

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Date Planted: May/06/2014 **Row Spacing:** 30 IN
Variety: HM-173 RR **No. of Reps:** 4
Population: 49,000 sseeds/A **% OM:** 2.9
Soil Type: Clay loam **pH:** 7.9
Plot Size: 10 X 30 FT **Design:** RANDOMIZED COMPLETE BLOCK

Tillage: Fall moldboard plowed, spring field cultivate and soil finish.

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	AMARE	PIGWEEED, REDROOT	AMARANTHUS RETROFLEXUS L.
3.	POLCO	BUCKWHEAT, WILD	POLYGONUM CONVOLVULUS L.
Crop	Code	Common Name	
1.	BETVU	BEET, SUGAR	

Application Description

	A	B	C	D
Application Timing:	PRE	2-Leaf	6-Leaf	Canopy
Date Treated:	May/06/2014	May/30/2014	Jun/10/2014	Jul/11/2014
Time Treated:	3:15 PM	9:30 AM	11:40 AM	12:00 PM
% Cloud Cover:	45	60	100	20
Air Temp., Unit:	63 F	70 F	72 F	78 F
% Relative Humidity:	43.6	56	46	53
Wind Speed/Unit/Dir:	4 mph NE	0 mph	3 mph E	3 mph S
Soil Temp., Unit:	58 F		68 F	62 F
Soil/Leaf Surface M:	3 -	5 5	5 5	5 5
Soil Moist (1=w 5=d):	3	5	5	5

Crop Stage at Each Application

	A	B	C	D
Crop Name:	BETVU	BETVU	BETVU	BETVU
Height (In.):	-	1.5"	5"	19"
Stage (L):	-	2	6	10-12

Weed Stage at Each Application

	A	B	C	D
Weed 1 Name:	CHEAL	CHEAL	CHEAL	CHEAL
Height (In.):	-	0.75"	2-2.5"	-
Stage (L):	-	4-6	8-Many	-
Weed 2 Name:	AMARE	AMARE	AMARE	AMARE
Height (In.):	-	-	1"	-
Stage (L):	-	-	2-6	-
Weed 3 Name:	POLCO	POLCO	POLCO	POLCO
Height (In.):	-	1"	1-3"	-
Stage (L):	-	2	2-7	-

Application Equipment

Appl	Sprayer Type	Speed MPH	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	GPA	Carrier	PSI
A	Cub	3.8	AirMix	11003	23"	20"	100"	19	Water	30
B	Cub	3.8	AirMix	11003	23"	20"	100"	19	Water	30
C	Cub	3.8	AirMix	11003	22"	20"	100"	19	Water	30
D	Cub	3.8	AirMix	11003	29"	20"	100"	19	Water	30

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Weed Code								BETVU	BETVU	BETVU	CHEAL
Crop Code								injury	injury	injury	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/03/2014	Jun/04/2014	Jun/10/2014	Jun/10/2014
Rating Date								28 DA-A	5 DA-B	11 DA-B	11 DA-B
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		0	0	91
1	AMS		WG	17	lb/100 gal	2-leaf	B				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
1	AMS		WG	17	lb/100 gal	6-leaf	C				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
1	AMS		WG	17	lb/100 gal	canopy	D				
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		18	25	95
2	Betamix	1.3	L	2	pt/a	2-leaf	B				
2	Warrant	3	L	3	pt/a	2-leaf	B				
2	AMS		WG	17	lb/100 gal	2-leaf	B				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
2	AMS		WG	17	lb/100 gal	6-leaf	C				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
2	AMS		WG	17	lb/100 gal	canopy	D				
3	Nortron	4	L	3	pt/a	PRE	A	0	26	40	99
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Warrant	3	L	3	pt/a	2-leaf	B				
3	AMS		WG	17	lb/100 gal	2-leaf	B				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
3	AMS		WG	17	lb/100 gal	6-leaf	C				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
3	AMS		WG	17	lb/100 gal	canopy	D				
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		23	24	99
4	Betamix	1.3	L	2	pt/a	2-leaf	B				
4	AMS		WG	17	lb/100 gal	2-leaf	B				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
4	Betamix	1.3	L	3	pt/a	6-leaf	C				
4	Warrant	3	L	3	pt/a	6-leaf	C				
4	AMS		WG	17	lb/100 gal	6-leaf	C				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
4	AMS		WG	17	lb/100 gal	canopy	D				
5	Nortron	4	L	3	pt/a	PRE	A	0	16	18	99
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
5	Betamix	1.3	L	2	pt/a	2-leaf	B				
5	AMS		WG	17	lb/100 gal	2-leaf	B				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
5	Betamix	1.3	L	3	pt/a	6-leaf	C				
5	Warrant	3	L	3	pt/a	6-leaf	C				
5	AMS		WG	17	lb/100 gal	6-leaf	C				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
5	AMS		WG	17	lb/100 gal	canopy	D				
6	Pyramin	65	WG	4.2	lb/a	PRE	A	5	15	16	99
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
6	Betamix	1.3	L	2	pt/a	2-leaf	B				
6	AMS		WG	17	lb/100 gal	2-leaf	B				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
6	Betamix	1.3	L	3	pt/a	6-leaf	C				
6	Warrant	3	L	3	pt/a	6-leaf	C				
6	AMS		WG	17	lb/100 gal	6-leaf	C				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
6	AMS		WG	17	lb/100 gal	canopy	D				

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Weed Code								CHEAL			
Crop Code								BETVU	BETVU	BETVU	
Rating Data Type								injury	injury	injury	control
Rating Unit								percent	percent	percent	percent
Rating Date								Jun/03/2014	Jun/04/2014	Jun/10/2014	Jun/10/2014
Trt-Eval Interval								28 DA-A	5 DA-B	11 DA-B	11 DA-B
# Subsamples, Dec.								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
7	Warrant	3	L	3	pt/a	PRE	A	0	20	23	99
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
7	Betamix	1.3	L	2	pt/a	2-leaf	B				
7	AMS		WG	17	lb/100 gal	2-leaf	B				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
7	AMS		WG	17	lb/100 gal	6-leaf	C				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
7	AMS		WG	17	lb/100 gal	canopy	D				
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		4	23	94
8	Warrant	3	L	3	pt/a	2-leaf	B				
8	AMS		WG	17	lb/100 gal	2-leaf	B				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
8	Warrant	3	L	3	pt/a	6-leaf	C				
8	AMS		WG	17	lb/100 gal	6-leaf	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
8	AMS		WG	17	lb/100 gal	canopy	D				
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		24	29	95
9	Betamix	1.3	L	2	pt/a	2-leaf	B				
9	Warrant	3	L	3	pt/a	2-leaf	B				
9	AMS		WG	17	lb/100 gal	2-leaf	B				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
9	Warrant	3	L	3	pt/a	6-leaf	C				
9	AMS		WG	17	lb/100 gal	6-leaf	C				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
9	AMS		WG	17	lb/100 gal	canopy	D				
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		18	13	98
10	Betamix	1.3	L	2	pt/a	2-leaf	B				
10	AMS		WG	17	lb/100 gal	2-leaf	B				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
10	Betamix	1.3	L	3	pt/a	6-leaf	C				
10	AMS		WG	17	lb/100 gal	6-leaf	C				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
10	AMS		WG	17	lb/100 gal	canopy	D				
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		23	18	98
11	Betamix	1.3	L	2	pt/a	2-leaf	B				
11	AMS		WG	17	lb/100 gal	2-leaf	B				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
11	Betamix	1.3	L	3	pt/a	6-leaf	C				
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
11	AMS		WG	17	lb/100 gal	6-leaf	C				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
11	AMS		WG	17	lb/100 gal	canopy	D				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		24	14	97
12	Betamix	1.3	L	2	pt/a	2-leaf	B				
12	AMS		WG	17	lb/100 gal	2-leaf	B				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
12	Betamix	1.3	L	3	pt/a	6-leaf	C				
12	Outlook	6	L	18	fl oz/a	6-leaf	C				
12	AMS		WG	17	lb/100 gal	6-leaf	C				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				

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Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/03/2014	Jun/04/2014	Jun/10/2014	Jun/10/2014
Rating Date								28 DA-A	5 DA-B	11 DA-B	11 DA-B
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		29	19	97
13	Betamix	1.3	L	2	pt/a	2-leaf	B				
13	Stinger	3	L	2	fl oz/a	2-leaf	B				
13	AMS		WG	17	lb/100 gal	2-leaf	B				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
13	Betamix	1.3	L	3	pt/a	6-leaf	C				
13	Stinger	3	L	4	fl oz/a	6-leaf	C				
13	AMS		WG	17	lb/100 gal	6-leaf	C				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
13	AMS		WG	17	lb/100 gal	canopy	D				
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		29	16	95
14	Betamix	1.3	L	2	pt/a	2-leaf	B				
14	Stinger	3	L	2	fl oz/a	2-leaf	B				
14	AMS		WG	17	lb/100 gal	2-leaf	B				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
14	Betamix	1.3	L	3	pt/a	6-leaf	C				
14	Stinger	3	L	4	fl oz/a	6-leaf	C				
14	Warrant	3	L	3	pt/a	6-leaf	C				
14	AMS		WG	17	lb/100 gal	6-leaf	C				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
14	AMS		WG	17	lb/100 gal	canopy	D				
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		21	19	98
15	Betamix	1.3	L	2	pt/a	2-leaf	B				
15	AMS		WG	17	lb/100 gal	2-leaf	B				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
15	Betamix	1.3	L	3	pt/a	6-leaf	C				
15	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	Betamix	1.3	L	3	pt/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		2	10	99
16	Stinger	3	L	2	fl oz/a	2-leaf	B				
16	AMS		WG	17	lb/100 gal	2-leaf	B				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
16	Stinger	3	L	4	fl oz/a	6-leaf	C				
16	AMS		WG	17	lb/100 gal	6-leaf	C				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
16	Stinger	3	L	4	fl oz/a	canopy	D				
16	AMS		WG	17	lb/100 gal	canopy	D				
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		24	14	91
17	Betamix	1.3	L	2	pt/a	2-leaf	B				
17	Stinger	3	L	2	fl oz/a	2-leaf	B				
17	AMS		WG	17	lb/100 gal	2-leaf	B				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
17	Betamix	1.3	L	3	pt/a	6-leaf	C				
17	Stinger	3	L	4	fl oz/a	6-leaf	C				
17	AMS		WG	17	lb/100 gal	6-leaf	C				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
17	Betamix	1.3	L	3	pt/a	canopy	D				
17	Stinger	3	L	4	fl oz/a	canopy	D				
17	AMS		WG	17	lb/100 gal	canopy	D				

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Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/03/2014	Jun/04/2014	Jun/10/2014	Jun/10/2014
Rating Date								28 DA-A	5 DA-B	11 DA-B	11 DA-B
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		19	13	99
18	Betamix	1.3	L	2	pt/a	2-leaf	B				
18	AMS		WG	17	lb/100 gal	2-leaf	B				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
18	Betamix	1.3	L	4	pt/a	6-leaf	C				
18	AMS		WG	17	lb/100 gal	6-leaf	C				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
18	Betamix	1.3	L	6	pt/a	canopy	D				
18	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		19	19	99
19	Betamix	1.3	L	2	pt/a	2-leaf	B				
19	AMS		WG	17	lb/100 gal	2-leaf	B				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
19	Betamix	1.3	L	4	pt/a	6-leaf	C				
19	Warrant	3	L	3	pt/a	6-leaf	C				
19	AMS		WG	17	lb/100 gal	6-leaf	C				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
19	Betamix	1.3	L	6	pt/a	canopy	D				
19	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		28	21	99
20	Betamix	1.3	L	2	pt/a	2-leaf	B				
20	Stinger	3	L	2	fl oz/a	2-leaf	B				
20	AMS		WG	17	lb/100 gal	2-leaf	B				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
20	Betamix	1.3	L	4	pt/a	6-leaf	C				
20	Stinger	3	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	AMS		WG	17	lb/100 gal	6-leaf	C				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
20	Betamix	1.3	L	6	pt/a	canopy	D				
20	Stinger	3	L	4	fl oz/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.0	9.5	11.6	4.4
CV								0.0	35.54	44.11	3.24

Means followed by same letter do not significantly differ (P=.05, LSD)

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Crop Code								control	control	injury	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/10/2014	Jun/10/2014	Jun/20/2014	Jun/20/2014
Rating Date								11 DA-B	11 DA-B	10 DA-C	10 DA-C
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	93	0	99
1	AMS		WG	17	lb/100 gal	2-leaf	B				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
1	AMS		WG	17	lb/100 gal	6-leaf	C				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
1	AMS		WG	17	lb/100 gal	canopy	D				
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	93	13	99
2	Betamix	1.3	L	2	pt/a	2-leaf	B				
2	Warrant	3	L	3	pt/a	2-leaf	B				
2	AMS		WG	17	lb/100 gal	2-leaf	B				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
2	AMS		WG	17	lb/100 gal	6-leaf	C				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
2	AMS		WG	17	lb/100 gal	canopy	D				
3	Nortron	4	L	3	pt/a	PRE	A	99	99	11	99
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Warrant	3	L	3	pt/a	2-leaf	B				
3	AMS		WG	17	lb/100 gal	2-leaf	B				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
3	AMS		WG	17	lb/100 gal	6-leaf	C				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
3	AMS		WG	17	lb/100 gal	canopy	D				
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	16	99
4	Betamix	1.3	L	2	pt/a	2-leaf	B				
4	AMS		WG	17	lb/100 gal	2-leaf	B				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
4	Betamix	1.3	L	3	pt/a	6-leaf	C				
4	Warrant	3	L	3	pt/a	6-leaf	C				
4	AMS		WG	17	lb/100 gal	6-leaf	C				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
4	AMS		WG	17	lb/100 gal	canopy	D				
5	Nortron	4	L	3	pt/a	PRE	A	99	99	7	99
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
5	Betamix	1.3	L	2	pt/a	2-leaf	B				
5	AMS		WG	17	lb/100 gal	2-leaf	B				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
5	Betamix	1.3	L	3	pt/a	6-leaf	C				
5	Warrant	3	L	3	pt/a	6-leaf	C				
5	AMS		WG	17	lb/100 gal	6-leaf	C				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
5	AMS		WG	17	lb/100 gal	canopy	D				
6	Pyramin	65	WG	4.2	lb/a	PRE	A	99	99	7	99
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
6	Betamix	1.3	L	2	pt/a	2-leaf	B				
6	AMS		WG	17	lb/100 gal	2-leaf	B				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
6	Betamix	1.3	L	3	pt/a	6-leaf	C				
6	Warrant	3	L	3	pt/a	6-leaf	C				
6	AMS		WG	17	lb/100 gal	6-leaf	C				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
6	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/10/2014	Jun/10/2014	Jun/20/2014	Jun/20/2014
								11 DA-B	11 DA-B	10 DA-C	10 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
7	Warrant	3	L	3	pt/a	PRE	A	99	96	1	99
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
7	Betamix	1.3	L	2	pt/a	2-leaf	B				
7	AMS		WG	17	lb/100 gal	2-leaf	B				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
7	AMS		WG	17	lb/100 gal	6-leaf	C				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
7	AMS		WG	17	lb/100 gal	canopy	D				
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	90	5	98
8	Warrant	3	L	3	pt/a	2-leaf	B				
8	AMS		WG	17	lb/100 gal	2-leaf	B				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
8	Warrant	3	L	3	pt/a	6-leaf	C				
8	AMS		WG	17	lb/100 gal	6-leaf	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
8	AMS		WG	17	lb/100 gal	canopy	D				
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	9	97
9	Betamix	1.3	L	2	pt/a	2-leaf	B				
9	Warrant	3	L	3	pt/a	2-leaf	B				
9	AMS		WG	17	lb/100 gal	2-leaf	B				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
9	Warrant	3	L	3	pt/a	6-leaf	C				
9	AMS		WG	17	lb/100 gal	6-leaf	C				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
9	AMS		WG	17	lb/100 gal	canopy	D				
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	97	0	99
10	Betamix	1.3	L	2	pt/a	2-leaf	B				
10	AMS		WG	17	lb/100 gal	2-leaf	B				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
10	Betamix	1.3	L	3	pt/a	6-leaf	C				
10	AMS		WG	17	lb/100 gal	6-leaf	C				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
10	AMS		WG	17	lb/100 gal	canopy	D				
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	14	99
11	Betamix	1.3	L	2	pt/a	2-leaf	B				
11	AMS		WG	17	lb/100 gal	2-leaf	B				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
11	Betamix	1.3	L	3	pt/a	6-leaf	C				
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
11	AMS		WG	17	lb/100 gal	6-leaf	C				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
11	AMS		WG	17	lb/100 gal	canopy	D				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	97	13	99
12	Betamix	1.3	L	2	pt/a	2-leaf	B				
12	AMS		WG	17	lb/100 gal	2-leaf	B				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
12	Betamix	1.3	L	3	pt/a	6-leaf	C				
12	Outlook	6	L	18	fl oz/a	6-leaf	C				
12	AMS		WG	17	lb/100 gal	6-leaf	C				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/10/2014	Jun/10/2014	Jun/20/2014	Jun/20/2014
								11 DA-B	11 DA-B	10 DA-C	10 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	96	3	99
13	Betamix	1.3	L	2	pt/a	2-leaf	B				
13	Stinger	3	L	2	fl oz/a	2-leaf	B				
13	AMS		WG	17	lb/100 gal	2-leaf	B				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
13	Betamix	1.3	L	3	pt/a	6-leaf	C				
13	Stinger	3	L	4	fl oz/a	6-leaf	C				
13	AMS		WG	17	lb/100 gal	6-leaf	C				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
13	AMS		WG	17	lb/100 gal	canopy	D				
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	92	6	99
14	Betamix	1.3	L	2	pt/a	2-leaf	B				
14	Stinger	3	L	2	fl oz/a	2-leaf	B				
14	AMS		WG	17	lb/100 gal	2-leaf	B				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
14	Betamix	1.3	L	3	pt/a	6-leaf	C				
14	Stinger	3	L	4	fl oz/a	6-leaf	C				
14	Warrant	3	L	3	pt/a	6-leaf	C				
14	AMS		WG	17	lb/100 gal	6-leaf	C				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
14	AMS		WG	17	lb/100 gal	canopy	D				
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	97	3	99
15	Betamix	1.3	L	2	pt/a	2-leaf	B				
15	AMS		WG	17	lb/100 gal	2-leaf	B				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
15	Betamix	1.3	L	3	pt/a	6-leaf	C				
15	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	Betamix	1.3	L	3	pt/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	94	2	99
16	Stinger	3	L	2	fl oz/a	2-leaf	B				
16	AMS		WG	17	lb/100 gal	2-leaf	B				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
16	Stinger	3	L	4	fl oz/a	6-leaf	C				
16	AMS		WG	17	lb/100 gal	6-leaf	C				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
16	Stinger	3	L	4	fl oz/a	canopy	D				
16	AMS		WG	17	lb/100 gal	canopy	D				
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	4	99
17	Betamix	1.3	L	2	pt/a	2-leaf	B				
17	Stinger	3	L	2	fl oz/a	2-leaf	B				
17	AMS		WG	17	lb/100 gal	2-leaf	B				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
17	Betamix	1.3	L	3	pt/a	6-leaf	C				
17	Stinger	3	L	4	fl oz/a	6-leaf	C				
17	AMS		WG	17	lb/100 gal	6-leaf	C				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
17	Betamix	1.3	L	3	pt/a	canopy	D				
17	Stinger	3	L	4	fl oz/a	canopy	D				
17	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/10/2014	Jun/10/2014	Jun/20/2014	Jun/20/2014
								11 DA-B	11 DA-B	10 DA-C	10 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	96	2	99
18	Betamix	1.3	L	2	pt/a	2-leaf	B				
18	AMS		WG	17	lb/100 gal	2-leaf	B				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
18	Betamix	1.3	L	4	pt/a	6-leaf	C				
18	AMS		WG	17	lb/100 gal	6-leaf	C				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
18	Betamix	1.3	L	6	pt/a	canopy	D				
18	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	15	99
19	Betamix	1.3	L	2	pt/a	2-leaf	B				
19	AMS		WG	17	lb/100 gal	2-leaf	B				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
19	Betamix	1.3	L	4	pt/a	6-leaf	C				
19	Warrant	3	L	3	pt/a	6-leaf	C				
19	AMS		WG	17	lb/100 gal	6-leaf	C				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
19	Betamix	1.3	L	6	pt/a	canopy	D				
19	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	96	25	99
20	Betamix	1.3	L	2	pt/a	2-leaf	B				
20	Stinger	3	L	2	fl oz/a	2-leaf	B				
20	AMS		WG	17	lb/100 gal	2-leaf	B				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
20	Betamix	1.3	L	4	pt/a	6-leaf	C				
20	Stinger	3	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	AMS		WG	17	lb/100 gal	6-leaf	C				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
20	Betamix	1.3	L	6	pt/a	canopy	D				
20	Stinger	3	L	4	fl oz/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.0	5.6	12.2	0.8
CV								0.0	4.14	113.91	0.58

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								AMARE	POLCO	BETVU	CHEAL
Crop Code								control	control	injury	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/20/2014	Jun/20/2014	Jun/26/2014	Jun/26/2014
Rating Date								10 DA-C	10 DA-C	16 DA-C	16 DA-C
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
1	AMS		WG	17	lb/100 gal	2-leaf	B				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
1	AMS		WG	17	lb/100 gal	6-leaf	C				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
1	AMS		WG	17	lb/100 gal	canopy	D				
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	5	99
2	Betamix	1.3	L	2	pt/a	2-leaf	B				
2	Warrant	3	L	3	pt/a	2-leaf	B				
2	AMS		WG	17	lb/100 gal	2-leaf	B				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
2	AMS		WG	17	lb/100 gal	6-leaf	C				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
2	AMS		WG	17	lb/100 gal	canopy	D				
3	Nortron	4	L	3	pt/a	PRE	A	99	99	4	99
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Warrant	3	L	3	pt/a	2-leaf	B				
3	AMS		WG	17	lb/100 gal	2-leaf	B				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
3	AMS		WG	17	lb/100 gal	6-leaf	C				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
3	AMS		WG	17	lb/100 gal	canopy	D				
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	6	99
4	Betamix	1.3	L	2	pt/a	2-leaf	B				
4	AMS		WG	17	lb/100 gal	2-leaf	B				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
4	Betamix	1.3	L	3	pt/a	6-leaf	C				
4	Warrant	3	L	3	pt/a	6-leaf	C				
4	AMS		WG	17	lb/100 gal	6-leaf	C				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
4	AMS		WG	17	lb/100 gal	canopy	D				
5	Nortron	4	L	3	pt/a	PRE	A	99	99	1	99
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
5	Betamix	1.3	L	2	pt/a	2-leaf	B				
5	AMS		WG	17	lb/100 gal	2-leaf	B				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
5	Betamix	1.3	L	3	pt/a	6-leaf	C				
5	Warrant	3	L	3	pt/a	6-leaf	C				
5	AMS		WG	17	lb/100 gal	6-leaf	C				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
5	AMS		WG	17	lb/100 gal	canopy	D				
6	Pyramin	65	WG	4.2	lb/a	PRE	A	99	99	1	99
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
6	Betamix	1.3	L	2	pt/a	2-leaf	B				
6	AMS		WG	17	lb/100 gal	2-leaf	B				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
6	Betamix	1.3	L	3	pt/a	6-leaf	C				
6	Warrant	3	L	3	pt/a	6-leaf	C				
6	AMS		WG	17	lb/100 gal	6-leaf	C				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
6	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/20/2014	Jun/20/2014	Jun/26/2014	Jun/26/2014
								10 DA-C	10 DA-C	16 DA-C	16 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
7	Warrant	3	L	3	pt/a	PRE	A	99	99	0	99
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
7	Betamix	1.3	L	2	pt/a	2-leaf	B				
7	AMS		WG	17	lb/100 gal	2-leaf	B				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
7	AMS		WG	17	lb/100 gal	6-leaf	C				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
7	AMS		WG	17	lb/100 gal	canopy	D				
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	97	2	96
8	Warrant	3	L	3	pt/a	2-leaf	B				
8	AMS		WG	17	lb/100 gal	2-leaf	B				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
8	Warrant	3	L	3	pt/a	6-leaf	C				
8	AMS		WG	17	lb/100 gal	6-leaf	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
8	AMS		WG	17	lb/100 gal	canopy	D				
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	2	95
9	Betamix	1.3	L	2	pt/a	2-leaf	B				
9	Warrant	3	L	3	pt/a	2-leaf	B				
9	AMS		WG	17	lb/100 gal	2-leaf	B				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
9	Warrant	3	L	3	pt/a	6-leaf	C				
9	AMS		WG	17	lb/100 gal	6-leaf	C				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
9	AMS		WG	17	lb/100 gal	canopy	D				
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
10	Betamix	1.3	L	2	pt/a	2-leaf	B				
10	AMS		WG	17	lb/100 gal	2-leaf	B				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
10	Betamix	1.3	L	3	pt/a	6-leaf	C				
10	AMS		WG	17	lb/100 gal	6-leaf	C				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
10	AMS		WG	17	lb/100 gal	canopy	D				
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99
11	Betamix	1.3	L	2	pt/a	2-leaf	B				
11	AMS		WG	17	lb/100 gal	2-leaf	B				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
11	Betamix	1.3	L	3	pt/a	6-leaf	C				
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
11	AMS		WG	17	lb/100 gal	6-leaf	C				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
11	AMS		WG	17	lb/100 gal	canopy	D				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
12	Betamix	1.3	L	2	pt/a	2-leaf	B				
12	AMS		WG	17	lb/100 gal	2-leaf	B				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
12	Betamix	1.3	L	3	pt/a	6-leaf	C				
12	Outlook	6	L	18	fl oz/a	6-leaf	C				
12	AMS		WG	17	lb/100 gal	6-leaf	C				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/20/2014	Jun/20/2014	Jun/26/2014	Jun/26/2014
								10 DA-C	10 DA-C	16 DA-C	16 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99
13	Betamix	1.3	L	2	pt/a	2-leaf	B				
13	Stinger	3	L	2	fl oz/a	2-leaf	B				
13	AMS		WG	17	lb/100 gal	2-leaf	B				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
13	Betamix	1.3	L	3	pt/a	6-leaf	C				
13	Stinger	3	L	4	fl oz/a	6-leaf	C				
13	AMS		WG	17	lb/100 gal	6-leaf	C				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
13	AMS		WG	17	lb/100 gal	canopy	D				
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99
14	Betamix	1.3	L	2	pt/a	2-leaf	B				
14	Stinger	3	L	2	fl oz/a	2-leaf	B				
14	AMS		WG	17	lb/100 gal	2-leaf	B				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
14	Betamix	1.3	L	3	pt/a	6-leaf	C				
14	Stinger	3	L	4	fl oz/a	6-leaf	C				
14	Warrant	3	L	3	pt/a	6-leaf	C				
14	AMS		WG	17	lb/100 gal	6-leaf	C				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
14	AMS		WG	17	lb/100 gal	canopy	D				
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
15	Betamix	1.3	L	2	pt/a	2-leaf	B				
15	AMS		WG	17	lb/100 gal	2-leaf	B				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
15	Betamix	1.3	L	3	pt/a	6-leaf	C				
15	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	Betamix	1.3	L	3	pt/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	0	99
16	Stinger	3	L	2	fl oz/a	2-leaf	B				
16	AMS		WG	17	lb/100 gal	2-leaf	B				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
16	Stinger	3	L	4	fl oz/a	6-leaf	C				
16	AMS		WG	17	lb/100 gal	6-leaf	C				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
16	Stinger	3	L	4	fl oz/a	canopy	D				
16	AMS		WG	17	lb/100 gal	canopy	D				
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
17	Betamix	1.3	L	2	pt/a	2-leaf	B				
17	Stinger	3	L	2	fl oz/a	2-leaf	B				
17	AMS		WG	17	lb/100 gal	2-leaf	B				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
17	Betamix	1.3	L	3	pt/a	6-leaf	C				
17	Stinger	3	L	4	fl oz/a	6-leaf	C				
17	AMS		WG	17	lb/100 gal	6-leaf	C				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
17	Betamix	1.3	L	3	pt/a	canopy	D				
17	Stinger	3	L	4	fl oz/a	canopy	D				
17	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL
								control	control	injury	control
								percent	percent	percent	percent
								Jun/20/2014	Jun/20/2014	Jun/26/2014	Jun/26/2014
								10 DA-C	10 DA-C	16 DA-C	16 DA-C
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99
18	Betamix	1.3	L	2	pt/a	2-leaf	B				
18	AMS		WG	17	lb/100 gal	2-leaf	B				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
18	Betamix	1.3	L	4	pt/a	6-leaf	C				
18	AMS		WG	17	lb/100 gal	6-leaf	C				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
18	Betamix	1.3	L	6	pt/a	canopy	D				
18	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99
19	Betamix	1.3	L	2	pt/a	2-leaf	B				
19	AMS		WG	17	lb/100 gal	2-leaf	B				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
19	Betamix	1.3	L	4	pt/a	6-leaf	C				
19	Warrant	3	L	3	pt/a	6-leaf	C				
19	AMS		WG	17	lb/100 gal	6-leaf	C				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
19	Betamix	1.3	L	6	pt/a	canopy	D				
19	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	9	99
20	Betamix	1.3	L	2	pt/a	2-leaf	B				
20	Stinger	3	L	2	fl oz/a	2-leaf	B				
20	AMS		WG	17	lb/100 gal	2-leaf	B				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
20	Betamix	1.3	L	4	pt/a	6-leaf	C				
20	Stinger	3	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	AMS		WG	17	lb/100 gal	6-leaf	C				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
20	Betamix	1.3	L	6	pt/a	canopy	D				
20	Stinger	3	L	4	fl oz/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.0	1.0	5.2	2.7
CV								0.0	0.74	224.64	1.95

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								AMARE	POLCO	BETVU	CHEAL	AMARE
Crop Code								control	control	injury	control	control
Rating Data Type								percent	percent	percent	percent	percent
Rating Unit								Jun/26/2014	Jun/26/2014	Jul/24/2014	Jul/24/2014	Jul/24/2014
Rating Date								16 DA-C	16 DA-C	13 DA-D	13 DA-D	13 DA-D
Trt-Eval Interval								0	0	0	0	0
# Subsamples, Dec.												
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	0	99	99
1	AMS		WG	17	lb/100 gal	2-leaf	B					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
1	AMS		WG	17	lb/100 gal	6-leaf	C					
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
1	AMS		WG	17	lb/100 gal	canopy	D					
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	98	3	99	99
2	Betamix	1.3	L	2	pt/a	2-leaf	B					
2	Warrant	3	L	3	pt/a	2-leaf	B					
2	AMS		WG	17	lb/100 gal	2-leaf	B					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
2	AMS		WG	17	lb/100 gal	6-leaf	C					
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
2	AMS		WG	17	lb/100 gal	canopy	D					
3	Nortron	4	L	3	pt/a	PRE	A	99	99	4	99	99
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
3	Betamix	1.3	L	2	pt/a	2-leaf	B					
3	Warrant	3	L	3	pt/a	2-leaf	B					
3	AMS		WG	17	lb/100 gal	2-leaf	B					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
3	AMS		WG	17	lb/100 gal	6-leaf	C					
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
3	AMS		WG	17	lb/100 gal	canopy	D					
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	3	99	99
4	Betamix	1.3	L	2	pt/a	2-leaf	B					
4	AMS		WG	17	lb/100 gal	2-leaf	B					
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
4	Betamix	1.3	L	3	pt/a	6-leaf	C					
4	Warrant	3	L	3	pt/a	6-leaf	C					
4	AMS		WG	17	lb/100 gal	6-leaf	C					
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
4	AMS		WG	17	lb/100 gal	canopy	D					
5	Nortron	4	L	3	pt/a	PRE	A	99	99	0	99	99
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
5	Betamix	1.3	L	2	pt/a	2-leaf	B					
5	AMS		WG	17	lb/100 gal	2-leaf	B					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
5	Betamix	1.3	L	3	pt/a	6-leaf	C					
5	Warrant	3	L	3	pt/a	6-leaf	C					
5	AMS		WG	17	lb/100 gal	6-leaf	C					
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
5	AMS		WG	17	lb/100 gal	canopy	D					
6	Pyramin	65	WG	4.2	lb/a	PRE	A	99	99	0	99	99
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
6	Betamix	1.3	L	2	pt/a	2-leaf	B					
6	AMS		WG	17	lb/100 gal	2-leaf	B					
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
6	Betamix	1.3	L	3	pt/a	6-leaf	C					
6	Warrant	3	L	3	pt/a	6-leaf	C					
6	AMS		WG	17	lb/100 gal	6-leaf	C					
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
6	AMS		WG	17	lb/100 gal	canopy	D					

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

								AMARE	POLCO	BETVU	CHEAL	AMARE
								control	control	injury	control	control
								percent	percent	percent	percent	percent
								Jun/26/2014	Jun/26/2014	Jul/24/2014	Jul/24/2014	Jul/24/2014
								16 DA-C	16 DA-C	13 DA-D	13 DA-D	13 DA-D
								0	0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
7	Warrant	3	L	3	pt/a	PRE	A	99	99	0	99	99
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
7	Betamix	1.3	L	2	pt/a	2-leaf	B					
7	AMS		WG	17	lb/100 gal	2-leaf	B					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
7	AMS		WG	17	lb/100 gal	6-leaf	C					
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
7	AMS		WG	17	lb/100 gal	canopy	D					
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99	99
8	Warrant	3	L	3	pt/a	2-leaf	B					
8	AMS		WG	17	lb/100 gal	2-leaf	B					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
8	Warrant	3	L	3	pt/a	6-leaf	C					
8	AMS		WG	17	lb/100 gal	6-leaf	C					
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
8	AMS		WG	17	lb/100 gal	canopy	D					
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99	99
9	Betamix	1.3	L	2	pt/a	2-leaf	B					
9	Warrant	3	L	3	pt/a	2-leaf	B					
9	AMS		WG	17	lb/100 gal	2-leaf	B					
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
9	Warrant	3	L	3	pt/a	6-leaf	C					
9	AMS		WG	17	lb/100 gal	6-leaf	C					
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
9	AMS		WG	17	lb/100 gal	canopy	D					
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99	99
10	Betamix	1.3	L	2	pt/a	2-leaf	B					
10	AMS		WG	17	lb/100 gal	2-leaf	B					
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
10	Betamix	1.3	L	3	pt/a	6-leaf	C					
10	AMS		WG	17	lb/100 gal	6-leaf	C					
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
10	AMS		WG	17	lb/100 gal	canopy	D					
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99	99
11	Betamix	1.3	L	2	pt/a	2-leaf	B					
11	AMS		WG	17	lb/100 gal	2-leaf	B					
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
11	Betamix	1.3	L	3	pt/a	6-leaf	C					
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C					
11	AMS		WG	17	lb/100 gal	6-leaf	C					
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
11	AMS		WG	17	lb/100 gal	canopy	D					
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99	99
12	Betamix	1.3	L	2	pt/a	2-leaf	B					
12	AMS		WG	17	lb/100 gal	2-leaf	B					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
12	Betamix	1.3	L	3	pt/a	6-leaf	C					
12	Outlook	6	L	18	fl oz/a	6-leaf	C					
12	AMS		WG	17	lb/100 gal	6-leaf	C					
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
12	AMS		WG	17	lb/100 gal	canopy	D					

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code	AMARE	POLCO	BETVU	CHEAL	AMARE
Crop Code					
Rating Data Type	control	control	injury	control	control
Rating Unit	percent	percent	percent	percent	percent
Rating Date	Jun/26/2014	Jun/26/2014	Jul/24/2014	Jul/24/2014	Jul/24/2014
Trt-Eval Interval	16 DA-C	16 DA-C	13 DA-D	13 DA-D	13 DA-D
# Subsamples, Dec.	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	AMARE	POLCO	BETVU	CHEAL	AMARE
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99	99
13	Betamix	1.3	L	2	pt/a	2-leaf	B					
13	Stinger	3	L	2	fl oz/a	2-leaf	B					
13	AMS		WG	17	lb/100 gal	2-leaf	B					
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
13	Betamix	1.3	L	3	pt/a	6-leaf	C					
13	Stinger	3	L	4	fl oz/a	6-leaf	C					
13	AMS		WG	17	lb/100 gal	6-leaf	C					
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
13	AMS		WG	17	lb/100 gal	canopy	D					
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99	99
14	Betamix	1.3	L	2	pt/a	2-leaf	B					
14	Stinger	3	L	2	fl oz/a	2-leaf	B					
14	AMS		WG	17	lb/100 gal	2-leaf	B					
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
14	Betamix	1.3	L	3	pt/a	6-leaf	C					
14	Stinger	3	L	4	fl oz/a	6-leaf	C					
14	Warrant	3	L	3	pt/a	6-leaf	C					
14	AMS		WG	17	lb/100 gal	6-leaf	C					
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
14	AMS		WG	17	lb/100 gal	canopy	D					
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	2	99	99
15	Betamix	1.3	L	2	pt/a	2-leaf	B					
15	AMS		WG	17	lb/100 gal	2-leaf	B					
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
15	Betamix	1.3	L	3	pt/a	6-leaf	C					
15	AMS		WG	17	lb/100 gal	6-leaf	C					
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
15	Betamix	1.3	L	3	pt/a	canopy	D					
15	AMS		WG	17	lb/100 gal	canopy	D					
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	0	99	99
16	Stinger	3	L	2	fl oz/a	2-leaf	B					
16	AMS		WG	17	lb/100 gal	2-leaf	B					
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
16	Stinger	3	L	4	fl oz/a	6-leaf	C					
16	AMS		WG	17	lb/100 gal	6-leaf	C					
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
16	Stinger	3	L	4	fl oz/a	canopy	D					
16	AMS		WG	17	lb/100 gal	canopy	D					
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99	99
17	Betamix	1.3	L	2	pt/a	2-leaf	B					
17	Stinger	3	L	2	fl oz/a	2-leaf	B					
17	AMS		WG	17	lb/100 gal	2-leaf	B					
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
17	Betamix	1.3	L	3	pt/a	6-leaf	C					
17	Stinger	3	L	4	fl oz/a	6-leaf	C					
17	AMS		WG	17	lb/100 gal	6-leaf	C					
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
17	Betamix	1.3	L	3	pt/a	canopy	D					
17	Stinger	3	L	4	fl oz/a	canopy	D					
17	AMS		WG	17	lb/100 gal	canopy	D					

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code	AMARE	POLCO	BETVU	CHEAL	AMARE
Crop Code					
Rating Data Type	control	control	injury	control	control
Rating Unit	percent	percent	percent	percent	percent
Rating Date	Jun/26/2014	Jun/26/2014	Jul/24/2014	Jul/24/2014	Jul/24/2014
Trt-Eval Interval	16 DA-C	16 DA-C	13 DA-D	13 DA-D	13 DA-D
# Subsamples, Dec.	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Grow Stg	Appl Code					
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	1	99	99
18	Betamix	1.3	L	2	pt/a	2-leaf	B					
18	AMS		WG	17	lb/100 gal	2-leaf	B					
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
18	Betamix	1.3	L	4	pt/a	6-leaf	C					
18	AMS		WG	17	lb/100 gal	6-leaf	C					
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
18	Betamix	1.3	L	6	pt/a	canopy	D					
18	AMS		WG	17	lb/100 gal	canopy	D					
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	3	99	99
19	Betamix	1.3	L	2	pt/a	2-leaf	B					
19	AMS		WG	17	lb/100 gal	2-leaf	B					
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
19	Betamix	1.3	L	4	pt/a	6-leaf	C					
19	Warrant	3	L	3	pt/a	6-leaf	C					
19	AMS		WG	17	lb/100 gal	6-leaf	C					
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
19	Betamix	1.3	L	6	pt/a	canopy	D					
19	AMS		WG	17	lb/100 gal	canopy	D					
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	2	99	99
20	Betamix	1.3	L	2	pt/a	2-leaf	B					
20	Stinger	3	L	2	fl oz/a	2-leaf	B					
20	AMS		WG	17	lb/100 gal	2-leaf	B					
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C					
20	Betamix	1.3	L	4	pt/a	6-leaf	C					
20	Stinger	3	L	4	fl oz/a	6-leaf	C					
20	Warrant	3	L	3	pt/a	6-leaf	C					
20	AMS		WG	17	lb/100 gal	6-leaf	C					
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
20	Betamix	1.3	L	6	pt/a	canopy	D					
20	Stinger	3	L	4	fl oz/a	canopy	D					
20	AMS		WG	17	lb/100 gal	canopy	D					

LSD (P=.05)	0.0	1.0	3.8	0.3	0.0
CV	0.0	0.73	253.87	0.23	0.0

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code	POLCO			
Crop Code		BETVU	BETVU	BETVU
Rating Data Type	control	stand count	% sugar	yield
Rating Unit	percent	100' row		ton/acre
Rating Date	Jul/24/2014	Sep/23/2014	Sep/24/2014	Sep/24/2014
Trt-Eval Interval	13 DA-D	140 DA-A	141 DA-A	141 DA-A
# Subsamples, Dec.	0			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	228.3	16.8	31.6
1	AMS		WG	17	lb/100 gal	2-leaf	B				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
1	AMS		WG	17	lb/100 gal	6-leaf	C				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
1	AMS		WG	17	lb/100 gal	canopy	D				
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	250.0	17.0	33.1
2	Betamix	1.3	L	2	pt/a	2-leaf	B				
2	Warrant	3	L	3	pt/a	2-leaf	B				
2	AMS		WG	17	lb/100 gal	2-leaf	B				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
2	AMS		WG	17	lb/100 gal	6-leaf	C				
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
2	AMS		WG	17	lb/100 gal	canopy	D				
3	Nortron	4	L	3	pt/a	PRE	A	99	244.7	16.8	31.8
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Warrant	3	L	3	pt/a	2-leaf	B				
3	AMS		WG	17	lb/100 gal	2-leaf	B				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
3	AMS		WG	17	lb/100 gal	6-leaf	C				
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
3	AMS		WG	17	lb/100 gal	canopy	D				
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	260.7	17.2	31.4
4	Betamix	1.3	L	2	pt/a	2-leaf	B				
4	AMS		WG	17	lb/100 gal	2-leaf	B				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
4	Betamix	1.3	L	3	pt/a	6-leaf	C				
4	Warrant	3	L	3	pt/a	6-leaf	C				
4	AMS		WG	17	lb/100 gal	6-leaf	C				
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
4	AMS		WG	17	lb/100 gal	canopy	D				
5	Nortron	4	L	3	pt/a	PRE	A	99	231.8	17.0	32.0
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
5	Betamix	1.3	L	2	pt/a	2-leaf	B				
5	AMS		WG	17	lb/100 gal	2-leaf	B				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
5	Betamix	1.3	L	3	pt/a	6-leaf	C				
5	Warrant	3	L	3	pt/a	6-leaf	C				
5	AMS		WG	17	lb/100 gal	6-leaf	C				
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
5	AMS		WG	17	lb/100 gal	canopy	D				
6	Pyramin	65	WG	4.2	lb/a	PRE	A	99	243.8	16.9	33.4
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
6	Betamix	1.3	L	2	pt/a	2-leaf	B				
6	AMS		WG	17	lb/100 gal	2-leaf	B				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
6	Betamix	1.3	L	3	pt/a	6-leaf	C				
6	Warrant	3	L	3	pt/a	6-leaf	C				
6	AMS		WG	17	lb/100 gal	6-leaf	C				
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
6	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code								POLCO			
Crop Code								control	BETVU	BETVU	BETVU
Rating Data Type								percent	stand count	% sugar	yield
Rating Unit								Jul/24/2014	Sep/23/2014	Sep/24/2014	Sep/24/2014
Rating Date								13 DA-D	140 DA-A	141 DA-A	141 DA-A
Trt-Eval Interval								0			
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
7	Warrant	3	L	3	pt/a	PRE	A	99	223.5	16.4	31.1
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
7	Betamix	1.3	L	2	pt/a	2-leaf	B				
7	AMS		WG	17	lb/100 gal	2-leaf	B				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
7	AMS		WG	17	lb/100 gal	6-leaf	C				
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
7	AMS		WG	17	lb/100 gal	canopy	D				
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	241.3	15.9	32.6
8	Warrant	3	L	3	pt/a	2-leaf	B				
8	AMS		WG	17	lb/100 gal	2-leaf	B				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
8	Warrant	3	L	3	pt/a	6-leaf	C				
8	AMS		WG	17	lb/100 gal	6-leaf	C				
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
8	AMS		WG	17	lb/100 gal	canopy	D				
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	252.5	17.0	30.6
9	Betamix	1.3	L	2	pt/a	2-leaf	B				
9	Warrant	3	L	3	pt/a	2-leaf	B				
9	AMS		WG	17	lb/100 gal	2-leaf	B				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
9	Warrant	3	L	3	pt/a	6-leaf	C				
9	AMS		WG	17	lb/100 gal	6-leaf	C				
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
9	AMS		WG	17	lb/100 gal	canopy	D				
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	263.0	16.9	33.0
10	Betamix	1.3	L	2	pt/a	2-leaf	B				
10	AMS		WG	17	lb/100 gal	2-leaf	B				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
10	Betamix	1.3	L	3	pt/a	6-leaf	C				
10	AMS		WG	17	lb/100 gal	6-leaf	C				
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
10	AMS		WG	17	lb/100 gal	canopy	D				
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	252.0	16.9	31.2
11	Betamix	1.3	L	2	pt/a	2-leaf	B				
11	AMS		WG	17	lb/100 gal	2-leaf	B				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
11	Betamix	1.3	L	3	pt/a	6-leaf	C				
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
11	AMS		WG	17	lb/100 gal	6-leaf	C				
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
11	AMS		WG	17	lb/100 gal	canopy	D				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	267.0	16.2	32.4
12	Betamix	1.3	L	2	pt/a	2-leaf	B				
12	AMS		WG	17	lb/100 gal	2-leaf	B				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
12	Betamix	1.3	L	3	pt/a	6-leaf	C				
12	Outlook	6	L	18	fl oz/a	6-leaf	C				
12	AMS		WG	17	lb/100 gal	6-leaf	C				
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code	POLCO			
Crop Code		BETVU	BETVU	BETVU
Rating Data Type	control	stand count	% sugar	yield
Rating Unit	percent	100' row		ton/acre
Rating Date	Jul/24/2014	Sep/23/2014	Sep/24/2014	Sep/24/2014
Trt-Eval Interval	13 DA-D	140 DA-A	141 DA-A	141 DA-A
# Subsamples, Dec.	0			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	253.5	17.2	31.8
13	Betamix	1.3	L	2	pt/a	2-leaf	B				
13	Stinger	3	L	2	fl oz/a	2-leaf	B				
13	AMS		WG	17	lb/100 gal	2-leaf	B				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
13	Betamix	1.3	L	3	pt/a	6-leaf	C				
13	Stinger	3	L	4	fl oz/a	6-leaf	C				
13	AMS		WG	17	lb/100 gal	6-leaf	C				
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
13	AMS		WG	17	lb/100 gal	canopy	D				
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	245.7	17.1	33.3
14	Betamix	1.3	L	2	pt/a	2-leaf	B				
14	Stinger	3	L	2	fl oz/a	2-leaf	B				
14	AMS		WG	17	lb/100 gal	2-leaf	B				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
14	Betamix	1.3	L	3	pt/a	6-leaf	C				
14	Stinger	3	L	4	fl oz/a	6-leaf	C				
14	Warrant	3	L	3	pt/a	6-leaf	C				
14	AMS		WG	17	lb/100 gal	6-leaf	C				
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
14	AMS		WG	17	lb/100 gal	canopy	D				
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	260.0	17.5	31.1
15	Betamix	1.3	L	2	pt/a	2-leaf	B				
15	AMS		WG	17	lb/100 gal	2-leaf	B				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
15	Betamix	1.3	L	3	pt/a	6-leaf	C				
15	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	Betamix	1.3	L	3	pt/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	251.3	16.4	33.8
16	Stinger	3	L	2	fl oz/a	2-leaf	B				
16	AMS		WG	17	lb/100 gal	2-leaf	B				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
16	Stinger	3	L	4	fl oz/a	6-leaf	C				
16	AMS		WG	17	lb/100 gal	6-leaf	C				
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
16	Stinger	3	L	4	fl oz/a	canopy	D				
16	AMS		WG	17	lb/100 gal	canopy	D				
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	255.8	16.7	30.6
17	Betamix	1.3	L	2	pt/a	2-leaf	B				
17	Stinger	3	L	2	fl oz/a	2-leaf	B				
17	AMS		WG	17	lb/100 gal	2-leaf	B				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
17	Betamix	1.3	L	3	pt/a	6-leaf	C				
17	Stinger	3	L	4	fl oz/a	6-leaf	C				
17	AMS		WG	17	lb/100 gal	6-leaf	C				
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
17	Betamix	1.3	L	3	pt/a	canopy	D				
17	Stinger	3	L	4	fl oz/a	canopy	D				
17	AMS		WG	17	lb/100 gal	canopy	D				

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								POLCO			
Crop Code								control	BETVU	BETVU	BETVU
Rating Data Type								percent	stand count	% sugar	yield
Rating Unit								100'	100' row		ton/acre
Rating Date								Jul/24/2014	Sep/23/2014	Sep/24/2014	Sep/24/2014
Trt-Eval Interval								13 DA-D	140 DA-A	141 DA-A	141 DA-A
# Subsamples, Dec.								0			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	259.3	17.3	35.6
18	Betamix	1.3	L	2	pt/a	2-leaf	B				
18	AMS		WG	17	lb/100 gal	2-leaf	B				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
18	Betamix	1.3	L	4	pt/a	6-leaf	C				
18	AMS		WG	17	lb/100 gal	6-leaf	C				
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
18	Betamix	1.3	L	6	pt/a	canopy	D				
18	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	249.3	17.2	29.8
19	Betamix	1.3	L	2	pt/a	2-leaf	B				
19	AMS		WG	17	lb/100 gal	2-leaf	B				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
19	Betamix	1.3	L	4	pt/a	6-leaf	C				
19	Warrant	3	L	3	pt/a	6-leaf	C				
19	AMS		WG	17	lb/100 gal	6-leaf	C				
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
19	Betamix	1.3	L	6	pt/a	canopy	D				
19	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	268.0	17.4	32.1
20	Betamix	1.3	L	2	pt/a	2-leaf	B				
20	Stinger	3	L	2	fl oz/a	2-leaf	B				
20	AMS		WG	17	lb/100 gal	2-leaf	B				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
20	Betamix	1.3	L	4	pt/a	6-leaf	C				
20	Stinger	3	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	AMS		WG	17	lb/100 gal	6-leaf	C				
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
20	Betamix	1.3	L	6	pt/a	canopy	D				
20	Stinger	3	L	4	fl oz/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.7	22.42	0.93	3.50
CV								0.49	6.27	3.85	7.62

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code
 Crop Code
 Rating Data Type
 Rating Unit
 Rating Date
 Trt-Eval Interval
 # Subsamples, Dec.

BETVU
 RWST
 # / ton
 Sep/24/2014
 141 DA-A
 BETVU
 RWSA
 # / acre
 Sep/24/2014
 141 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code			
1	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	250.3	7879.0	
1	AMS		WG	17	lb/100 gal	2-leaf	B			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
1	AMS		WG	17	lb/100 gal	canopy	D			
2	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	256.5	8391.5	
2	Betamix	1.3	L	2	pt/a	2-leaf	B			
2	Warrant	3	L	3	pt/a	2-leaf	B			
2	AMS		WG	17	lb/100 gal	2-leaf	B			
2	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
2	AMS		WG	17	lb/100 gal	canopy	D			
3	Nortron	4	L	3	pt/a	PRE	A	246.5	7574.0	
3	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B			
3	Betamix	1.3	L	2	pt/a	2-leaf	B			
3	Warrant	3	L	3	pt/a	2-leaf	B			
3	AMS		WG	17	lb/100 gal	2-leaf	B			
3	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
3	AMS		WG	17	lb/100 gal	6-leaf	C			
3	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
3	AMS		WG	17	lb/100 gal	canopy	D			
4	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	257.5	8507.0	
4	Betamix	1.3	L	2	pt/a	2-leaf	B			
4	AMS		WG	17	lb/100 gal	2-leaf	B			
4	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
4	Betamix	1.3	L	3	pt/a	6-leaf	C			
4	Warrant	3	L	3	pt/a	6-leaf	C			
4	AMS		WG	17	lb/100 gal	6-leaf	C			
4	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
4	AMS		WG	17	lb/100 gal	canopy	D			
5	Nortron	4	L	3	pt/a	PRE	A	253.5	8102.5	
5	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B			
5	Betamix	1.3	L	2	pt/a	2-leaf	B			
5	AMS		WG	17	lb/100 gal	2-leaf	B			
5	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
5	Betamix	1.3	L	3	pt/a	6-leaf	C			
5	Warrant	3	L	3	pt/a	6-leaf	C			
5	AMS		WG	17	lb/100 gal	6-leaf	C			
5	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
5	AMS		WG	17	lb/100 gal	canopy	D			
6	Pyramin	65	WG	4.2	lb/a	PRE	A	252.5	8418.8	
6	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B			
6	Betamix	1.3	L	2	pt/a	2-leaf	B			
6	AMS		WG	17	lb/100 gal	2-leaf	B			
6	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
6	Betamix	1.3	L	3	pt/a	6-leaf	C			
6	Warrant	3	L	3	pt/a	6-leaf	C			
6	AMS		WG	17	lb/100 gal	6-leaf	C			
6	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D			
6	AMS		WG	17	lb/100 gal	canopy	D			

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code
 Crop Code
 Rating Data Type
 Rating Unit
 Rating Date
 Trt-Eval Interval
 # Subsamples, Dec.

BETVU
 RWST
 # / ton
 Sep/24/2014
 141 DA-A
 BETVU
 RWSA
 # / acre
 Sep/24/2014
 141 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code		
7	Warrant	3	L	3	pt/a	PRE	A	242.3	7544.0
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B		
7	Betamix	1.3	L	2	pt/a	2-leaf	B		
7	AMS		WG	17	lb/100 gal	2-leaf	B		
7	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
7	AMS		WG	17	lb/100 gal	6-leaf	C		
7	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
7	AMS		WG	17	lb/100 gal	canopy	D		
8	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	240.0	7837.3
8	Warrant	3	L	3	pt/a	2-leaf	B		
8	AMS		WG	17	lb/100 gal	2-leaf	B		
8	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
8	Warrant	3	L	3	pt/a	6-leaf	C		
8	AMS		WG	17	lb/100 gal	6-leaf	C		
8	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
8	AMS		WG	17	lb/100 gal	canopy	D		
9	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	255.0	7886.0
9	Betamix	1.3	L	2	pt/a	2-leaf	B		
9	Warrant	3	L	3	pt/a	2-leaf	B		
9	AMS		WG	17	lb/100 gal	2-leaf	B		
9	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
9	Warrant	3	L	3	pt/a	6-leaf	C		
9	AMS		WG	17	lb/100 gal	6-leaf	C		
9	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
9	AMS		WG	17	lb/100 gal	canopy	D		
10	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	253.3	8355.0
10	Betamix	1.3	L	2	pt/a	2-leaf	B		
10	AMS		WG	17	lb/100 gal	2-leaf	B		
10	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
10	Betamix	1.3	L	3	pt/a	6-leaf	C		
10	AMS		WG	17	lb/100 gal	6-leaf	C		
10	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
10	AMS		WG	17	lb/100 gal	canopy	D		
11	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	252.5	7853.5
11	Betamix	1.3	L	2	pt/a	2-leaf	B		
11	AMS		WG	17	lb/100 gal	2-leaf	B		
11	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
11	Betamix	1.3	L	3	pt/a	6-leaf	C		
11	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C		
11	AMS		WG	17	lb/100 gal	6-leaf	C		
11	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
11	AMS		WG	17	lb/100 gal	canopy	D		
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	237.7	7785.7
12	Betamix	1.3	L	2	pt/a	2-leaf	B		
12	AMS		WG	17	lb/100 gal	2-leaf	B		
12	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
12	Betamix	1.3	L	3	pt/a	6-leaf	C		
12	Outlook	6	L	18	fl oz/a	6-leaf	C		
12	AMS		WG	17	lb/100 gal	6-leaf	C		
12	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
12	AMS		WG	17	lb/100 gal	canopy	D		

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

Subsamples, Dec.

BETVU

BETVU

RWST

RWSA

/ ton

/ acre

Sep/24/2014

Sep/24/2014

141 DA-A

141 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code		
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	258.0	8470.0
13	Betamix	1.3	L	2	pt/a	2-leaf	B		
13	Stinger	3	L	2	fl oz/a	2-leaf	B		
13	AMS		WG	17	lb/100 gal	2-leaf	B		
13	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
13	Betamix	1.3	L	3	pt/a	6-leaf	C		
13	Stinger	3	L	4	fl oz/a	6-leaf	C		
13	AMS		WG	17	lb/100 gal	6-leaf	C		
13	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
13	AMS		WG	17	lb/100 gal	canopy	D		
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	254.3	8456.0
14	Betamix	1.3	L	2	pt/a	2-leaf	B		
14	Stinger	3	L	2	fl oz/a	2-leaf	B		
14	AMS		WG	17	lb/100 gal	2-leaf	B		
14	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
14	Betamix	1.3	L	3	pt/a	6-leaf	C		
14	Stinger	3	L	4	fl oz/a	6-leaf	C		
14	Warrant	3	L	3	pt/a	6-leaf	C		
14	AMS		WG	17	lb/100 gal	6-leaf	C		
14	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
14	AMS		WG	17	lb/100 gal	canopy	D		
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	260.0	8111.0
15	Betamix	1.3	L	2	pt/a	2-leaf	B		
15	AMS		WG	17	lb/100 gal	2-leaf	B		
15	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
15	Betamix	1.3	L	3	pt/a	6-leaf	C		
15	AMS		WG	17	lb/100 gal	6-leaf	C		
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
15	Betamix	1.3	L	3	pt/a	canopy	D		
15	AMS		WG	17	lb/100 gal	canopy	D		
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	245.5	8707.5
16	Stinger	3	L	2	fl oz/a	2-leaf	B		
16	AMS		WG	17	lb/100 gal	2-leaf	B		
16	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
16	Stinger	3	L	4	fl oz/a	6-leaf	C		
16	AMS		WG	17	lb/100 gal	6-leaf	C		
16	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
16	Stinger	3	L	4	fl oz/a	canopy	D		
16	AMS		WG	17	lb/100 gal	canopy	D		
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	250.0	7827.0
17	Betamix	1.3	L	2	pt/a	2-leaf	B		
17	Stinger	3	L	2	fl oz/a	2-leaf	B		
17	AMS		WG	17	lb/100 gal	2-leaf	B		
17	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
17	Betamix	1.3	L	3	pt/a	6-leaf	C		
17	Stinger	3	L	4	fl oz/a	6-leaf	C		
17	AMS		WG	17	lb/100 gal	6-leaf	C		
17	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
17	Betamix	1.3	L	3	pt/a	canopy	D		
17	Stinger	3	L	4	fl oz/a	canopy	D		
17	AMS		WG	17	lb/100 gal	canopy	D		

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-14
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code
 Crop Code
 Rating Data Type
 Rating Unit
 Rating Date
 Trt-Eval Interval
 # Subsamples, Dec.

BETVU BETVU
 RWST RWSA
 # / ton # / acre
 Sep/24/2014 Sep/24/2014
 141 DA-A 141 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code		
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	255.0	9386.0
18	Betamix	1.3	L	2	pt/a	2-leaf	B		
18	AMS		WG	17	lb/100 gal	2-leaf	B		
18	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
18	Betamix	1.3	L	4	pt/a	6-leaf	C		
18	AMS		WG	17	lb/100 gal	6-leaf	C		
18	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
18	Betamix	1.3	L	6	pt/a	canopy	D		
18	AMS		WG	17	lb/100 gal	canopy	D		
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	257.3	7673.3
19	Betamix	1.3	L	2	pt/a	2-leaf	B		
19	AMS		WG	17	lb/100 gal	2-leaf	B		
19	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
19	Betamix	1.3	L	4	pt/a	6-leaf	C		
19	Warrant	3	L	3	pt/a	6-leaf	C		
19	AMS		WG	17	lb/100 gal	6-leaf	C		
19	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
19	Betamix	1.3	L	6	pt/a	canopy	D		
19	AMS		WG	17	lb/100 gal	canopy	D		
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	262.0	8422.0
20	Betamix	1.3	L	2	pt/a	2-leaf	B		
20	Stinger	3	L	2	fl oz/a	2-leaf	B		
20	AMS		WG	17	lb/100 gal	2-leaf	B		
20	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C		
20	Betamix	1.3	L	4	pt/a	6-leaf	C		
20	Stinger	3	L	4	fl oz/a	6-leaf	C		
20	Warrant	3	L	3	pt/a	6-leaf	C		
20	AMS		WG	17	lb/100 gal	6-leaf	C		
20	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D		
20	Betamix	1.3	L	6	pt/a	canopy	D		
20	Stinger	3	L	4	fl oz/a	canopy	D		
20	AMS		WG	17	lb/100 gal	canopy	D		
LSD (P=.05)								13.86	877.67
CV								3.81	7.45

Means followed by same letter do not significantly differ (P=.05, LSD)