofumesate	4 L		3 pt/a	A	98	97	97	88	73	40
1	Roundup PowerMax	4.5 SL		32 fl oz/a	B						
1	AMS	WG		17 lb/100 gal	B						
1	Roundup PowerMax	4.5 SL		22 fl oz/a	C						
1	AMS	WG		17 lb/100 gal	C						
1	Roundup PowerMax	4.5 SL		22 fl oz/a	D						
1	AMS	WG		17 lb/100 gal	D						
2	Ethofumesate	4 L		3 pt/a	A	99	100	98	95	73	41
2	Betamix	1.3 L		2 pt/a	B						
2	Roundup PowerMax	4.5 SL		32 fl oz/a	B						
2	AMS	WG		17 lb/100 gal	B						
2	Betamix	1.3 L		3 pt/a	C						
2	Roundup PowerMax	4.5 SL		22 fl oz/a	C						
2	AMS	WG		17 lb/100 gal	C						
2	Betamix	1.3 L		3 pt/a	C						
2	Roundup PowerMax	4.5 SL		22 fl oz/a	D						
2	AMS	WG		17 lb/100 gal	D						
3	Ethofumesate	4 L		3 pt/a	A	96	98	96	96	78	56
3	Spin-Aid	1.3 L		2 pt/a	B						
3	Roundup PowerMax	4.5 SL		32 fl oz/a	B						
3	AMS	WG		17 lb/100 gal	B						
3	Spin-Aid	1.3 L		3 pt/a	C						
3	Roundup PowerMax	4.5 SL		32 fl oz/a	C						
3	AMS	WG		17 lb/100 gal	C						
3	Spin-Aid	1.3 L		3 pt/a	D						
3	Roundup PowerMax	4.5 SL		32 fl oz/a	D						
3	AMS	WG		17 lb/100 gal	D						
4	Ethofumesate	4 L		3 pt/a	A	99	100	100	100	90	81
4	Ethofumesate	4 L		1 pt/a	B						
4	Roundup PowerMax	4.5 SL		32 fl oz/a	B						
4	Destiny HC	L		1.5 pt/a	B						
4	AMS	WG		17 lb/100 gal	B						
4	Ethofumesate	4 L		1 pt/a	C						
4	Roundup PowerMax	4.5 SL		32 fl oz/a	C						
4	Destiny HC	L		1.5 pt/a	C						
4	AMS	WG		17 lb/100 gal	C						
4	Ethofumesate	4 L		1 pt/a	D						
4	Roundup PowerMax	4.5 SL		32 fl oz/a	D						
4	Destiny HC	L		1.5 pt/a	D						
4	AMS	WG		17 lb/100 gal	D						

\* Adjusted means

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Rating Unit	percent	percent	percent	percent	percent	percent
Trt-Eval Interval	19 DA-A	8 DA-B	14 DA-C	6 DA-D	21 DA-D	36 DA-D
Number of Decimals	0	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*	*
5	Ethofumesate	4	L	3	pt/a	A	100	100	100	100	91	80
5	Warrant	3	L	3	pt/a	B						
5	Roundup PowerMax	4.5	SL	32	fl oz/a	B						
5	AMS		WG	17	lb/100 gal	B						
5	Warrant	3	L	3	pt/a	C						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	C						
5	AMS		WG	17	lb/100 gal	C						
5	Roundup PowerMax	4.5	SL	22	fl oz/a	D						
5	AMS		WG	17	lb/100 gal	D						
6	Ethofumesate	4	L	3	pt/a	A	99	100	100	100	96	91
6	Betamix	1.3	L	2	pt/a	B						
6	Warrant	3	L	3	pt/a	B						
6	Roundup PowerMax	4.5	SL	32	fl oz/a	B						
6	AMS		WG	17	lb/100 gal	B						
6	Betamix	1.3	L	3	pt/a	C						
6	Warrant	3	L	3	pt/a	C						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	C						
6	AMS		WG	17	lb/100 gal	C						
6	Roundup PowerMax	4.5	SL	22	fl oz/a	D						
6	AMS		WG	17	lb/100 gal	D						
7	Untreated						0	0	0	0	0	0
8	Roundup PowerMax	4.5	SL	32	fl oz/a	B		64	59	48	30	21
8	AMS		WG	17	lb/100 gal	B						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	C						
8	AMS		WG	17	lb/100 gal	C						
8	Roundup PowerMax	4.5	SL	22	fl oz/a	D						
8	AMS		WG	17	lb/100 gal	D						
9	Ethofumesate	4	L	1	qt/a	B		56	100	100	91	77
9	Roundup PowerMax	4.5	SL	32	fl oz/a	B						
9	Destiny HC		L	1.5	pt/a	B						
9	AMS		WG	17	lb/100 gal	B						
9	Ethofumesate	4	L	1	qt/a	C						
9	Roundup PowerMax	4.5	SL	32	fl oz/a	C						
9	Destiny HC		L	1.5	pt/a	C						
9	AMS		WG	17	lb/100 gal	C						
9	Ethofumesate	4	L	1	qt/a	D						
9	Roundup PowerMax	4.5	SL	32	fl oz/a	D						
9	Destiny HC		L	1.5	pt/a	D						
9	AMS		WG	17	lb/100 gal	D						

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Rating Unit	percent	percent	percent	percent	percent	percent
Trt-Eval Interval	19 DA-A	8 DA-B	14 DA-C	6 DA-D	21 DA-D	36 DA-D
Number of Decimals	0	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*	*
10	Betamix	1.3 L		2 pt/a		B		53	71	56	38	16
10	Roundup PowerMax	4.5 SL		32 fl oz/a		B						
10	AMS		WG	17 lb/100 gal		B						
10	Betamix	1.3 L		3 pt/a		C						
10	Roundup PowerMax	4.5 SL		22 fl oz/a		C						
10	AMS		WG	17 lb/100 gal		C						
10	Betamix	1.3 L		3 pt/a		C						
10	Roundup PowerMax	4.5 SL		22 fl oz/a		D						
10	AMS		WG	17 lb/100 gal		D						
11	Spin-Aid	1.3 L		2 pt/a		B		58	66	66	53	23
11	Roundup PowerMax	4.5 SL		32 fl oz/a		B						
11	AMS		WG	17 lb/100 gal		B						
11	Spin-Aid	1.3 L		3 pt/a		C						
11	Roundup PowerMax	4.5 SL		32 fl oz/a		C						
11	AMS		WG	17 lb/100 gal		C						
11	Spin-Aid	1.3 L		3 pt/a		D						
11	Roundup PowerMax	4.5 SL		32 fl oz/a		D						
11	AMS		WG	17 lb/100 gal		D						
12	Ethofumesate	4 L		1 qt/a		B		81	100	100	98	88
12	Warrant	3 L		3 pt/a		B						
12	Roundup PowerMax	4.5 SL		32 fl oz/a		B						
12	Destiny HC		L	1.5 pt/a		B						
12	AMS		WG	17 lb/100 gal		B						
12	Ethofumesate	4 L		1 qt/a		C						
12	Warrant	3 L		3 pt/a		C						
12	Roundup PowerMax	4.5 SL		32 fl oz/a		C						
12	Destiny HC		L	1.5 pt/a		C						
12	AMS		WG	17 lb/100 gal		C						
12	Roundup PowerMax	4.5 SL		32 fl oz/a		D						
12	AMS		WG	17 lb/100 gal		D						
13	Spin-Aid	1.3 L		2 pt/a		B		64	99	99	90	80
13	Warrant	3 L		3 pt/a		B						
13	Roundup PowerMax	4.5 SL		32 fl oz/a		B						
13	AMS		WG	17 lb/100 gal		B						
13	Spin-Aid	1.3 L		3 pt/a		C						
13	Warrant	3 L		3 pt/a		C						
13	Roundup PowerMax	4.5 SL		32 fl oz/a		C						
13	AMS		WG	17 lb/100 gal		C						
13	Roundup PowerMax	4.5 SL		32 fl oz/a		D						
13	AMS		WG	17 lb/100 gal		D						

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Number of Decimals	0	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	*	*	*	*	*	*	
14	Betamix	1.3	L	2	pt/a	B		79	100	100	93	83	
14	Warrant	3	L	3	pt/a	B							
14	Roundup PowerMax	4.5	SL	32	fl oz/a	B							
14	AMS		WG	17	lb/100 gal	B							
14	Betamix	1.3	L	3	pt/a	C							
14	Warrant	3	L	3	pt/a	C							
14	Roundup PowerMax	4.5	SL	22	fl oz/a	C							
14	AMS		WG	17	lb/100 gal	C							
14	Roundup PowerMax	4.5	SL	22	fl oz/a	D							
14	AMS		WG	17	lb/100 gal	D							
15	Betamix	1.3	L	2	pt/a	B		81	99	100	98	91	
15	Dual II Magnum	7.64	L	1.33	pt/a	B							
15	Roundup PowerMax	4.5	SL	32	fl oz/a	B							
15	AMS		WG	17	lb/100 gal	B							
15	Betamix	1.3	L	3	pt/a	C							
15	Dual II Magnum	7.64	L	1.33	pt/a	C							
15	Roundup PowerMax	4.5	SL	22	fl oz/a	C							
15	AMS		WG	17	lb/100 gal	C							
15	Roundup PowerMax	4.5	SL	22	fl oz/a	D							
15	AMS		WG	17	lb/100 gal	D							
16	Betamix	1.3	L	2	pt/a	B		82	99	98	85	66	
16	Outlook	6	L	10.5	fl oz/a	B							
16	Roundup PowerMax	4.5	SL	32	fl oz/a	B							
16	AMS		WG	17	lb/100 gal	B							
16	Betamix	1.3	L	3	pt/a	C							
16	Outlook	6	L	10.5	fl oz/a	C							
16	Roundup PowerMax	4.5	SL	22	fl oz/a	C							
16	AMS		WG	17	lb/100 gal	C							
16	Roundup PowerMax	4.5	SL	22	fl oz/a	D							
16	AMS		WG	17	lb/100 gal	D							
LSD P=.05								2.7	9.6	5.1	7.8	13.1	16.9
Standard Deviation								1.8	6.7	3.6	5.5	9.2	11.8
CV								2.12	8.85	4.16	6.47	12.43	20.18

\* Adjusted means