

MSU Weed Science Research Program

Strategies for improving sugarbeet root health - Syngenta I

Trial ID: SB03-14 Study Dir.: Sprague, Powell
 Conducted: SVREC Investigator: Christy Sprague

Date Planted: May/06/2014 **Row Spacing:** 30 IN
Variety: HM-28RR **No. of Reps:** 4
Population: 49,000 seeds/A **% OM:** 2.9
Soil Type: Clay loam **pH:** 7.9
Plot Size: 10 X 30 FT **Design:** RANDOMIZED COMPLETE BLOCK

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

		Crop and Weed Description		
Weed	Code	Common Name	Scientific Name	
1.	ZEAMX	CORN, VOLUNTEER	ZEA MAYS L.	
2.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.	
3.	AMARE	PIGWEEED, REDROOT	AMARANTHUS RETROFLEXUS L.	
4.	POLCO	BUCKWHEAT, WILD	POLYGONUM CONVULVULUS L.	
Crop	Code	Common Name		
1.	BETVU	BEET, SUGAR		

		Application Description				
		A	B	C	D	E
Application Timing:		2-Leaf	4-Leaf	6-Leaf	55 DSV	+55 DSV
Date Treated:		May/27/2014	Jun/04/2014	Jun/10/2014	Jul/11/2014	Jul/29/2014
Time Treated:		2:20 PM	10:17 AM	12:30 PM	11:30 AM	3:50 PM
% Cloud Cover:		90	100	100	30	30
Air Temp., Unit:		78 F	65 F	72 F	78 F	70 F
% Relative Humidity:		68	58	46	53	66
Wind Speed/Unit/Dir:		7 mph W	2 mph E	3 mph E	2 mph S	6 mph W
Soil Temp., Unit:		70 F	61 F	68 F	62 F	68 F
Soil/Leaf Surface M:		5 5	5 5	5 5	5 5	3 3
Soil Moist (1=w 5=d):		5	4	5	5	3

		Crop Stage at Each Application				
		A	B	C	D	E
Crop Name:		BETVU	BETVU	BETVU	BETVU	BETVU
Height (In.):		0.5-1"	1.5-2"	5"	19"	22"
Stage (L):		2	4	6	10-12	20-22

		weed Stage at Each Application				
		A	B	C	D	E
Weed 1 Name:		ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
Height (In.):		4"	-	6-12"	38"	70"
Stage (L):		V2	-	V4-V6	V7	R2
Weed 2 Name:		CHEAL	CHEAL	CHEAL	CHEAL	CHEAL
Height (In.):		1"	-	2-2.5"	-	50"
Stage (L):		4	-	8-Many	-	Many
Weed 3 Name:		AMARE	AMARE	AMARE	AMARE	AMARE
Height (In.):		-	-	1"	-	-
Stage (L):		-	-	2-6	-	-
Weed 4 Name:		POLCO	POLCO	POLCO	POLCO	POLCO
Height (In.):		1"	-	1-3"	-	-
Stage (L):		2	-	2-7	-	-

		weed Density (plants/sq. ft.)			
		1	2	3	4
Weed Name:		ZEAMX	CHEAL	AMARE	POLCO
Density:		3	3	<1	<1

		Application Equipment								
Appl	Sprayer	Speed	Nozzle	Nozzle	Nozzle	Nozzle	Boom	GPA	Carrier	PSI
		MPH	Type	Size	Height	Spacing	Width			
A	Cub	3.8	AirMix	11003	21"	20"	100"	19	Water	30
B	Backpack	3.8	AirMix	11003	22"	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
E	Backpack	3.8	AIXR	11003	35"	20"	100"	19	Water	30

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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

Subsamples, Dec.

BETVU stand count 100' row May/19/2014 -8 DA-A
 BETVU stand count 100' row May/27/2014 0 DA-A
 BETVU injury percent Jun/20/2014 24 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	BETVU stand count 100' row May/19/2014 -8 DA-A	BETVU stand count 100' row May/27/2014 0 DA-A	BETVU injury percent Jun/20/2014 24 DA-A
1	Apron + Maxim - Seed 1							244.5	236	0
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
1	AMS		WG	17	lb/100 gal	2-leaf	A			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C			
1	Surfactant		L	0.125	% v/v	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Eminent	1	L	13	fl oz/a	55 DSV	D			
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E			
2	A+M+C+VE - Seed 2							225.5	240	4
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A			
2	AMS		WG	17	lb/100 gal	2-leaf	A			
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B			
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C			
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D			
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E			
3	A+M+C+VE - Seed 2							237.3	245	0
3	Untreated									
4	Apron + Maxim - Seed 1							228.8	237	0
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
4	AMS		WG	17	lb/100 gal	2-leaf	A			
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D			
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E			
LSD (P=.05)								33.96	33.7	0.9
CV								9.07	8.79	57.74

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

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Weed Code	POLCO		
Crop Code		BETVU	BETVU
Rating Data Type	control	injury	v. corn
Rating Unit	percent	percent	percent
Rating Date	Jun/20/2014	Jun/26/2014	Jun/26/2014
Trt-Eval Interval	24 DA-A	30 DA-A	30 DA-A
# Subsamples, Dec.			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code			
1	Apron + Maxim - Seed 1							99	1	98
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
1	AMS		WG	17	lb/100 gal	2-leaf	A			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C			
1	Surfactant		L	0.125	% v/v	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Eminent	1	L	13	fl oz/a	55 DSV	D			
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E			
2	A+M+C+VE - Seed 2							99	1	97
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A			
2	AMS		WG	17	lb/100 gal	2-leaf	A			
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B			
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C			
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D			
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E			
3	A+M+C+VE - Seed 2							0	0	0
3	Untreated									
4	Apron + Maxim - Seed 1							96	0	0
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
4	AMS		WG	17	lb/100 gal	2-leaf	A			
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D			
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E			
LSD (P=.05)								6.6	1.8	1.3
CV								5.41	298.14	1.68

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Weed Code	CHEAL	AMARE	POLCO
Crop Code			
Rating Data Type	control	control	control
Rating Unit	percent	percent	percent
Rating Date	Jun/26/2014	Jun/26/2014	Jun/26/2014
Trt-Eval Interval	30 DA-A	30 DA-A	30 DA-A
# Subsamples, Dec.			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	CHEAL	AMARE	POLCO
1	Apron + Maxim - Seed 1							96	99	99
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
1	AMS		WG	17	lb/100 gal	2-leaf	A			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C			
1	Surfactant		L	0.125	% v/v	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Eminent	1	L	13	fl oz/a	55 DSV	D			
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E			
2	A+M+C+VE - Seed 2							99	99	99
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A			
2	AMS		WG	17	lb/100 gal	2-leaf	A			
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B			
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C			
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D			
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E			
3	A+M+C+VE - Seed 2							0	0	0
3	Untreated									
4	Apron + Maxim - Seed 1							86	93	96
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
4	AMS		WG	17	lb/100 gal	2-leaf	A			
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D			
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E			
LSD (P=.05)								8.3	7.2	5.9
CV								7.34	6.2	5.04

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

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code				
1	Apron + Maxim - Seed 1							0	96	94	99
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A				
1	AMS		WG	17	lb/100 gal	2-leaf	A				
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C				
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C				
1	Surfactant		L	0.125	% v/v	6-leaf	C				
1	AMS		WG	17	lb/100 gal	6-leaf	C				
1	Eminent	1	L	13	fl oz/a	55 DSV	D				
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E				
2	A+M+C+VE - Seed 2							0	99	97	99
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A				
2	AMS		WG	17	lb/100 gal	2-leaf	A				
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B				
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C				
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C				
2	AMS		WG	17	lb/100 gal	6-leaf	C				
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D				
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E				
3	A+M+C+VE - Seed 2							0	0	0	0
3	Untreated										
4	Apron + Maxim - Seed 1							0	0	81	91
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A				
4	AMS		WG	17	lb/100 gal	2-leaf	A				
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D				
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E				
LSD (P=.05)								0.0	4.2	11.9	9.1
CV								0.0	5.39	10.97	7.84

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Weed Code	POLCO		
Crop Code		BETVU	BETVU
Rating Data Type	control	cercospora	stand count
Rating Unit	percent	0-10	100' row
Rating Date	Jul/24/2014	Sep/09/2014	Sep/23/2014
Trt-Eval Interval	13 DA-D	42 DA-E	56 DA-E
# Subsamples, Dec.			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code			
1	Apron + Maxim - Seed 1							98	2	170
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
1	AMS		WG	17	lb/100 gal	2-leaf	A			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C			
1	Surfactant		L	0.125	% v/v	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Eminent	1	L	13	fl oz/a	55 DSV	D			
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E			
2	A+M+C+VE - Seed 2							98	1	191
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A			
2	AMS		WG	17	lb/100 gal	2-leaf	A			
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B			
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C			
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D			
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E			
3	A+M+C+VE - Seed 2							0	3	168
3	Untreated									
4	Apron + Maxim - Seed 1							92	3	190
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
4	AMS		WG	17	lb/100 gal	2-leaf	A			
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D			
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E			
LSD (P=.05)								6.1	0.8	48.1
CV								5.3	23.53	16.73

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Weed Code

Crop Code

Rating Data Type

Rating Unit

Rating Date

Trt-Eval Interval

Subsamples, Dec.

BETVU
% sugar

BETVU
yield
ton/acre

BETVU
RWST
/ ton

Sep/24/2014
57 DA-E

Sep/24/2014
57 DA-E

Sep/24/2014
57 DA-E

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	BETVU % sugar	BETVU yield ton/acre	BETVU RWST # / ton
1	Apron + Maxim - Seed 1							16.1	26.4	242
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
1	AMS		WG	17	lb/100 gal	2-leaf	A			
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C			
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C			
1	Surfactant		L	0.125	% v/v	6-leaf	C			
1	AMS		WG	17	lb/100 gal	6-leaf	C			
1	Eminent	1	L	13	fl oz/a	55 DSV	D			
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E			
2	A+M+C+VE - Seed 2							16.7	26.0	251
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A			
2	AMS		WG	17	lb/100 gal	2-leaf	A			
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B			
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C			
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C			
2	AMS		WG	17	lb/100 gal	6-leaf	C			
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D			
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E			
3	A+M+C+VE - Seed 2							16.2	5.7	242
3	Untreated									
4	Apron + Maxim - Seed 1							15.8	11.7	236
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A			
4	AMS		WG	17	lb/100 gal	2-leaf	A			
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D			
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E			
LSD (P=.05)								0.68	5.12	13.2
CV								2.63	18.34	3.41

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

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

BETVU
 RWSA
 # / acre
 Sep/24/2014
 57 DA-E

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code
1	Apron + Maxim - Seed 1						6385
1	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A
1	AMS		WG	17	lb/100 gal	2-leaf	A
1	Roundup PowerMax	4.5	SL	22	fl oz/a	6-leaf	C
1	Assure II	0.88	L	5	fl oz/a	6-leaf	C
1	Surfactant		L	0.125	% v/v	6-leaf	C
1	AMS		WG	17	lb/100 gal	6-leaf	C
1	Eminent	1	L	13	fl oz/a	55 DSV	D
1	Eminent	1	L	13	fl oz/a	+55 DSV1	E
2	A+M+C+VE - Seed 2						6521
2	Touchdown Total	4.17	SL	28	fl oz/a	2-leaf	A
2	AMS		WG	17	lb/100 gal	2-leaf	A
2	Quadris (7" band)	2.08	SC	10.5	fl oz/a	4-leaf	B
2	Sequence	5.25	L	3.5	pt/a	6-leaf	C
2	Fusilade DX	2	L	12	fl oz/a	6-leaf	C
2	AMS		WG	17	lb/100 gal	6-leaf	C
2	Inspire XT	4.17	L	7	fl oz/a	55 DSV	D
2	Inspire XT	4.17	L	7	fl oz/a	+55 DSV1	E
3	A+M+C+VE - Seed 2						1397
3	Untreated						
4	Apron + Maxim - Seed 1						2766
4	Roundup PowerMax	4.5	SL	22	fl oz/a	2-leaf	A
4	AMS		WG	17	lb/100 gal	2-leaf	A
4	Headline	2.09	L	9.2	fl oz/a	55 DSV	D
4	Headline	2.09	L	9.2	fl oz/a	+55 DSV1	E
LSD (P=.05)							1256.0
CV							18.4

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