The Ohio State University

GarrCo Adjuvants with Glyphosate and Glufosinate Combinations

Trial ID: 20MSUGARR Location: Trial Year: 2020
Protocol ID: 20MSUGARR Investigator: Dr. Mark M. Loux
Project ID: Study Director:
Sponsor Contact:

General Trial Information
Study Director: Anthony Dobbels
Investigator: Dr. Mark M. Loux

Trial Status: E established
ARM Trial Created On: Mar-25-2020
Initiation Date: May-13-2020

Trial Location
Address (Location): 7721 South Charleston Pike
City: South Charlesont **Country:** USA United States
State/Prov.: Ohio
Postal Code: 45368

Latitude of LL Corner °: 39.86081 N
Longitude of LL Corner °: -83.67079 W
Altitude of LL Corner: 1096.00 FT

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Study Director: Anthony Dobbels

Investigator: Dr. Mark M. Loux

Crop Description
Crop 1: C GLXMA Glycine max Soybean **BBCH Scale:** BSOY
Entry Date: May-14-2020 **Stage Scale:** BBCH
Variety: Seed Consultants SC7370E
Attributes: 2,4-D Choline, Glyphosate, Glufosinate Tol
Planting Date: May-13-2020 **Planting Rate:** 160000 S/A
Depth: 2 IN
Rows per Plot: 8 **Planting Method:** PLANTD planted
Row Spacing: 15 IN **Planting Equipment:** FE field equipment
Seed Bed: MEDIUM medium
Soil Temperature: 62 F **Soil Moisture:** NORMAL normal, adequate
Emergence Date: May-25-2020

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Pest Description

Pest 1 Type: W **Code:** SETFA Setaria faberi
Common Name: foxtail, giant **Entry Date:** May-14-2020

Pest 2 Type: W **Code:** ECHCG Echinochloa crus-galli
Common Name: barnyardgrass **Entry Date:** Jun-16-2020

Pest 3 Type: W **Code:** AMBTR Ambrosia trifida
Common Name: ragweed, giant **Entry Date:** Jun-16-2020

Pest 4 Type: W **Code:** POLPY Polygonum pensylvanicum
Common Name: smartweed, Pennsylvania **Entry Date:** Jun-16-2020

Pest 5 Type: W **Code:** CHEAL Chenopodium album
Common Name: lambsquarters, common **Entry Date:** Jun-16-2020

Pest 6 Type: W **Code:** HIBTR Hibiscus trionum
Common Name: mallow, Venice **Entry Date:** Jun-16-2020

Pest 7 Type: W **Code:** SOLPT Solanum ptychanthum
Common Name: Eastern black nightshade **Entry Date:** Jun-16-2020

Pest 8 Type: W **Code:** AMARE Amaranthus retroflexus
Common Name: pigweed, redroot **Entry Date:** Jun-16-2020

Pest 9 Type: W **Code:** VERAG Veronica agrestis
Common Name: speedwell, field **Entry Date:** Jun-16-2020

Pest10 Type: W **Code:** SIDSP Sida spinosa
Common Name: sida, prickly **Entry Date:** Jun-16-2020

Pest11 Type: W **Code:** AMBEL Ambrosia artemisiifolia
Common Name: ragweed, common **Entry Date:** Jun-16-2020

Pest12 Type: W **Code:** ABUTH Abutilon theophrasti
Common Name: velvetleaf **Entry Date:** Jun-16-2020

Pest13 Type: W **Code:** SETPU Setaria helvola
Common Name: yellow foxtail **Entry Date:** Jul-9-2020

Site and Design

Treated Plot Width: 6.67 FT **Site Type:** FIELD field
Treated Plot Length: 30 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 200.1 FT2 **Treatments:** 16 **Tillage Type:** CONTIL conventional-till
Replications: 3 **Study Design:** RACOBL Randomized Complete Block (RCB)

No.	Previous Crop	Year
1.	SOYBEAN	2019

Soil Description

Description Name: F-7 East
% Sand: 37 **% OM:** 2.8 **Texture:** SICL silty clay loam
% Silt: 48 **pH:** 5.7 **Soil Name:** Crosby
% Clay: 15 **CEC:** 11.8 **Fert. Level:** G good
Soil Drainage: G good

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Application Description

	A	B
Application Date	Jun-16-2020	Jun-18-2020
Appl. Start Time	7:54 AM	8:30 AM
Appl. Stop Time	8:30 AM	8:45 AM
Interval to Prev. Appl.		2 DAYS
Application Method	SPRAY	SPRAY
Application Timing	POST	POST
Application Placement	BROFOL	BROFOL
Applied By	Essman	Loux
Appl. Entry Date	Jun-16-2020	Jun-22-2020
Air Temperature Start, Stop	68 68 F	65 65 F
% Relative Humidity Start, Stop	71 71	79 79
Wind Velocity+Dir. Start	3 MPH E	3 MPH NE
Wind Velocity+Dir. Stop	3 MPH E	3 MPH NE
Wind Velocity+Dir. Max	3 MPH E	3 MPH NE
Wet Leaves (Y/N)	N no	N no
Soil Temperature	64 F	68 F
Soil Moisture	DRY	DRY
Soil Surface Condition	MEDIUM	MEDIUM
% Cloud Cover	10	70
Next Moisture Occurred On	Jun-18-2020	Jun-18-2020
Time to Next Moisture	2 DAY	5 HR
Moisture 6 Hours after Appl.	0 IN	0.05 IN
Moisture 1 Week after Appl.	0.88 IN	0.90 IN

Crop Stage At Each Application

	A		B	
Crop 1 Code, BBCH Scale	GLXMA	BSOY	GLXMA	BSOY
Days after Emergence	22		24	
Stage Majority, Percent	12	100	12	50
Stage Minimum, Percent			12	50
Stage Maximum, Percent			13	50
Height Average	6 IN		6 IN	

Pest Stage At Each Application

	A		B	
Pest 1 Code, Type, Scale	SETFA	W	SETFA	W
Stage Majority, Percent	14	80	16	60
Stage Minimum, Percent	12	10	13	
Stage Maximum, Percent	16	10	19	
Height Average	3 IN		7 IN	
Height Minimum, Maximum	1	6	2	12
Density Average			72	PLA/m2
Density Min, Max			60	81
Pest 2 Code, Type, Scale	ECHCG	W	ECHCG	W
Stage Majority, Percent	14	80		
Stage Minimum, Percent	12	10		
Stage Maximum, Percent	16	10		
Height Average	3 IN			
Height Minimum, Maximum	1	6		
Density Average			12	PLA/m2
Density Min, Max			0	36
Pest 3 Code, Type, Scale	AMBTR	W	AMBTR	W
Stage Majority, Percent	14	80	19	90
Stage Minimum, Percent	12	10	14	
Stage Maximum, Percent	16	10	19	
Height Average	4 IN		9 IN	
Height Minimum, Maximum	1	8	3	20
Density Average			1	PLA/m2
Density Min, Max			0	3
Pest 4 Code, Type, Scale	POLPY	W	POLPY	W
Stage Majority, Percent	16	80		
Stage Minimum, Percent	14	10		
Stage Maximum, Percent	18	10		
Height Average	3 IN			
Height Minimum, Maximum	2	7		
Pest 5 Code, Type, Scale	CHEAL	W	CHEAL	W
Stage Majority, Percent	17	80	18	80
Stage Minimum, Percent	14	10	14	
Stage Maximum, Percent	21	10	19	
Height Average	3 IN		3 IN	
Height Minimum, Maximum	1	4	2	4
Density Average			48	PLA/m2
Density Min, Max			36	60

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Pest 6 Code, Type, Scale	HIBTR W	HIBTR W		
Stage Majority, Percent	13 80			
Stage Minimum, Percent	12 10			
Stage Maximum, Percent	14 10			
Height Average	3 IN			
Height Minimum, Maximum	1 4			
Pest 7 Code, Type, Scale	SOLPT W	SOLPT W		
Stage Majority, Percent	13 80	16 80		
Stage Minimum, Percent	12 10	14		
Stage Maximum, Percent	14 10	18		
Height Average	3 IN	3 IN		
Height Minimum, Maximum	1 4	2 4		
Pest 8 Code, Type, Scale	AMARE W	AMARE W		
Stage Majority, Percent	13 80	16 80		
Stage Minimum, Percent	12 10	14		
Stage Maximum, Percent	14 10	19		
Height Average	2 IN	5 IN		
Height Minimum, Maximum	1 3	4 6		
Density Average		30 PLA/m2		
Density Min, Max		24 36		
Pest 9 Code, Type, Scale	VERAG W	VERAG W		
Stage Majority, Percent	25 90			
Stage Minimum, Percent	19 10			
Stage Maximum, Percent	25 90			
Height Average	4 IN			
Height Minimum, Maximum	2 6			
Pest10 Code, Type, Scale	SIDSP W	SIDSP W		
Stage Majority, Percent	13 80	16 80		
Stage Minimum, Percent	12 10	14		
Stage Maximum, Percent	14 10	18		
Height Average	2 IN	4 IN		
Height Minimum, Maximum	1 2	2 6		
Density Average		29 PLA/m2		
Density Min, Max		24 36		
Pest11 Code, Type, Scale	AMBEL W	AMBEL W		
Stage Majority, Percent	13 80	16 80		
Stage Minimum, Percent	12 10	14		
Stage Maximum, Percent	14 10	18		
Height Average	2 IN	5 IN		
Height Minimum, Maximum	1 3	4 6		
Pest12 Code, Type, Scale	ABUTH W	ABUTH W		
Stage Majority, Percent	13 80			
Stage Minimum, Percent	12 10			
Stage Maximum, Percent	14 10			
Height Average	2 IN			
Height Minimum, Maximum	1 4			
Pest13 Code, Type, Scale	SETPU W	SETPU W		
Density Average		53 PLA/m2		
Density Min, Max		18 72		

Application Equipment

	A	B
Appl. Equipment	6 FT	6 FT
Equipment Type	BACCAI	BACCAI
Operation Pressure	44 PSI	44 PSI
Nozzle Type	XR	XR
Nozzle Size	8002	8002
Nozzle Spacing	18 IN	18 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	20 GAL/AC	20 GAL/AC
Mix Size	2 L	2 L
Propellant	COMCO2	COMCO2

Context	Date	By	Notes
STATUS	Mar-25-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Mar-25-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Mar-27-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Mar-27-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-14-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.
STATUS	Jun-22-2020	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

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Pest Type	W Weed	W Weed	W Weed	W Weed
Pest Code	SETFA	ECHCG	AMBTR	CHEAL
Pest Scientific Name	Setaria faberi	Echinochloa cr>	Ambrosia trifi>	Chenopodium al>
Pest Name	Giant foxtail	Common barnyar>	Giant ragweed	common lambsqu>
Rating Date	Jun-30-2020	Jun-30-2020	Jun-30-2020	Jun-30-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Number of Subsamples	1	1	1	1
Data Entry Date	Jun-30-2020	Jun-30-2020	Jun-30-2020	Jun-30-2020
Days After First/Last Applic.	14 12	14 12	14 12	14 12
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A
Plant-Eval Interval	48 DP-1	48 DP-1	48 DP-1	48 DP-1
Days After Emergence	36 DE-1	36 DE-1	36 DE-1	36 DE-1
Number of Decimals	0	0	0	0

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	1*	2*	3*	4*
1	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	90 b	100 a	72 f
1	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
1	Control Duo	4	qt/100 gal	0.8	qt/a	A				
2	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	100 a	87 c	97 ab
2	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
2	Control Duo	4	qt/100 gal	0.8	qt/a	A				
3	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	98 a	100 a	87 cde
3	Roundup Powermax	1.13	lb ae/a	32	oz/a	A				
3	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
3	Control Duo	4	qt/100 gal	0.8	qt/a	A				
4	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	95 ab	100 a	92 a-d
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
4	Roundup Powermax	1.13	lb ae/a	32	oz/a	B				
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
4	Control Duo	4	qt/100 gal	0.8	qt/a	B				
5	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a	100 a
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
5	Liberty	0.66	lb ae/a	36	oz/a	B				
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
5	Control Duo	4	qt/100 gal	0.8	qt/a	B				
6	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	88 b	100 a	82 ef
6	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
6	Tri-Plex	4	qt/100 gal	1	% v/v	A				
7	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	100 a	82 c	100 a
7	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
7	Tri-Plex	4	qt/100 gal	1	% v/v	A				
8	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	100 a	100 a	93 abc
8	Roundup Powermax	0.77	lb ae/a	22	oz/a	A				
8	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
8	Tri-Plex	4	qt/100 gal	0.8	qt/a	A				
9	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	98 a	100 a	97 ab
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
9	Roundup Powermax	1.13	lb ae/a	32	oz/a	B				
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
9	Tri-Plex	4	qt/100 gal	0.8	qt/a	B				

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).
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Pest Type	W Weed	W Weed	W Weed	W Weed
Pest Code	SETFA	ECHCG	AMBTR	CHEAL
Pest Scientific Name	Setaria faberi	Echinochloa cr>	Ambrosia trifi>	Chenopodium al>
Pest Name	Giant foxtail	Common barnyar>	Giant ragweed	common lambsqu>
Rating Date	Jun-30-2020	Jun-30-2020	Jun-30-2020	Jun-30-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Number of Subsamples	1	1	1	1
Data Entry Date	Jun-30-2020	Jun-30-2020	Jun-30-2020	Jun-30-2020
Days After First/Last Applic.	14 12	14 12	14 12	14 12
Trt-Eval Interval	14 DA-A	14 DA-A	14 DA-A	14 DA-A
Plant-Eval Interval	48 DP-1	48 DP-1	48 DP-1	48 DP-1
Days After Emergence	36 DE-1	36 DE-1	36 DE-1	36 DE-1
Number of Decimals	0	0	0	0

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	1*	2*	3*	4*
10	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a	99 ab
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
10	Liberty	0.66	lb ae/a	36	oz/a	B				
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
10	Tri-Plex	4	qt/100 gal	0.8	qt/a	B				
11	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	93 ab	100 a	93 abc
11	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
12	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	98 a	88 bc	98 ab
12	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
13	Liberty	0.475	lb ai/a	26	oz/a	A	100 a	100 a	97 ab	90 b-e
13	Roundup Powermax	1.13	lb ae/a	32	oz/a	A				
13	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
14	Liberty	0.66	lb ai/a	36	oz/a	A	100 a	95 ab	100 a	83 de
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
14	Roundup Powermax	1.13	lb ae/a	32	oz/a	B				
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
15	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a	100 a
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	A				
15	Liberty	0.66	lb ae/a	36	oz/a	B				
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	B				
16	UTC						0 b	0 c	0 d	0 g
LSD P=.05							.	7.4	8.4	9.5
Standard Deviation							0.0	4.4	5.0	5.7
CV							0.0	4.88	5.52	6.56
Grand Mean							93.8	91.0	90.8	86.5
Levene's F							0.00	1.274	2.218	0.936
Levene's Prob(F)							.	0.274	0.029*	0.538
Rank X2							.	.	.	.
P(Rank X2)							.	.	.	.
Skewness							-3.7325*	-3.443*	-3.2871*	-2.9074*
Kurtosis							12.4486*	10.951*	10.0582*	8.3271*
Replicate F							0.000	2.360	0.270	4.351
Replicate Prob(F)							1.0000	0.1117	0.7654	0.0219
Treatment F							0.000	91.760	74.224	55.286
Treatment Prob(F)							1.0000	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	5*	6*	7*	8*	9*
	Pest Type						W Weed	W Weed	W Weed	W Weed	W Weed
	Pest Code						AMARE	POLPY	SETFA	ECHCG	AMBTR
	Pest Scientific Name						Amaranthus ret>	Persicaria pen>	Setaria faberi	Echinochloa cr>	Ambrosia trifi>
	Pest Name						Redroot pigweed	annual smartwe>	foxtail, giant	barnyardgrass	ragweed, giant
	Rating Date						Jun-30-2020	Jun-30-2020	Jul-15-2020	Jul-15-2020	Jul-15-2020
	Rating Type						CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit						%	%	%	%	%
	Number of Subsamples						1	1	1	1	1
	Data Entry Date						Jun-30-2020	Jun-30-2020	Jul-15-2020	Jul-15-2020	Jul-15-2020
	Days After First/Last Applic.						14 12	14 12	29 27	29 27	29 27
	Trt-Eval Interval						14 DA-A	14 DA-A	29 DA-A	29 DA-A	29 DA-A
	Plant-Eval Interval						48 DP-1	48 DP-1	63 DP-1	63 DP-1	63 DP-1
	Days After Emergence						36 DE-1	36 DE-1	51 DE-1	51 DE-1	51 DE-1
	Number of Decimals						0	0	0	0	0
1	Liberty	0.66	lb ai/a	36	oz/a	A	77 e	100 a	100 a	76 b	92 a
1	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
1	Control Duo	4	qt/100 gal	0.8	qt/a	A					
2	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	90 b	100 a	98 a	92 a
2	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
2	Control Duo	4	qt/100 gal	0.8	qt/a	A					
3	Liberty	0.66	lb ai/a	36	oz/a	A	93 abc	100 a	100 a	95 a	100 a
3	Roundup Powermax	1.13	lb ae/a	32	oz/a	A					
3	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
3	Control Duo	4	qt/100 gal	0.8	qt/a	A					
4	Liberty	0.66	lb ai/a	36	oz/a	A	94 abc	100 a	100 a	90 a	100 a
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
4	Roundup Powermax	1.13	lb ae/a	32	oz/a	B					
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
4	Control Duo	4	qt/100 gal	0.8	qt/a	B					
5	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a	97 a	100 a
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
5	Liberty	0.66	lb ae/a	36	oz/a	B					
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
5	Control Duo	4	qt/100 gal	0.8	qt/a	B					
6	Liberty	0.66	lb ai/a	36	oz/a	A	80 de	90 b	100 a	75 b	97 a
6	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
6	Tri-Plex	4	qt/100 gal	1	% v/v	A					
7	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	100 a	100 a	98 a	90 a
7	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
7	Tri-Plex	4	qt/100 gal	1	% v/v	A					
8	Liberty	0.66	lb ai/a	36	oz/a	A	97 ab	100 a	100 a	93 a	100 a
8	Roundup Powermax	0.77	lb ae/a	22	oz/a	A					
8	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
8	Tri-Plex	4	qt/100 gal	0.8	qt/a	A					
9	Liberty	0.66	lb ai/a	36	oz/a	A	87 cd	100 a	100 a	93 a	100 a
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
9	Roundup Powermax	1.13	lb ae/a	32	oz/a	B					
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
9	Tri-Plex	4	qt/100 gal	0.8	qt/a	B					

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Sponsor Contact:

Pest Type						W Weed	W Weed	W Weed	W Weed	W Weed
Pest Code						AMARE	POLPY	SETFA	ECHCG	AMBTR
Pest Scientific Name						Amaranthus ret>	Persicaria pen>	Setaria faberi	Echinochloa cr>	Ambrosia trifi>
Pest Name						Redroot pigweed	annual smartwe>	foxtail, giant	barnyardgrass	ragweed, giant
Rating Date						Jun-30-2020	Jun-30-2020	Jul-15-2020	Jul-15-2020	Jul-15-2020
Rating Type						CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit						%	%	%	%	%
Number of Subsamples						1	1	1	1	1
Data Entry Date						Jun-30-2020	Jun-30-2020	Jul-15-2020	Jul-15-2020	Jul-15-2020
Days After First/Last Applic.						14 12	14 12	29 27	29 27	29 27
Trt-Eval Interval						14 DA-A	14 DA-A	29 DA-A	29 DA-A	29 DA-A
Plant-Eval Interval						48 DP-1	48 DP-1	63 DP-1	63 DP-1	63 DP-1
Days After Emergence						36 DE-1	36 DE-1	51 DE-1	51 DE-1	51 DE-1
Number of Decimals						0	0	0	0	0
Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	5*	6*	7*	8*	9*
10	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	97 a	100 a	99 a	100 a
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
10	Liberty	0.66	lb ae/a	36	oz/a	B					
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
10	Tri-Plex	4	qt/100 gal	0.8	qt/a	B					
11	Liberty	0.66	lb ai/a	36	oz/a	A	93 abc	100 a	100 a	89 a	100 a
11	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
12	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	88 b	100 a	100 a	93 a
12	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
13	Liberty	0.475	lb ai/a	26	oz/a	A	96 ab	100 a	100 a	97 a	90 a
13	Roundup Powermax	1.13	lb ae/a	32	oz/a	A					
13	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
14	Liberty	0.66	lb ai/a	36	oz/a	A	90 bc	100 a	100 a	90 a	100 a
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
14	Roundup Powermax	1.13	lb ae/a	32	oz/a	B					
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
15	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a	99 a	100 a
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	A					
15	Liberty	0.66	lb ae/a	36	oz/a	B					
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	B					
16	UTC						0 f	0 c	0 b	0 c	0 b
LSD P=.05							8.9	5.7	.	12.3	10.9
Standard Deviation							5.3	3.4	0.0	7.4	6.5
CV							6.07	3.76	0.0	8.48	7.17
Grand Mean							87.9	91.6	93.8	86.9	90.8
Levene's F							0.657	2.321	0.00	1.293	0.876
Levene's Prob(F)							0.805	0.022*	.	0.263	0.594
Rank X2							.	.	.	.	.
P(Rank X2)							.	.	.	.	.
Skewness							-3.0524*	-3.4864*	-3.7325*	-2.7913*	-3.321*
Kurtosis							9.0221*	11.1683*	12.4486*	7.4183*	10.2435*
Replicate F							1.201	1.188	0.000	11.245	1.118
Replicate Prob(F)							0.3148	0.3189	1.0000	0.0002	0.3402
Treatment F							63.557	155.540	0.000	32.822	42.693
Treatment Prob(F)							0.0001	0.0001	1.0000	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).
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* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,7 because error mean square = 0.

The Ohio State University

GarrCo Adjuvants with Glyphosate and Glufosinate Combinations

Trial ID: 20MSUGARR Location: Trial Year: 2020
Protocol ID: 20MSUGARR Investigator: Dr. Mark M. Loux
Project ID: Study Director:
Sponsor Contact:

Pest Type	W Weed	W Weed	W Weed
Pest Code	CHEAL	AMARE	POLPY
Pest Scientific Name	Chenopodium al>	Amaranthus ret>	Polygonum pens>
Pest Name	lambsquarters,>	pigweed, redro>	smartweed, Pen>
Rating Date	Jul-15-2020	Jul-15-2020	Jul-15-2020
Rating Type	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%
Number of Subsamples	1	1	1
Data Entry Date	Jul-15-2020	Jul-15-2020	Jul-15-2020
Days After First/Last Applic.	29 27	29 27	29 27
Trt-Eval Interval	29 DA-A	29 DA-A	29 DA-A
Plant-Eval Interval	63 DP-1	63 DP-1	63 DP-1
Days After Emergence	51 DE-1	51 DE-1	51 DE-1
Number of Decimals	0	0	0

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	10*	11*	12*
1	Liberty	0.66	lb ai/a	36	oz/a	A	53 f	57 f	100 a
1	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
1	Control Duo	4	qt/100 gal	0.8	qt/a	A			
2	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	100 a	100 a	100 a
2	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
2	Control Duo	4	qt/100 gal	0.8	qt/a	A			
3	Liberty	0.66	lb ai/a	36	oz/a	A	83 cd	90 ab	100 a
3	Roundup Powermax	1.13	lb ae/a	32	oz/a	A			
3	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
3	Control Duo	4	qt/100 gal	0.8	qt/a	A			
4	Liberty	0.66	lb ai/a	36	oz/a	A	80 d	80 bcd	97 ab
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
4	Roundup Powermax	1.13	lb ae/a	32	oz/a	B			
4	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
4	Control Duo	4	qt/100 gal	0.8	qt/a	B			
5	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
5	Liberty	0.66	lb ae/a	36	oz/a	B			
5	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
5	Control Duo	4	qt/100 gal	0.8	qt/a	B			
6	Liberty	0.66	lb ai/a	36	oz/a	A	67 e	67 ef	83 b
6	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
6	Tri-Plex	4	qt/100 gal	1	% v/v	A			
7	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	99 a	100 a	100 a
7	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
7	Tri-Plex	4	qt/100 gal	1	% v/v	A			
8	Liberty	0.66	lb ai/a	36	oz/a	A	84 bcd	85 bc	100 a
8	Roundup Powermax	0.77	lb ae/a	22	oz/a	A			
8	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
8	Tri-Plex	4	qt/100 gal	0.8	qt/a	A			
9	Liberty	0.66	lb ai/a	36	oz/a	A	79 de	70 de	93 ab
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
9	Roundup Powermax	1.13	lb ae/a	32	oz/a	B			
9	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
9	Tri-Plex	4	qt/100 gal	0.8	qt/a	B			

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The Ohio State University

GarrCo Adjuvants with Glyphosate and Glufosinate Combinations

Trial ID: 20MSUGARR Location: Trial Year: 2020
Protocol ID: 20MSUGARR Investigator: Dr. Mark M. Loux
Project ID: Study Director:
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	10*	11*	12*
	Pest Type						W Weed	W Weed	W Weed
	Pest Code						CHEAL	AMARE	POLPY
	Pest Scientific Name						Chenopodium al>	Amaranthus ret>	Polygonum pens>
	Pest Name						lambsquarters,>	pigweed, redro>	smartweed, Pen>
	Rating Date						Jul-15-2020	Jul-15-2020	Jul-15-2020
	Rating Type						CONTRO	CONTRO	CONTRO
	Rating Unit						%	%	%
	Number of Subsamples						1	1	1
	Data Entry Date						Jul-15-2020	Jul-15-2020	Jul-15-2020
	Days After First/Last Applic.						29 27	29 27	29 27
	Trt-Eval Interval						29 DA-A	29 DA-A	29 DA-A
	Plant-Eval Interval						63 DP-1	63 DP-1	63 DP-1
	Days After Emergence						51 DE-1	51 DE-1	51 DE-1
	Number of Decimals						0	0	0
10	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	97 ab	100 a	100 a
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
10	Liberty	0.66	lb ae/a	36	oz/a	B			
10	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
10	Tri-Plex	4	qt/100 gal	0.8	qt/a	B			
11	Liberty	0.66	lb ai/a	36	oz/a	A	79 de	72 de	100 a
11	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
12	Roundup Powermax	1.13	lb ae/a	32	oz/a	A	93 abc	100 a	97 ab
12	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
13	Liberty	0.475	lb ai/a	26	oz/a	A	86 bcd	88 ab	100 a
13	Roundup Powermax	1.13	lb ae/a	32	oz/a	A			
13	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
14	Liberty	0.66	lb ai/a	36	oz/a	A	73 de	73 cde	100 a
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
14	Roundup Powermax	1.13	lb ae/a	32	oz/a	B			
14	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
15	Roundup Powermax	1.13	lb ai/a	32	oz/a	A	100 a	100 a	100 a
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	A			
15	Liberty	0.66	lb ae/a	36	oz/a	B			
15	N PAK-AMS	2.5	% v/v	2.5	% v/v	B			
16	UTC						0 g	0 g	0 c
	LSD P=.05						12.9	12.3	13.5
	Standard Deviation						7.7	7.4	8.1
	CV						9.73	9.24	8.84
	Grand Mean						79.6	80.1	91.9
	Levene's F						0.881	1.461	0.892
	Levene's Prob(F)						0.589	0.179	0.579
	Rank X2						.	.	.
	P(Rank X2)						.	.	.
	Skewness						-1.9671*	-1.8461*	-3.2875*
	Kurtosis						3.9986*	3.5993*	9.7353*
	Replicate F						4.432	3.671	0.663
	Replicate Prob(F)						0.0206	0.0375	0.5226
	Treatment F						31.340	36.183	28.158
	Treatment Prob(F)						0.0001	0.0001	0.0001

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GarrCo Adjuvants with Glyphosate and Glufosinate Combinations

Trial ID: 20MSUGARR Location: Trial Year: 2020
Protocol ID: 20MSUGARR Investigator: Dr. Mark M. Loux
Project ID: Study Director:
Sponsor Contact:

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
SETFA, Setaria faberi, Giant foxtail = US
ECHCG, Echinochloa crus-galli, Common barnyard grass = US
AMBTR, Ambrosia trifida, Giant ragweed = US
CHEAL, Chenopodium album, common lambsquarters = US
AMARE, Amaranthus retroflexus, Redroot pigweed = US
POLPY, Persicaria pensylvanica, annual smartweed = US
SETFA, Setaria faberi, foxtail, giant = US
ECHCG, Echinochloa crus-galli, barnyardgrass = US
AMBTR, Ambrosia trifida, ragweed, giant = US
CHEAL, Chenopodium album, lambsquarters, common = US
AMARE, Amaranthus retroflexus, pigweed, redroot = US
POLPY, Polygonum pensylvanicum, smartweed, Pennsylvania = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit
% = percent
Plant-Eval Interval
48 DP-1 = 1 GLXMA May-13-2020
63 DP-1 = 1 GLXMA May-13-2020