

AMS Replacements for Glyphosate - Winfield Solutions and Chemorse.

Trial ID: 10-2B-W110

Location: Belleville Res. Center

Investigator: Bryan Young, Professor, Southern Illinois University, bgyoung@siu.edu
 City State Zip Country: Belleville IL 62221 USA
 Trial Status: FINAL Initiation Date: 06-10-10

Objectives: Determine the effectiveness of various experimental adjuvants applied with glyphosate compared with standard AMS.

Crop 1: GLXMA Soybean Variety: AG 4404 Description: RR/STS
 Planting Method: SEEDED Planting Date: 06-10-10
 Rate, Unit: 75 LB/A Depth, Unit: 1.0 IN
 Row Spacing, Unit: 30 IN

Pest 1 Type: W Code: GGGAN grasses, annual
 Pest 2 Type: W Code: AMBTR Ambrosia trifida L. ragweed, giant
 Pest 3 Type: W Code: AMATA Amaranthus rudis Sauer waterhemp, common
 Pest 4 Type: W Code: ABUTH Abutilon theophrasti Medicus velvetleaf

Plot Width, Unit: 10 FT Site Type: FIELD
 Plot Length, Unit: 28 FT Tillage Type: REDUCED-TILL
 Replications: 3 Study Design: Randomized Complete Block

Prior Crops, Year
 1. ZEAMD 2009

Field Prep./Maintenance: N 0 LB/A, P2O5 0 LB/A, K2O 150 LB/A

% OM: 1.6 Texture: SILT LOAM
 pH: 6.8 Soil Name: PIERRON
 CEC: 8 Fert. Level: P1: 77 LB/A, K: 252 LB/A

Application Description

A
 Application Date: 07-02-10
 Time of Day: 6:45
 Application Method: Spray
 Application Timing: 4-6"W
 Application Placement: BROFOL
 Applied By: JRK DKP
 Air Temperature, Unit: 68 F
 % Relative Humidity: 92
 Wind Velocity, Unit: 0 MPH
 Wind Direction: NA
 Dew Presence (Y/N): Y
 Soil Moisture: ABONOR
 % Cloud Cover: 0

07-02-10
 Crop stage at application: V2-V3
 Height Min, Max (inch): 4 8

Pest Stage At Each Application

Application Date: 07-02-10
 Weed Code: GGGAN
 Stage Majority (leaves): 4
 Stage Min, Max: 2 5
 Height Majority: 4 IN
 Height Min, Max: 1 6
 Density, Unit: 0.1 FT2
 Weed Code: AMBTR
 Stage Majority (leaves): 6
 Stage Min, Max: 4 8
 Height Majority: 6 IN
 Height Min, Max: 4 7
 Density, Unit: 0.01 FT2
 Weed Code: AMATA
 Stage Majority (leaves): 6
 Stage Min, Max: 4 8
 Height Majority: 5 IN
 Height Min, Max: 2 8
 Density, Unit: 0.01 FT2
 Weed Code: ABUTH
 Stage Majority (leaves): 4
 Stage Min, Max: 2 6
 Height Majority: 5 IN
 Height Min, Max: 2 7
 Density, Unit: 0.01 FT2

Application Equipment

Appl. Equipment: CO2 sprayer
 Operating Pressure: 30 PSI
 Nozzle Type: Flat fan
 Nozzle Size: TT 110Q15
 Boom Length, Unit: 7.5 FT
 Spray Volume, Unit: 10 GPA

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Pest Code										GLXMA		GGGAN	AMBTR	AMBTR	AMATA	AMATA
Crop Code										07-16-10	07-30-10	07-16-10	07-16-10	07-30-10	07-16-10	07-30-10
Rating Date										Injury	Injury	Control	Control	Control	Control	Control
Rating Data Type										Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit																
Rating Timing																
Trt-Eval Interval										14 DA-A	28 DA-A	14 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code							
1	HARD WATER (500 PPM)									0 a	0 a	53 ij	20 e	15 i	12 e	8 f
1	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
2	HARD WATER (500 PPM)									0 a	0 a	73 a	34 ab	28 b-f	18 a-d	15 a-f
2	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
2	N-PAK AMS	100	SL	2.5 % v/v	2.5 % v/v	4-6"W	A									
3	HARD WATER (500 PPM)									0 a	0 a	67 b-f	37 a	33 abc	22 a	18 ab
3	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
3	N-PAK AMS	100	SL	5 % v/v	5 % v/v	4-6"W	A									
4	HARD WATER (500 PPM)									0 a	0 a	64 efg	37 a	32 a-d	18 a-d	16 a-e
4	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
4	CLASS ACT NG	100	SL	2.5 % v/v	2.5 % v/v	4-6"W	A									
5	HARD WATER (500 PPM)									0 a	0 a	72 ab	33 ab	34 ab	18 a-e	14 a-f
5	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
5	AG 10003	100	SL	2 % v/v	2 % v/v	4-6"W	A									
6	HARD WATER (500 PPM)									0 a	0 a	73 a	37 a	36 a	19 abc	17 a-e
6	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
6	AG 10004	100	SL	2 % v/v	2 % v/v	4-6"W	A									
7	HARD WATER (500 PPM)									0 a	0 a	60 gh	29 bcd	27 d-g	18 a-d	12 b-f
7	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
7	AG 10009	100	SL	2 % v/v	2 % v/v	4-6"W	A									
8	HARD WATER (500 PPM)									0 a	0 a	72 ab	34 ab	30 a-e	19 abc	16 a-e
8	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
8	AG 10010	100	SL	2 % v/v	2 % v/v	4-6"W	A									
9	HARD WATER (500 PPM)									0 a	0 a	70 a-d	33 ab	32 a-d	22 a	17 a-d
9	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
9	AG 10011	100	SL	2 % v/v	2 % v/v	4-6"W	A									
10	HARD WATER (500 PPM)									0 a	0 a	63 fg	27 cd	27 d-g	13 cde	11 c-f
10	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
10	CLASS ACT NG	100	SL	1.25 % v/v	1.25 % v/v	4-6"W	A									
11	HARD WATER (500 PPM)									0 a	0 a	70 abc	32 abc	27 d-g	18 a-e	14 a-f
11	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
11	AG 10003	100	SL	1 % v/v	1 % v/v	4-6"W	A									
12	HARD WATER (500 PPM)									0 a	0 a	70 a-d	27 cd	19 hi	15 b-e	10 ef
12	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
12	AG 10004	100	SL	1 % v/v	1 % v/v	4-6"W	A									
13	HARD WATER (500 PPM)									0 a	0 a	67 a-f	27 cd	22 gh	17 a-e	13 b-f
13	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
13	AG 10009	100	SL	1 % v/v	1 % v/v	4-6"W	A									
14	HARD WATER (500 PPM)									0 a	0 a	72 ab	35 a	28 b-f	20 ab	18 ab
14	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
14	AG 10010	100	SL	1 % v/v	1 % v/v	4-6"W	A									
15	HARD WATER (500 PPM)									0 a	0 a	65 c-g	35 a	31 a-d	18 a-d	17 abc
15	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
15	AG 10011	100	SL	1 % v/v	1 % v/v	4-6"W	A									
16	HARD WATER (500 PPM)									0 a	0 a	64 d-g	33 ab	33 abc	18 a-d	16 a-e
16	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
16	AG 03019	100	SL	0.5 % v/v	0.5 % v/v	4-6"W	A									
17	NONTREATED									0 a	0 a	0 k	0 f	0 j	0 f	0 g
18	HARD WATER (500 PPM)									0 a	0 a	69 a-e	34 ab	28 c-g	22 a	20 a
18	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	4-6"W	A									
18	CHEMPRO S-180	100	SL	1.5 % v/v	1.5 % v/v	4-6"W	A									

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Crop Code		07-16-10	07-30-10	07-16-10	07-16-10	07-30-10	07-16-10	07-30-10
Rating Date		Injury	Injury	Control	Control	Control	Control	Control
Rating Data Type		Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit		14 DA-A	28 DA-A	14 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A
Rating Timing								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate Unit	Growth Stage	Appl Code
19	HARD WATER (500 PPM)							
19	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a		4-6"W	A
19	CHEMPRO CP-20	100	SL	0.125 % v/v	0.125 % v/v		4-6"W	A
20	HARD WATER (500 PPM)							
20	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a		4-6"W	A
20	CHEMPRO CP-35	100	SL	0.125 % v/v	0.125 % v/v		4-6"W	A
21	HARD WATER (500 PPM)							
21	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a		4-6"W	A
21	CHEMPRO EXP-2010	100	SL	1 % v/v	1 % v/v		4-6"W	A
LSD (P=.05)		0.0	0.0	5.8	5.8	6.2	6.1	7.0
Replicate F		0.000	0.000	0.768	0.874	1.206	0.049	6.644
Replicate Prob(F)		1.0000	1.0000	0.4705	0.4253	0.3102	0.9520	0.0032
Treatment F		0.000	0.000	60.880	16.469	13.521	5.119	3.320
Treatment Prob(F)		1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0006

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

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Trial ID: 10-2B-W110

Location: Belleville Res. Center

Pest Code	ABUTH	ABUTH
Crop Code		
Rating Date	07-16-10	07-30-10
Rating Data Type	Control	Control
Rating Unit	Percent	Percent
Rating Timing		
Trt-Eval Interval	14 DA-A	28 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code		
1	HARD WATER (500 PPM)									22 ef	23 efg
1	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
2	HARD WATER (500 PPM)									33 ab	27 cde
2	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
2	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	4-6"W	A		
3	HARD WATER (500 PPM)									37 a	35 a
3	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
3	N-PAK AMS	100	SL	5	% v/v	5	% v/v	4-6"W	A		
4	HARD WATER (500 PPM)									33 ab	28 cde
4	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
4	CLASS ACT NG	100	SL	2.5	% v/v	2.5	% v/v	4-6"W	A		
5	HARD WATER (500 PPM)									28 cd	28 cd
5	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
5	AG 10003	100	SL	2	% v/v	2	% v/v	4-6"W	A		
6	HARD WATER (500 PPM)									32 bc	28 cde
6	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
6	AG 10004	100	SL	2	% v/v	2	% v/v	4-6"W	A		
7	HARD WATER (500 PPM)									33 ab	28 cd
7	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
7	AG 10009	100	SL	2	% v/v	2	% v/v	4-6"W	A		
8	HARD WATER (500 PPM)									37 a	35 a
8	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
8	AG 10010	100	SL	2	% v/v	2	% v/v	4-6"W	A		
9	HARD WATER (500 PPM)									33 ab	34 ab
9	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
9	AG 10011	100	SL	2	% v/v	2	% v/v	4-6"W	A		
10	HARD WATER (500 PPM)									25 de	27 cde
10	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
10	CLASS ACT NG	100	SL	1.25	% v/v	1.25	% v/v	4-6"W	A		
11	HARD WATER (500 PPM)									23 e	24 def
11	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
11	AG 10003	100	SL	1	% v/v	1	% v/v	4-6"W	A		
12	HARD WATER (500 PPM)									22 ef	19 g
12	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
12	AG 10004	100	SL	1	% v/v	1	% v/v	4-6"W	A		
13	HARD WATER (500 PPM)									28 cd	26 cde
13	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
13	AG 10009	100	SL	1	% v/v	1	% v/v	4-6"W	A		
14	HARD WATER (500 PPM)									32 bc	29 cd
14	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
14	AG 10010	100	SL	1	% v/v	1	% v/v	4-6"W	A		
15	HARD WATER (500 PPM)									28 cd	28 cd
15	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
15	AG 10011	100	SL	1	% v/v	1	% v/v	4-6"W	A		
16	HARD WATER (500 PPM)									24 de	23 efg
16	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
16	AG 03019	100	SL	0.5	% v/v	0.5	% v/v	4-6"W	A		
17	NONTREATED									0 h	0 h
18	HARD WATER (500 PPM)									32 bc	30 bc
18	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A		
18	CHEMPRO S-180	100	SL	1.5	% v/v	1.5	% v/v	4-6"W	A		

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Pest Code	ABUTH	ABUTH
Crop Code		
Rating Date	07-16-10	07-30-10
Rating Data Type	Control	Control
Rating Unit	Percent	Percent
Rating Timing		
Trt-Eval Interval	14 DA-A	28 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code			
19	HARD WATER (500 PPM)									24	de	24
19	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A			
19	CHEMPRO CP-20	100	SL	0.125	% v/v	0.125	% v/v	4-6"W	A			
20	HARD WATER (500 PPM)									18	fg	20
20	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A			
20	CHEMPRO CP-35	100	SL	0.125	% v/v	0.125	% v/v	4-6"W	A			
21	HARD WATER (500 PPM)									17	g	19
21	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	4-6"W	A			
21	CHEMPRO EXP-2010	100	SL	1	% v/v	1	% v/v	4-6"W	A			
LSD (P=.05)											4.3	4.8
Replicate F											10.328	1.919
Replicate Prob(F)											0.0002	0.1601
Treatment F											30.778	19.542
Treatment Prob(F)											0.0001	0.0001

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

Trial Comments

1. Protocol: Winfield Solutions, Chemorse.
2. Ratings: CI/WC at 14 and 28 DAT.
3. Note any handling, mixing or spraying characteristics.
HARD WATER (500 PPM) = Ca + Mg hard water.
HARD WATER MIXING INSTRUCTIONS:
To make 1 gallon of 500 ppm Ca + Mg hard water use the formula:
2.24 g of CaCl₂·2H₂O (Calcium Chloride Dihydrate)
0.77 g of MgCl₂·6H₂O (Magnesium Chloride Hexahydrate)
1 gallon distilled water
Be sure to use the dihydrate form of the calcium chloride and the hexahydrate form of the magnesium chloride.
Be sure to stir in the salts to insure that the solutions are all homogeneous before use.
4. GGGAN = Annual grasses including SETFA (giant foxtail) and PANDI (fall panicum).
Weed control was lower than expected due to the very early morning application time.
Not possible to rate GGGAN at 28 DA-A due to competition from dense AMBTR.
5. Not harvested.