

CPDA - Water Conditioning Adjuvants without Surfactant.

Trial ID: 10-21N-M150

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: 06-11-10

Objectives: Compare the performance of adjuvant water conditioners compared with standard dry AMS for glyphosate efficacy.

Crop 1: GLXMA Soybean Variety: AG 4005 Description: RR
 Planting Method: SEEDED Planting Date: 06-11-10
 Rate, Unit: 75 LB/A Depth, Unit: 1.0 IN
 Row Spacing, Unit: 30 IN

Pest 1 Type: W Code: SETFA Setaria faberi Herrm. foxtail, giant
 Pest 2 Type: W Code: ABUTH Abutilon theophrasti Medicus velvetleaf
 Pest 3 Type: W Code: AMBTR Ambrosia trifida L. ragweed, giant
 Pest 4 Type: W Code: XANST Xanthium strumarium L. cocklebur, common

Plot Width, Unit: 10 FT Site Type: FIELD
 Plot Length, Unit: 30 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 0 LB/A

% OM: 2.1 Texture: SILT LOAM
 pH: 6 Soil Name: BETHALTO
 CEC: 12 Fert. Level: P1: 89 LB/A, K: 400 LB/A

Application Description

A
 Application Date: 07-02-10
 Time of Day: 5:45
 Application Method: Spray
 Application Timing: 6-8"W
 Application Placement: BROFOL
 Applied By: DKP
 Air Temperature, Unit: 68 F
 % Relative Humidity: 92
 Wind Velocity, Unit: 0 MPH
 Dew Presence (Y/N): Y
 Soil Moisture: NORMAL
 % Cloud Cover: 0

07-02-10
 Crop stage at application: V2-V3
 Height Min, Max (inch): 4 7

Pest Stage At Each Application

Application Date: 07-02-10
 Weed Code: SETFA
 Stage Majority (leaves): 5
 Stage Min, Max: 1 7
 Height Majority: 7 IN
 Height Min, Max: 1 8
 Density, Unit: 2 FT2
 Weed Code: ABUTH
 Stage Majority (leaves): 4
 Stage Min, Max: COTY 8
 Height Majority: 6 IN
 Height Min, Max: 1 8
 Density, Unit: 3 FT2
 Weed Code: AMBTR
 Stage Majority (leaves): 8
 Stage Min, Max: 2 10
 Height Majority: 8 IN
 Height Min, Max: 2 10
 Density, Unit: 2 FT2
 Weed Code: XANST
 Stage Majority (leaves): 6
 Stage Min, Max: 2 8
 Height Majority: 8 IN
 Height Min, Max: 2 10
 Density, Unit: 0.3 FT2

Application Equipment

Appl. Equipment: CO2 sprayer
 Operating Pressure: 40 PSI
 Nozzle Type: Flat fan
 Nozzle Size: TT 11001
 Boom Length, Unit: 6.67 FT
 Spray Volume, Unit: 10 GPA

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Pest Code										SETFA		SETFA		ABUTH		ABUTH	
Crop Code										GLXMA		GLXMA		07-16-10		07-30-10	
Rating Date										Injury		Injury		Control		Control	
Rating Data Type										Percent		Percent		Percent		Percent	
Rating Unit																	
Rating Timing																	
Trt-Eval Interval										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	DEIONIZED WATER									0 a	0 a	83 abc	86 bc	18 de	16 efg		
1	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
2	HARD WATER (1000 PPM)									0 a	0 a	60 d	77 d	18 de	17 efg		
2	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
3	DEIONIZED WATER									0 a	0 a	90 ab	90 abc	40 a	29 ab		
3	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
3	AMS	100	SG	1	% w/w	8.5	lb/100 gal	6-8"W	A								
4	HARD WATER (1000 PPM)									0 a	0 a	88 ab	89 abc	42 a	33 a		
4	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
4	AMS	100	SG	1	% w/w	8.5	lb/100 gal	6-8"W	A								
5	HARD WATER (1000 PPM)									0 a	0 a	85 abc	85 c	30 b	24 bcd		
5	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
5	REQUEST	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
6	HARD WATER (1000 PPM)									0 a	0 a	89 ab	92 a	29 bc	19 c-f		
6	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
6	HEL-FIRE	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
7	HARD WATER (1000 PPM)									0 a	0 a	90 ab	91 ab	26 bc	24 bcd		
7	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
7	N-TENSE	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
8	HARD WATER (1000 PPM)									0 a	0 a	82 bc	86 bc	30 b	25 bc		
8	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
8	ARRAY	100	SG	1.08	% w/w	9	lb/100 gal	6-8"W	A								
9	HARD WATER (1000 PPM)									0 a	0 a	77 c	79 d	16 e	11 g		
9	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
9	BRONC MAX	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
10	HARD WATER (1000 PPM)									0 a	0 a	83 abc	86 bc	15 e	14 fg		
10	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
10	CHOICE WEATHER MASTER	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
11	HARD WATER (1000 PPM)									0 a	0 a	91 a	93 a	30 b	18 d-g		
11	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
11	CLASS ACT NG	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A								
12	HARD WATER (1000 PPM)									0 a	0 a	89 ab	90 abc	23 cd	22 cde		
12	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
12	BRONC PLUS DRY EDT	100	SG	1.2	% w/w	10	lb/100 gal	6-8"W	A								
13	HARD WATER (1000 PPM)									0 a	0 a	85 abc	89 abc	19 de	11 g		
13	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
13	FLAME	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
14	HARD WATER (1000 PPM)									0 a	0 a	89 ab	92 a	28 bc	24 bcd		
14	TOUCHDOWN HI-TECH	5	SL	0.28	lb ae/a	7.2	fl oz/a	6-8"W	A								
14	CAYUSE PLUS	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
15	NONTREATED									0 a	0 a	0 e	0 e	0 f	0 h		
LSD (P=.05)										0.0	0.0	9.0	5.6	6.5	7.2		
Replicate F										0.000	0.000	2.001	1.128	1.012	0.581		
Replicate Prob(F)										1.0000	1.0000	0.1540	0.3380	0.3775	0.5671		
Treatment F										0.000	0.000	55.394	142.724	22.432	11.468		
Treatment Prob(F)										1.0000	1.0000	0.0001	0.0001	0.0001	0.0001		

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

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Pest Code								AMBTR	AMBTR	XANST	XANST				
Crop Code								07-16-10	07-30-10	07-16-10	07-30-10				
Rating Date								Control	Control	Control	Control				
Rating Data Type								Percent	Percent	Percent	Percent				
Rating Unit															
Rating Timing															
Trt-Eval Interval								14 DA-A	28 DA-A	14 DA-A	28 DA-A				
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate Unit	Growth Stage	Appl Code								
1	DEIONIZED WATER							27	def	19	def	53	de	47	bcd
1	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
2	HARD WATER (1000 PPM)							22	f	17	ef	50	e	43	cd
2	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
3	DEIONIZED WATER							33	b	29	abc	65	a	57	ab
3	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
3	AMS	100	SG	1 % w/w	8.5 lb/100 gal	6-8"W	A								
4	HARD WATER (1000 PPM)							32	bc	33	ab	65	a	63	a
4	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
4	AMS	100	SG	1 % w/w	8.5 lb/100 gal	6-8"W	A								
5	HARD WATER (1000 PPM)							28	cd	23	b-e	63	ab	52	a-d
5	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
5	REQUEST	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
6	HARD WATER (1000 PPM)							32	bc	27	a-d	59	a-d	48	bcd
6	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
6	HEL-FIRE	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
7	HARD WATER (1000 PPM)							28	de	20	cde	57	bcd	42	d
7	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
7	N-TENSE	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
8	HARD WATER (1000 PPM)							33	bc	27	a-d	62	ab	60	a
8	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
8	ARRAY	100	SG	1.08 % w/w	9 lb/100 gal	6-8"W	A								
9	HARD WATER (1000 PPM)							23	ef	18	def	55	cde	48	bcd
9	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
9	BRONC MAX	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
10	HARD WATER (1000 PPM)							23	ef	10	f	63	a	52	a-d
10	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
10	CHOICE WEATHER MASTER	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
11	HARD WATER (1000 PPM)							38	a	27	a-d	65	a	47	bcd
11	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
11	CLASS ACT NG	100	SL	2.5 % v/v	2.5 % v/v	6-8"W	A								
12	HARD WATER (1000 PPM)							33	bc	22	cde	63	a	60	a
12	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
12	BRONC PLUS DRY EDT	100	SG	1.2 % w/w	10 lb/100 gal	6-8"W	A								
13	HARD WATER (1000 PPM)							27	def	19	def	60	abc	53	abc
13	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
13	FLAME	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
14	HARD WATER (1000 PPM)							37	ab	33	a	63	a	60	a
14	TOUCHDOWN HI-TECH	5	SL	0.28 lb ae/a	7.2 fl oz/a	6-8"W	A								
14	CAYUSE PLUS	100	SL	0.5 % v/v	0.5 % v/v	6-8"W	A								
15	NONTREATED							0	g	0	g	0	f	0	e
LSD (P=.05)								4.6		9.6		6.4		11.1	
Replicate F								4.745		1.124		0.024		0.292	
Replicate Prob(F)								0.0168		0.3392		0.9763		0.7490	
Treatment F								33.193		6.844		53.364		15.268	
Treatment Prob(F)								0.0001		0.0001		0.0001		0.0001	

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

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Trial Comments

1. Protocol: CPDA-2.
2. Ratings: WC at 14 and 28 DAT.
3. Target ABUTH and any other weed species.
4. Mixing instructions, Use hardwater for most treatments, deionized water for the rest.
HARD WATER (1000 PPM) = Ca + Mg hard water.
HARD WATER MIXING INSTRUCTIONS:
To make 3 gallons of 1000 ppm Ca + Mg hard water use the formula:
13.45 g of $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ (Calcium Chloride Dihydrate)
4.62 g of $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ (Magnesium Chloride Hexahydrate)
3 gallons 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.
5. Spraying instructions, must use TT11001 tips and 40 PSI.
6. Weed control was lower than expected due to the very early morning application time.
7. Not harvested.