

Waterhemp control with strategies using residual herbicides in sugarbeet

Trial ID: SB09-23 Study Dir.: Sprague, Stiles
 Conducted: Shiawassee County Investigator: Christy Sprague

Planting Date: May-23-2023 **Row Spacing:** 30 IN
Variety: Crystal G049 **No. of Reps:** 4
Population: 4.375 " spacing **% OM:** 1.9
Soil Type: SCL sandy clay loam **pH:** 6.7
Plot Size: 10 X 25 FT **Study Design:** Randomized Complete Block (RCB)

Tillage/Previous Crops: Spring chisel plow; spring disk and soil finished twice.
Fertilizer:

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1	AMATU	waterhemp	Amaranthus tuberculatus
Crop	Code	Common Name	
1	BEAVP	sugarbeet	

Application Description

	A	B	C
Application Timing:	PRE	2-leaf	6-8 leaf
Date Treated:	May-23-2023	Jun-14-2023	Jul-11-2023
Time Treated:	3:45 PM	1:55 PM	9:50 AM
% Cloud Cover:	0	50	0
Air Temp., Unit:	75 F	71 F	80 F
% Relative Humidity:	37	41	49
Wind Speed/Unit/Dir:	1 MPH NW	6 MPH NW	6 MPH SW
Soil Temp, Unit:	69 F	83 F	80 F
Leaf Moist/Dew Presence (Y/N):	N	N	N
Soil Moist:	5	5	5

Crop Stage at Each Application

	A	B	C
Crop 1 Name:	BEAVP	BEAVP	BEAVP
Height:	1 "	10-14 " (12)	
Stage:	2L	6-8L	

Weed Stage at Each Application

	A	B	C
Weed 1 Name:	AMATU	AMATU	AMATU
Height:	2-4 " (3)	8-14 " (10)	
Stage:	2L-4L (4L)	8-many	

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	22.0 "	20 "	100 "	19 GPA	WATER	30 PSI
B	CUB	3.8 MPH	AIXR	11003	22.0 "	20 "	100 "	19 GPA	WATER	30 PSI
C	CUB	3.8 MPH	AIXR	11003	30.0 "	20 "	100 "	19 GPA	WATER	30 PSI

Comments:

The waterhemp 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.

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Rating Date	Jul-11-2023	Jul-18-2023	Aug-10-2023
Rating Type	control	control	control
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100
Pest Code	AMATU	AMATU	AMATU
Trt-Eval Interval	27 DA-B	7 DA-C	30 DA-C
Number of Decimals	0	0	0

Trt No.	Treatment Name	Rate	Unit	Appl Code	Appl Timing	Jul-11-2023	Jul-18-2023	Aug-10-2023
1	Roundup PowerMax 3	30 fl oz/a		B	2 leaf	0	0	0
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
2	Dual Magnum	0.5 pt/a		A	PRE	88	89	70
	Dual Magnum	1.33 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
3	Dual Magnum	0.5 pt/a		A	PRE	87	86	68
	Warrant	3 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
4	Dual Magnum	0.5 pt/a		A	PRE	92	88	71
	Outlook	16 fl oz/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
5	Dual Magnum	0.5 pt/a		A	PRE	90	94	88
	Dual Magnum	1.3 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Dual Magnum	1.3 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
6	Dual Magnum	0.5 pt/a		A	PRE	85	88	79
	Warrant	3 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Warrant	3 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
7	Dual Magnum	0.5 pt/a		A	PRE	88	90	82
	Outlook	12 fl oz/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Outlook	12 fl oz/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			
8	Dual Magnum	0.5 pt/a		A	PRE	83	86	81
	Ethofumesate	6 fl oz/a		B	2 leaf			
	Dual Magnum	1 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	Destiny HC	1.5 pt/a		B	2 leaf			
	AMS	17 lb/100 gal	gal	B	2 leaf			
	Ethofumesate	6 fl oz/a		C	6-8 leaf			
	Dual Magnum	1 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	Destiny HC	1.5 pt/a		C	6-8 leaf			
	AMS	17 lb/100 gal	gal	C	6-8 leaf			

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Rating Type	control	control	control
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100
Pest Code	AMATU	AMATU	AMATU
Trt-Eval Interval	27 DA-B	7 DA-C	30 DA-C
Number of Decimals	0	0	0

Trt No.	Treatment Name	Rate	Unit	Appl Code	Appl Timing	Jul-11-2023	Jul-18-2023	Aug-10-2023
9	Ethofumesate	6 fl oz/a		B	2 leaf	87	91	77
	Dual Magnum	1 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	Destiny HC	1.5 pt/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Ethofumesate	6 fl oz/a		C	6-8 leaf			
	Dual Magnum	1 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	Destiny HC	1.5 pt/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
10	Roundup PowerMax 3	30 fl oz/a		B	2 leaf	0	91	65
	AMS	17 lb/100 gal		B	2 leaf			
	Ultra Blazer	16 fl oz/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
11	Roundup PowerMax 3	30 fl oz/a		B	2 leaf	0	86	62
	AMS	17 lb/100 gal		B	2 leaf			
	Ultra Blazer	16 fl oz/a		C	6-8 leaf			
	Warrant	3 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
12	Ethofumesate	2 pt/a		B	2 leaf	71	97	75
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	Destiny HC	1.5 pt/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Ethofumesate	2 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	Destiny HC	1.5 pt/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
13	Dual Magnum	0.5 pt/a		A	PRE	66	99	82
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Ultra Blazer	16 fl oz/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
14	Dual Magnum	0.5 pt/a		A	PRE	65	96	83
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Ultra Blazer	16 fl oz/a		C	6-8 leaf			
	Warrant	3 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
15	Ethofumesate	3 pt/a		A	PRE	60	93	77
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Ultra Blazer	16 fl oz/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
16	Ethofumesate	3 pt/a		A	PRE	88	92	82
	Dual Magnum	1.33 pt/a		B	2 leaf			
	Roundup PowerMax 3	30 fl oz/a		B	2 leaf			
	AMS	17 lb/100 gal		B	2 leaf			
	Dual Magnum	1.33 pt/a		C	6-8 leaf			
	Roundup PowerMax 3	20 fl oz/a		C	6-8 leaf			
	AMS	17 lb/100 gal		C	6-8 leaf			
	LSD P=.05					12.6	11.3	14.0
	Standard Deviation					8.9	8.0	9.8
	CV					13.5	9.34	13.84