

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Date Planted: May/19/2015 **Row Spacing:** 30 IN
Variety: Crystal 059 **No. of Reps:** 4
Population: 49,000 seeds/A **% OM:** 3.0
Soil Type: Clay loam **pH:** 7.5
Plot Size: 10 X 30 FT **Design:** RANDOMIZED COMPLETE BLOCK

Tillage: Fall moldboard plow; spring soil finish twice
Fertilizer: 125 lbs of actual N per acre applied as urea broadcast and incorporated on April 1, 2015

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.	POLPY	SMARTWEED, PENNSYLVANIA	POLYGONUM PENNSYLVANICUM L.
Crop	Code	Common Name	
1.	BETVU	BEEET, SUGAR	

Application Description

	A	B	C	D
Application Timing:	PRE	2-leaf	6-leaf	canopy
Date Treated:	Apr/15/2015	Jun/11/2015	Jun/24/2015	Jul/20/2015
Time Treated:	3:20 PM	12:15 PM	10:40 AM	12:45 PM
% Cloud Cover:	0	35	15	50
Air Temp., Unit:	65 F	77 F	68 F	78 F
% Relative Humidity:	23	52	56	62
Wind Speed/Unit/Dir:	8 mph S	1 mph W	6 mph SW	7 mph SW
Soil Temp., Unit:	50 F	71 F	67 F	74 F
Soil/Leaf Surface M:	5 -	5 5	5 5	5 5
Soil Moist (1=w 5=d):	3	4	4	4

Crop Stage at Each Application

	A	B	C	D
Crop Name:	BETVU	BETVU	BETVU	BETVU
Height (In.):	-	1"	4-6"	15"
Stage (L):	-	2	6	15

Weed Stage at Each Application

	A	B	C	D
Weed 1 Name:	CHEAL	CHEAL	CHEAL	CHEAL
Height (In.):	-	1"	0.5"	2-18"
Stage (L):	-	4	4	8-many
Weed 2 Name:	AMARE	AMARE	AMARE	AMARE
Height (In.):	-	-	0.5-1"	-
Stage (L):	-	-	4-6	-
Weed 3 Name:	POLPY	POLPY	POLPY	POLPY
Height (In.):	-	-	-	-
Stage (L):	-	-	-	-

Weed Density (plants/sq. ft.)

	1	2	3
Weed Name:	CHEAL	AMARE	POLPY
Density:	8	3	<1

Application Equipment

Appl	Sprayer Type	Speed MPH	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	GPA	Carrier	PSI
A	Cub	3.8	AIXR	11003	22"	20"	100"	19	Water	28
B	Cub	3.8	AIXR	11003	25"	20"	100"	19	Water	28
C	Cub	3.8	AIXR	11003	26"	20"	100"	19	Water	28
D	Cub	3.8	AIXR	11003	28"	20"	100"	19	Water	28

Comments: Sugarbeets were originally planted on April 15, 2015. Due to poor emergence sugarbeet were replanted on May 19, 2015.

MSU Weed Science Research Program

Impact of glyphosate-resistant Palmer amaranth treatments on sugarbeet yield

Trial ID: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								BETVU	CHEAL	POLPY	BETVU
Crop Code								injury	control	control	injury
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/17/2015	Jun/17/2015	Jun/17/2015	Jun/24/2015
Rating Date								6 DA-B	6 DA-B	6 DA-B	13 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	99	99	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	12	99	99	3
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	4	99	99	6
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Dual II Magnum	7.64	L	1.33	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	6	99	99	2
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	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	2	99	99	2
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	3	99	99	5
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	Dual II Magnum	7.64	L	1.33	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								BETVU	CHEAL	POLPY	BETVU
Crop Code								injury	control	control	injury
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/17/2015	Jun/17/2015	Jun/17/2015	Jun/24/2015
Rating Date								6 DA-B	6 DA-B	6 DA-B	13 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				
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	7	99	99	2
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	Betamix	1.3	L	3	pt/a	6-leaf	C				
7	Outlook	6	L	18	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	8	99	99	3
8	Betamix	1.3	L	2	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	Betamix	1.3	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	Betamix	1.3	L	3	pt/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	5	99	99	3
9	Betamix	1.3	L	2	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	Betamix	1.3	L	4	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	Betamix	1.3	L	6	pt/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	5	99	99	6
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	4	pt/a	6-leaf	C				
10	Warrant	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	Betamix	1.3	L	6	pt/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	3	99	99	0
11	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/a	canopy	D				
11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								BETVU	CHEAL	POLPY	BETVU
Crop Code								injury	control	control	injury
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jun/17/2015	Jun/17/2015	Jun/17/2015	Jun/24/2015
Rating Date								6 DA-B	6 DA-B	6 DA-B	13 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				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	3	99	99	3
12	Nortron	4	L	4	fl oz/a	2-leaf	B				
12	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
12	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	canopy	D				
12	Destiny HC		L	1.5	pt/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				
13	Nortron	4	L	3	pt/a	PRE	A	7	99	99	1
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
13	Betamix	1.3	L	2	pt/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	Warrant	3	L	3	pt/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	Nortron	4	L	3	pt/a	PRE	A	5	99	99	7
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
14	Nortron	4	L	4	fl oz/a	2-leaf	B				
14	Warrant	3	L	3	pt/a	2-leaf	B				
14	Destiny HC		L	1.5	pt/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	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	Nortron	4	L	3	pt/a	PRE	A	9	99	99	4
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
15	Nortron	4	L	4	fl oz/a	2-leaf	B				
15	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
15	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Nortron	4	L	3	pt/a	PRE	A	5	99	99	2
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
16	Nortron	4	L	4	fl oz/a	2-leaf	B				
16	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
16	Warrant	3	L	3	pt/a	6-leaf	C				
16	Destiny HC		L	1.5	pt/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	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	# Subsamples, Dec.	BETVU injury percent	CHEAL control percent	POLPY control percent	BETVU injury percent	
							Jun/17/2015	Jun/17/2015	Jun/17/2015	Jun/24/2015	
							6 DA-B	6 DA-B	6 DA-B	13 DA-B	
							0	0	0	0	
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	2	99	99	0
17	Nortron	4	L	4	fl oz/a	2-leaf	B				
17	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
17	Warrant	3	L	3	pt/a	6-leaf	C				
17	Destiny HC		L	1.5	pt/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	AMS		WG	17	lb/100 gal	canopy	D				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	3	99	99	1
18	Nortron	4	L	4	fl oz/a	2-leaf	B				
18	Warrant	3	L	3	pt/a	2-leaf	B				
18	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
18	Warrant	3	L	3	pt/a	6-leaf	C				
18	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	6	99	99	3
19	Nortron	4	L	4	fl oz/a	2-leaf	B				
19	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
19	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
19	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
19	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	6	99	99	3
20	Nortron	4	L	4	fl oz/a	2-leaf	B				
20	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	canopy	D				
20	Destiny HC		L	1.5	pt/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								5.0	0.0	0.0	4.3
CV								71.24	0.0	0.0	113.25

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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code								CHEAL	AMARE		CHEAL	AMARE
Crop Code										BETVU		
Rating Data Type								control	control	injury	control	control
Rating Unit								percent	percent	percent	percent	percent
Rating Date								Jun/24/2015	Jun/24/2015	Jul/09/2015	Jul/09/2015	Jul/09/2015
Trt-Eval Interval								13 DA-B	13 DA-B	15 DA-C	15 DA-C	15 DA-C
# Subsamples, Dec.								0	0	0	0	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	95	97	2	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	98	99	7	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	99	4	99	99
3	Betamix	1.3	L	2	pt/a	2-leaf	B					
3	Dual II Magnum	7.64	L	1.33	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	98	98	8	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	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	98	12	99	99
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	97	13	99	99
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	Dual II Magnum	7.64	L	1.33	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								CHEAL	AMARE	BETVU	CHEAL	AMARE
Crop Code												
Rating Data Type								control	control	injury	control	control
Rating Unit								percent	percent	percent	percent	percent
Rating Date								Jun/24/2015	Jun/24/2015	Jul/09/2015	Jul/09/2015	Jul/09/2015
Trt-Eval Interval								13 DA-B	13 DA-B	15 DA-C	15 DA-C	15 DA-C
# Subsamples, Dec.								0	0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	99	13	99	99
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	Betamix	1.3	L	3	pt/a	6-leaf	C					
7	Outlook	6	L	18	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	98	97	10	99	99
8	Betamix	1.3	L	2	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	Betamix	1.3	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	Betamix	1.3	L	3	pt/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	98	99	9	99	99
9	Betamix	1.3	L	2	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	Betamix	1.3	L	4	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	Betamix	1.3	L	6	pt/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	98	16	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	4	pt/a	6-leaf	C					
10	Warrant	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	Betamix	1.3	L	6	pt/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	96	99	0	99	99
11	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/a	canopy	D					
11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								CHEAL	AMARE	BETVU	CHEAL	AMARE
								control	control	injury	control	control
								percent	percent	percent	percent	percent
								Jun/24/2015	Jun/24/2015	Jul/09/2015	Jul/09/2015	Jul/09/2015
								13 DA-B	13 DA-B	15 DA-C	15 DA-C	15 DA-C
								0	0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code					
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	92	98	1	99	99
12	Nortron	4	L	4	fl oz/a	2-leaf	B					
12	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C					
12	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	canopy	D					
12	Destiny HC		L	1.5	pt/a	canopy	D					
12	AMS		WG	17	lb/100 gal	canopy	D					
13	Nortron	4	L	3	pt/a	PRE	A	99	99	14	99	99
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
13	Betamix	1.3	L	2	pt/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	Warrant	3	L	3	pt/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	Nortron	4	L	3	pt/a	PRE	A	99	99	6	99	99
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
14	Nortron	4	L	4	fl oz/a	2-leaf	B					
14	Warrant	3	L	3	pt/a	2-leaf	B					
14	Destiny HC		L	1.5	pt/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	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	Nortron	4	L	3	pt/a	PRE	A	99	99	2	99	99
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
15	Nortron	4	L	4	fl oz/a	2-leaf	B					
15	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B					
15	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	6-leaf	C					
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D					
15	AMS		WG	17	lb/100 gal	canopy	D					
16	Nortron	4	L	3	pt/a	PRE	A	95	99	5	99	99
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B					
16	Nortron	4	L	4	fl oz/a	2-leaf	B					
16	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C					
16	Warrant	3	L	3	pt/a	6-leaf	C					
16	Destiny HC		L	1.5	pt/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	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								CHEAL	AMARE	BETVU	CHEAL	AMARE
								control	control	injury	control	control
								percent	percent	percent	percent	percent
								Jun/24/2015	Jun/24/2015	Jul/09/2015	Jul/09/2015	Jul/09/2015
								13 DA-B	13 DA-B	15 DA-C	15 DA-C	15 DA-C
								0	0	0	0	0
Trt	Treatment	Form	Form	Rate	Grow	Appl						
No.	Name	Conc	Type	Unit	Stg	Code						
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	99	4	99	99
17	Nortron	4	L	4	fl oz/a	2-leaf	B					
17	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C					
17	Warrant	3	L	3	pt/a	6-leaf	C					
17	Destiny HC		L	1.5	pt/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	AMS		WG	17	lb/100 gal	canopy	D					
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	2	99	99
18	Nortron	4	L	4	fl oz/a	2-leaf	B					
18	Warrant	3	L	3	pt/a	2-leaf	B					
18	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C					
18	Warrant	3	L	3	pt/a	6-leaf	C					
18	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D					
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	99	5	99	99
19	Nortron	4	L	4	fl oz/a	2-leaf	B					
19	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B					
19	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C					
19	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C					
19	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D					
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	98	99	8	99	99
20	Nortron	4	L	4	fl oz/a	2-leaf	B					
20	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C					
20	Warrant	3	L	3	pt/a	6-leaf	C					
20	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	canopy	D					
20	Destiny HC		L	1.5	pt/a	canopy	D					
20	AMS		WG	17	lb/100 gal	canopy	D					
LSD (P=.05)								3.6	2.4	6.1	0.0	0.0
CV								2.63	1.71	61.08	0.0	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code								POLPY	BETVU	CHEAL	AMARE
Crop Code								control	injury	control	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jul/09/2015	Aug/13/2015	Aug/13/2015	Aug/13/2015
Rating Date								15 DA-C	24 DA-D	24 DA-D	24 DA-D
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	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	0	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Dual II Magnum	7.64	L	1.33	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	0	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	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Dual II Magnum	7.64	L	1.33	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code								POLPY	BETVU	CHEAL	AMARE
Crop Code								control	injury	control	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Jul/09/2015	Aug/13/2015	Aug/13/2015	Aug/13/2015
Rating Date								15 DA-C	24 DA-D	24 DA-D	24 DA-D
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Betamix	1.3	L	3	pt/a	6-leaf	C				
7	Outlook	6	L	18	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	0	99	99
8	Betamix	1.3	L	2	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	Betamix	1.3	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	Betamix	1.3	L	3	pt/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	0	99	99
9	Betamix	1.3	L	2	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	Betamix	1.3	L	4	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	Betamix	1.3	L	6	pt/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	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	4	pt/a	6-leaf	C				
10	Warrant	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	Betamix	1.3	L	6	pt/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	0	99	99
11	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/a	canopy	D				
11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								POLPY	BETVU	CHEAL	AMARE
								control	injury	control	control
								percent	percent	percent	percent
								Jul/09/2015	Aug/13/2015	Aug/13/2015	Aug/13/2015
								15 DA-C	24 DA-D	24 DA-D	24 DA-D
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
12	Nortron	4	L	4	fl oz/a	2-leaf	B				
12	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
12	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	canopy	D				
12	Destiny HC		L	1.5	pt/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				
13	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
13	Betamix	1.3	L	2	pt/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	Warrant	3	L	3	pt/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	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
14	Nortron	4	L	4	fl oz/a	2-leaf	B				
14	Warrant	3	L	3	pt/a	2-leaf	B				
14	Destiny HC		L	1.5	pt/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	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	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
15	Nortron	4	L	4	fl oz/a	2-leaf	B				
15	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
15	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
16	Nortron	4	L	4	fl oz/a	2-leaf	B				
16	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
16	Warrant	3	L	3	pt/a	6-leaf	C				
16	Destiny HC		L	1.5	pt/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	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

								POLPY	BETVU	CHEAL	AMARE
								control	injury	control	control
								percent	percent	percent	percent
								Jul/09/2015	Aug/13/2015	Aug/13/2015	Aug/13/2015
								15 DA-C	24 DA-D	24 DA-D	24 DA-D
								0	0	0	0
Trt	Treatment	Form	Form	Rate	Grow	Appl					
No.	Name	Conc	Type	Unit	Stg	Code					
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
17	Nortron	4	L	4	fl oz/a	2-leaf	B				
17	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
17	Warrant	3	L	3	pt/a	6-leaf	C				
17	Destiny HC		L	1.5	pt/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	AMS		WG	17	lb/100 gal	canopy	D				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
18	Nortron	4	L	4	fl oz/a	2-leaf	B				
18	Warrant	3	L	3	pt/a	2-leaf	B				
18	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
18	Warrant	3	L	3	pt/a	6-leaf	C				
18	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
19	Nortron	4	L	4	fl oz/a	2-leaf	B				
19	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
19	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
19	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
19	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
20	Nortron	4	L	4	fl oz/a	2-leaf	B				
20	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	canopy	D				
20	Destiny HC		L	1.5	pt/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.0	0.0	0.0	0.0
CV								0.0	0.0	0.0	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code								POLPY	BETVU	CHEAL	AMARE
Crop Code								control	injury	control	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Aug/13/2015	Sep/15/2015	Sep/15/2015	Sep/15/2015
Rating Date								24 DA-D	57 DA-D	57 DA-D	57 DA-D
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	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	0	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
3	Betamix	1.3	L	2	pt/a	2-leaf	B				
3	Dual II Magnum	7.64	L	1.33	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	0	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	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Dual II Magnum	7.64	L	1.33	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

Weed Code								POLPY	BETVU	CHEAL	AMARE
Crop Code								control	injury	control	control
Rating Data Type								percent	percent	percent	percent
Rating Unit								Aug/13/2015	Sep/15/2015	Sep/15/2015	Sep/15/2015
Rating Date								24 DA-D	57 DA-D	57 DA-D	57 DA-D
Trt-Eval Interval								0	0	0	0
# Subsamples, Dec.											
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
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	Betamix	1.3	L	3	pt/a	6-leaf	C				
7	Outlook	6	L	18	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	0	99	99
8	Betamix	1.3	L	2	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	Betamix	1.3	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	Betamix	1.3	L	3	pt/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	0	99	99
9	Betamix	1.3	L	2	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	Betamix	1.3	L	4	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	Betamix	1.3	L	6	pt/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	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	4	pt/a	6-leaf	C				
10	Warrant	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	Betamix	1.3	L	6	pt/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	0	99	99
11	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/a	canopy	D				
11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

								POLPY	BETVU	CHEAL	AMARE
								control	injury	control	control
								percent	percent	percent	percent
								Aug/13/2015	Sep/15/2015	Sep/15/2015	Sep/15/2015
								24 DA-D	57 DA-D	57 DA-D	57 DA-D
								0	0	0	0
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
12	Nortron	4	L	4	fl oz/a	2-leaf	B				
12	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
12	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	canopy	D				
12	Destiny HC		L	1.5	pt/a	canopy	D				
12	AMS		WG	17	lb/100 gal	canopy	D				
13	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
13	Betamix	1.3	L	2	pt/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	Warrant	3	L	3	pt/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	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
14	Nortron	4	L	4	fl oz/a	2-leaf	B				
14	Warrant	3	L	3	pt/a	2-leaf	B				
14	Destiny HC		L	1.5	pt/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	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	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
15	Nortron	4	L	4	fl oz/a	2-leaf	B				
15	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
15	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	6-leaf	C				
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D				
15	AMS		WG	17	lb/100 gal	canopy	D				
16	Nortron	4	L	3	pt/a	PRE	A	99	0	99	99
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B				
16	Nortron	4	L	4	fl oz/a	2-leaf	B				
16	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
16	Warrant	3	L	3	pt/a	6-leaf	C				
16	Destiny HC		L	1.5	pt/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	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: SB02-15 Study Dir.: Sprague and Powell
 Conducted: SVREC Investigator: Christy Sprague

								POLPY	BETVU	CHEAL	AMARE
								control	injury	control	control
								percent	percent	percent	percent
								Aug/13/2015	Sep/15/2015	Sep/15/2015	Sep/15/2015
								24 DA-D	57 DA-D	57 DA-D	57 DA-D
								0	0	0	0
Trt	Treatment	Form	Form	Rate	Grow	Appl					
No.	Name	Conc	Type	Unit	Stg	Code					
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
17	Nortron	4	L	4	fl oz/a	2-leaf	B				
17	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
17	Warrant	3	L	3	pt/a	6-leaf	C				
17	Destiny HC		L	1.5	pt/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	AMS		WG	17	lb/100 gal	canopy	D				
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
18	Nortron	4	L	4	fl oz/a	2-leaf	B				
18	Warrant	3	L	3	pt/a	2-leaf	B				
18	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
18	Warrant	3	L	3	pt/a	6-leaf	C				
18	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
19	Nortron	4	L	4	fl oz/a	2-leaf	B				
19	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B				
19	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C				
19	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C				
19	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D				
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99	0	99	99
20	Nortron	4	L	4	fl oz/a	2-leaf	B				
20	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C				
20	Warrant	3	L	3	pt/a	6-leaf	C				
20	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	canopy	D				
20	Destiny HC		L	1.5	pt/a	canopy	D				
20	AMS		WG	17	lb/100 gal	canopy	D				
LSD (P=.05)								0.0	0.0	0.2	0.0
CV								0.0	0.0	0.11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code POLPY
 Crop Code
 Rating Data Type control
 Rating Unit percent
 Rating Date Sep/15/2015
 Trt-Eval Interval 57 DA-D
 # Subsamples, Dec. 0

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	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
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
3	Betamix	1.3	L	2	pt/a	2-leaf	B	
3	Dual II Magnum	7.64	L	1.33	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
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	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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
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	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
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	Dual II Magnum	7.64	L	1.33	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code POLPY
 Crop Code
 Rating Data Type control
 Rating Unit percent
 Rating Date Sep/15/2015
 Trt-Eval Interval 57 DA-D
 # Subsamples, Dec. 0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	
7	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
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	Betamix	1.3	L	3	pt/a	6-leaf	C	
7	Outlook	6	L	18	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
8	Betamix	1.3	L	2	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	Betamix	1.3	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	Betamix	1.3	L	3	pt/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
9	Betamix	1.3	L	2	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	Betamix	1.3	L	4	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	Betamix	1.3	L	6	pt/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
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	4	pt/a	6-leaf	C	
10	Warrant	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	Betamix	1.3	L	6	pt/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
11	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/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	Nortron	4	L	4	fl oz/a	canopy	D	
11	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code POLPY
 Crop Code
 Rating Data Type control
 Rating Unit percent
 Rating Date Sep/15/2015
 Trt-Eval Interval 57 DA-D
 # Subsamples, Dec. 0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Grow Stg	Appl Code	
12	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
12	Nortron	4	L	4	fl oz/a	2-leaf	B	
12	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C	
12	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	canopy	D	
12	Destiny HC		L	1.5	pt/a	canopy	D	
12	AMS		WG	17	lb/100 gal	canopy	D	
13	Nortron	4	L	3	pt/a	PRE	A	99
13	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	
13	Betamix	1.3	L	2	pt/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	Warrant	3	L	3	pt/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	Nortron	4	L	3	pt/a	PRE	A	99
14	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	
14	Nortron	4	L	4	fl oz/a	2-leaf	B	
14	Warrant	3	L	3	pt/a	2-leaf	B	
14	Destiny HC		L	1.5	pt/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	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	Nortron	4	L	3	pt/a	PRE	A	99
15	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	
15	Nortron	4	L	4	fl oz/a	2-leaf	B	
15	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B	
15	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	6-leaf	C	
15	Roundup PowerMax	4.5	SL	22	fl oz/a	canopy	D	
15	AMS		WG	17	lb/100 gal	canopy	D	
16	Nortron	4	L	3	pt/a	PRE	A	99
16	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	
16	Nortron	4	L	4	fl oz/a	2-leaf	B	
16	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C	
16	Warrant	3	L	3	pt/a	6-leaf	C	
16	Destiny HC		L	1.5	pt/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	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: SB02-15
 Conducted: SVREC

Study Dir.: Sprague and Powell
 Investigator: Christy Sprague

Weed Code POLPY
 Crop Code
 Rating Data Type control
 Rating Unit percent
 Rating Date Sep/15/2015
 Trt-Eval Interval 57 DA-D
 # Subsamples, Dec. 0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	
17	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
17	Nortron	4	L	4	fl oz/a	2-leaf	B	
17	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C	
17	Warrant	3	L	3	pt/a	6-leaf	C	
17	Destiny HC		L	1.5	pt/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	AMS		WG	17	lb/100 gal	canopy	D	
18	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
18	Nortron	4	L	4	fl oz/a	2-leaf	B	
18	Warrant	3	L	3	pt/a	2-leaf	B	
18	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C	
18	Warrant	3	L	3	pt/a	6-leaf	C	
18	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D	
19	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
19	Nortron	4	L	4	fl oz/a	2-leaf	B	
19	Dual II Magnum	7.64	L	1.33	pt/a	2-leaf	B	
19	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	6-leaf	C	
19	Dual II Magnum	7.64	L	1.33	pt/a	6-leaf	C	
19	Destiny HC		L	1.5	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	AMS		WG	17	lb/100 gal	canopy	D	
20	Roundup PowerMax	4.5	SL	32	fl oz/a	2-leaf	B	99
20	Nortron	4	L	4	fl oz/a	2-leaf	B	
20	Destiny HC		L	1.5	pt/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	Nortron	4	L	4	fl oz/a	6-leaf	C	
20	Warrant	3	L	3	pt/a	6-leaf	C	
20	Destiny HC		L	1.5	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	Nortron	4	L	4	fl oz/a	canopy	D	
20	Destiny HC		L	1.5	pt/a	canopy	D	
20	AMS		WG	17	lb/100 gal	canopy	D	

LSD (P=.05) 0.0
 CV 0.0

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