

Impact Tank-Mixes for Glyphosate-Resistant Waterhemp.

Trial ID: 12-DSO-ImpactTM
 Location: De Soto, IL

Investigator: Bryan Young

General Trial Information	
Study Director: Bryan Young	Investigator: Bryan Young Title: Professor
Trial Status: F - one-year/final	Initiation Date: 4-29-12
Trial Location	
City: De Soto	State/Prov.: IL
Postal Code: 62924	Country: USA

Objectives: Evaluate glyphosate-resistant waterhemp control from herbicide combinations with Impact.
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Personnel	
Study Director: Bryan Young	Investigator: Bryan Young Title: Professor
Affiliation: Southern Illinois University	Address: 1205 Lincoln Drive - AG 176 - MC 4415
Location: Carbondale IL	Postal Code: 62901
Phone No.: 618-453-7679	E-mail: bgyoung@siu.edu
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Crop Description	
Crop 1: ZEAMD Zea mays indentata Dent corn	Description: RR2/LL
Variety: DKC 61-06	Planting Date: 4-29-12
BCH Scale: BCOR	Rate, Unit: 31000 S/A
Planting Method: SEEDED Seeded	
Depth, Unit: 2 IN	
Row Spacing, Unit: 30 IN	

Pest Description	
Pest 1 Type: W Code: AMATA - Amaranthus rudis Sauer	Common Name: waterhemp, common
	Description: glyphosate-resistant waterhemp
Pest 2 Type: W Code: PANDI - Panicum dichotomiflorum Michx.	Common Name: panicum, fall

Site and Design	
Plot Width, Unit: 10 FT	Site Type: FIELD field
Plot Length, Unit: 30 FT	Tillage Type: NOTILL no-till
Plot Area, Unit: 300 FT2	Study Design: RACOBL Randomized Complete Block (RCB)
Replications: 4	

No.	Previous Crop	Year
1.	GLXMA	2011

Maintenance	
No.	Maintenance Treatment Name
1.	N 177 LB/A, P205 69 LB/A, K20 90 LB/A

Soil Description	
% Sand: 15.4	% OM: 2.15
% Silt: 64.7	pH: 6.9
% Clay: 19.9	CEC: 12.4
Texture: SIL SILT LOAM	Soil Name: OKAW

Additional Measured Elements		
Element	Quantity	Unit
P1	94	LB/A
K	468	LB/A

Moisture and Weather Conditions	
Overall Moisture Conditions: BELNOR below normal	Distance, Unit: 1.5 MI
Closest Weather Station: SOUTHERN IL AIRPORT (93810)	

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No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-30-12	0.55	IN	RAIN	rain					
2.	5-1-12					7	DAY	59.1	91.3	F
3.	5-6-12	0.14	IN	RAIN	rain					
4.	5-7-12	0.07	IN	RAIN	rain					
5.	5-8-12					7	DAY	43.3	79	F
6.	5-15-12					7	DAY	44.9	89.1	F
7.	5-20-12	0.93	IN	RAIN	rain					
8.	5-22-12					7	DAY	45.5	92.8	F
9.	5-29-12					7	DAY	46.3	89.8	F
10.	5-30-12	0.02	IN	RAIN	rain					
11.	5-31-12	0.14	IN	RAIN	rain					
12.	6-4-12	0.49	IN	RAIN	rain					
13.	6-5-12					7	DAY	48.5	88.8	F
14.	6-11-12	0.21	IN	RAIN	rain					
15.	6-12-12					7	DAY	49.8	91.1	F
16.	6-17-12	0.03	IN	RAIN	rain					
17.	6-19-12					7	DAY	55.4	96.4	F
18.	6-26-12					7	DAY	51.1	105.4	F
19.	7-3-12					7	DAY	71.1	105	F
20.	7-8-12	0.07	IN	RAIN	rain					
21.	7-9-12	0.12	IN	RAIN	rain					
22.	7-10-12					7	DAY	65.9	93.9	F
23.	7-14-12	0.02	IN	RAIN	rain					
24.	7-17-12					7	DAY	60	102.3	F
25.	7-17-12	0.03	IN	RAIN	rain					
26.	7-24-12					7	DAY	64.1	102.1	F
27.	7-26-12	1.41	IN	RAIN	rain					
28.	7-29-12	0.24	IN	RAIN	rain					
29.	7-31-12					7	DAY	62.7	97.9	F
30.	8-2-12	0.08	IN	RAIN	rain					
31.	8-4-12	3.29	IN	RAIN	rain					
32.	8-5-12	0.21	IN	RAIN	rain					
33.	8-7-12					7	DAY	54.1	97.2	F

Application Description

	A
Application Date:	5-20-12
Time of Day:	9:30
Application Method:	Spray
Application Timing:	POST
Application Placement:	BROFOL
Applied By:	JRK
Air Temperature, Unit:	82 F
% Relative Humidity:	65
Wind Velocity, Unit:	4 MPH
Wind Direction:	SW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	71 F
Soil Moisture:	BELNOR
% Cloud Cover:	0
Next Rain Occurred On:	5-20-12

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Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMD BCOR
Stage Scale Used:	DESC
Stage Majority, Percent:	V4
Stage Minimum, Percent:	V3
Stage Maximum, Percent:	V4
Height, Unit:	12 IN
Height Minimum, Maximum:	8 12

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMATA W DESC
Stage Majority, Percent:	6
Stage Minimum, Percent:	2
Stage Maximum, Percent:	10
Height, Unit:	3 IN
Height Minimum, Maximum:	0.5 6
Density, Unit:	1 FT2
Pest 2 Code, Type, Scale:	PANDI W DESC
Stage Majority, Percent:	2
Stage Minimum, Percent:	1
Stage Maximum, Percent:	3
Height, Unit:	2 IN
Height Minimum, Maximum:	1 4
Density, Unit:	3 FT2

Application Equipment

	A
Appl. Equipment:	CO2 sprayer
Equipment Type:	BACSPR
Operation Pressure, Unit:	30 PSI
Nozzle Type:	XR
Nozzle Size:	8002
Boom Length, Unit:	6.67 FT
Spray Volume, Unit:	15 GPA

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Pest Code	Crop Code	Rating Date	Rating Type	Rating Unit	Rating Timing	Trt-Eval Interval	ZEAMD 9-24-12 Moisture Percent	ZEAMD 9-24-12 Yield bu/A	ZEAMD 5-27-12 Injury Percent	ZEAMD 6-4-12 Injury Percent	ZEAMD 6-19-12 Injury Percent
									7 DA-A	15 DA-A	30 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Other Rate	Other Rate	Unit	Growth Stage	Appl Code	
1	NONTREATED										6 b
2	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a		POST	A	15.7 ab
	AATREX	4	SC	0.5	lb ai/a	1	pt/a		POST	A	27 a
	MSO (MSO ULTRA)	100	SL	1	% v/v	1	% v/v		POST	A	0 a
	28% UAN	100	SL	2.5	% v/v	2.5	% v/v		POST	A	0 a
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a		POST	A	15.2 ab
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a		POST	A	19 a
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a		POST	A	18.2 a
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a		POST	A	26 a
	AATREX	4	SC	0.5	lb ai/a	1	pt/a		POST	A	0 a
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v		POST	A	0 a
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a		POST	A	0 a
5	WARRANT	3	CS	1.13	lb ai/a	3	pt/a		POST	A	17.7 a
	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a		POST	A	26 a
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a		POST	A	0 a
	AATREX	4	SC	0.5	lb ai/a	1	pt/a		POST	A	0 a
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v		POST	A	0 a
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a		POST	A	0 a
6	HALEX GT	4.38	CS	1.97	lb ai/a	3.6	pt/a		POST	A	12.8 b
	AATREX	4	SC	0.5	lb ai/a	1	pt/a		POST	A	24 a
	NIS (ACTIVATOR 90)	100	SL	0.25	% v/v	0.25	% v/v		POST	A	0 a
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a		POST	A	0 a
LSD (P=.05)							3.29	12.5	0.0	0.0	0.0
Standard Deviation							2.14	8.3	0.0	0.0	0.0
CV							13.42	38.57	0.0	0.0	0.0
Replicate F							0.688	3.035	0.000	0.000	0.000
Replicate Prob(F)							0.5763	0.0619	1.0000	1.0000	1.0000
Treatment F							4.135	3.778	0.000	0.000	0.000
Treatment Prob(F)							0.0247	0.0205	1.0000	1.0000	1.0000

Means followed by same letter do not significantly differ (P=.05, LSD)
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Code							AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR			
Crop Code							5-27-12	6-4-12	6-19-12	7-19-12			
Rating Date							Control	Control	Control	Control			
Rating Type							Percent	Percent	Percent	Percent			
Rating Unit							7 DA-A	15 DA-A	30 DA-A	60 DA-A			
Rating Timing													
Trt-Eval Interval													
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Other Rate	Other Rate	Growth Stage	Appl Code				
1	NONTREATED									0 c	0 c	0 c	0 c
2	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A	93 a	99 a	97 a	95 a
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	1	% v/v	1	% v/v	POST	A				
	28% UAN	100	SL	2.5	% v/v	2.5	% v/v	POST	A				
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A	66 b	59 b	21 b	19 b
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A	91 a	99 a	97 a	98 a
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A				
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
5	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	POST	A	93 a	99 a	99 a	96 a
	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A				
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A				
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
6	HALEX GT	4.38	CS	1.97	lb ai/a	3.6	pt/a	POST	A	94 a	99 a	99 a	99 a
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	NIS (ACTIVATOR 90)	100	SL	0.25	% v/v	0.25	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
LSD (P=.05)							4.7	3.9	4.1	9.9			
Standard Deviation							3.1	2.6	2.7	6.6			
CV							4.25	3.46	3.96	9.68			
Replicate F							1.618	1.078	1.368	1.067			
Replicate Prob(F)							0.2271	0.3883	0.2905	0.3924			
Treatment F							581.026	952.191	1119.119	193.470			
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001			

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Pest Code							PANDI	PANDI	PANDI	PANDI			
Crop Code							5-27-12	6-4-12	6-19-12	7-19-12			
Rating Date							Control	Control	Control	Control			
Rating Type							Percent	Percent	Percent	Percent			
Rating Unit							7 DA-A	15 DA-A	30 DA-A	60 DA-A			
Rating Timing													
Trt-Eval Interval													
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Other Rate	Other Unit	Growth Stage	Appl Code				
1	NONTREATED									0 d	0 d	0 c	0 d
2	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A	79 ab	96 ab	91 a	93 ab
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	1	% v/v	1	% v/v	POST	A				
	28% UAN	100	SL	2.5	% v/v	2.5	% v/v	POST	A				
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A	85 a	97 a	96 a	96 a
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A	71 bc	94 ab	92 a	93 ab
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A				
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
5	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	POST	A	71 c	93 b	90 a	90 bc
	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	POST	A				
	IMPACT	2.8	SC	0.0164	lb ai/a	0.75	fl oz/a	POST	A				
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	MSO (MSO ULTRA)	100	SL	0.5	% v/v	0.5	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
6	HALEX GT	4.38	CS	1.97	lb ai/a	3.6	pt/a	POST	A	73 bc	90 c	79 b	85 c
	AATREX	4	SC	0.5	lb ai/a	1	pt/a	POST	A				
	NIS (ACTIVATOR 90)	100	SL	0.25	% v/v	0.25	% v/v	POST	A				
	N-PAK AMS	100	SL	2.5	% v/v	3	pt/a	POST	A				
LSD (P=.05)							7.7	3.2	5.7	5.2			
Standard Deviation							5.1	2.1	3.8	3.5			
CV							8.09	2.71	5.04	4.57			
Replicate F							1.019	1.795	1.523	1.765			
Replicate Prob(F)							0.4118	0.1914	0.2493	0.1969			
Treatment F							151.448	1309.381	387.511	463.992			
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001			

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Trial Comments

1. Protocol: AMVAC.
2. CI at 7, 15, and 30 DAT. WC at 7, 15, 30, and 60 DAT.
3. POST timing is 2-4 inch weeds and V3-V4 corn.
4. Blanket burndown of Gramoxone Inteon (4 pt/A) plus NIS (0.5%) was applied on 4-28-12.
Rainfall following application A was on the same day, 8 hours after application.
5. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
6. Harvested 9-24-12, (2) 30 inch rows by 27 ft.