

Emergence Timing and Glyphosate Efficacy.

Trial ID: 10-DSO-EmergTime Location: De Soto, IL

Investigator: Bryan Young, Professor, Southern Illinois University, bgyoung@siu.edu
 City State Zip Country: De Soto IL 62924 USA
 Trial Status: FINAL Initiation Date: 05-08-10

Objectives: Determine if the time of emergence for waterhemp is related to the ratio of glyphosate-resistant waterhemp plants in the population.

Crop 1: YACKR Arable land Variety: NON-CROP

Pest 1 Type: W Code: AMATA Amaranthus rudis Sauer waterhemp, common
 Pest Description: glyphosate-resistant waterhemp

Plot Width, Unit: 10 FT Site Type: FIELD
 Plot Length, Unit: 30 FT Tillage Type: NO-TILL
 Replications: 6 Study Design: Randomized Complete Block

Prior Crops, Year
 1. GLXMA 2009

Field Prep./Maintenance: N 13 LB/A, P205 34 LB/A, K20 92 LB/A

% OM: 2.5 Texture: SILT LOAM
 pH: 6.8 Soil Name: OKAW
 CEC: 12 Fert. Level: P1 88 LB/A, K 207 LB/A

	Application Description						
	A	B	C	D	E	F	G
Application Date:	05-21-10	06-04-10	06-18-10	05-25-10	06-15-10	06-25-10	07-09-10
Time of Day:	20:45	13:30	10:00	11:45	9:50	8:30	10:00
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	2WAP	4WAP	6WAP	4-6"WH	4-6"RG-1	4-6"RG-2	4-6"RG-3
Application Placement:	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Applied By:	DKP	NVH	JRK	NVH	NVH	NVH	NVH
Air Temperature, Unit:	71 F	90 F	93 F	86 F	92 F	75 F	84 F
% Relative Humidity:	68	52	59	66	67	84	73
Wind Velocity, Unit:	4 MPH	4 MPH	1 MPH	1 MPH	1 MPH	0 MPH	1 MPH
Wind Direction:	W	S	S	NW	S		E
Dew Presence (Y/N):	N	N	N	N	N	Y	
Soil Temperature, Unit:	70 F	82 F	81 F	80 F	80 F	80 F	82 F
Soil Moisture:	ABONOR	NORMAL	ABONOR	ABONOR	ABONOR	NORMAL	ABONOR
% Cloud Cover:	80	65	0	90	0	10	30

	A	B	C	D	E	F	G
Crop stage at application:	05-21-10	06-04-10	06-18-10	05-25-10	06-15-10	06-25-10	07-09-10
	NA	NA	NA	NA	NA	NA	NA

	Pest Stage At Each Application						
	A	B	C	D	E	F	G
Application Date:	05-21-10	06-04-10	06-18-10	05-25-10	06-15-10	06-25-10	07-09-10
Weed Code:	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA
Stage Majority (leaves):	4	3	4	6	8	16	12
Stage Min, Max:	COTY 6	COTY 5	COTY 8	4	15	2	12
Height Majority:	3	IN 2	IN 1	IN 5	IN 5	IN 7	IN 5
Height Min, Max:	0.5	5	0.5	4	0.5	3	1
Density, Unit:	60	FT2 0.1	FT2 4	FT2 50	FT2 4	FT2 2	FT2 0.1

	Application Equipment							
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	30 PSI	30 PSI	30 PSI	30 PSI	30 PSI	30 PSI	30 PSI	30 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	XR 8002	XR 8002	XR 8002	XR 8002	XR 8002	XR 8002	XR 8002	XR 8002
Boom Length, Unit:	6.67 FT	6.67 FT	6.67 FT	6.67 FT	6.67 FT	6.67 FT	6.67 FT	6.67 FT
Spray Volume, Unit:	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA

Emergence Timing and Glyphosate Efficacy.

Trial ID: 10-DSO-EmergTime Location: De Soto, IL

										AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR							
Pest Code																						
Crop Code																						
Rating Date										05-25-10	06-01-10	06-15-10	06-22-10	06-25-10	07-02-10							
Rating Data Type										Plants	Plants	Plants	Plants	Plants	Plants							
Rating Unit										0.5 m2	0.5 m2	0.5 m2	0.5 m2	0.5 m2	0.5 m2							
Rating Timing												0 DA-E										
Trt-Eval Interval										0 DA-D	7 DA-D	21 DA-D	7 DA-E	0 DA-F	7 DA-F							
Trt	Treatment	Form	Form	Rate	Other	Other	Growth	Appl														
No.	Name	Conc	Type	Rate	Unit	Rate	Rate	Unit	Stage	Code												
1	ROUNDUP POWERMAX	4.5	SL	1.55	lb ae/a	44	fl oz/a		4-6"WH	D	340	a	55	a	38	a	48	a	50	a	52	a
1	N-PAK AMS	100	SL	5	% v/v	5	% v/v		4-6"WH	D												
2	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		2WAP	A	19	b	19	ab	34	a	2	b	3	b	4	b
2	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		2WAP	A												
2	ROUNDUP POWERMAX	4.5	SL	1.55	lb ae/a	44	fl oz/a		4-6"RG-1	E												
2	N-PAK AMS	100	SL	5	% v/v	5	% v/v		4-6"RG-1	E												
3	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		2WAP	A	32	b	9	b	4	b	39	a	45	a	8	b
3	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		2WAP	A												
3	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		4WAP	B												
3	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		4WAP	B												
3	ROUNDUP POWERMAX	4.5	SL	1.55	lb ae/a	44	fl oz/a		4-6"RG-2	F												
3	N-PAK AMS	100	SL	5	% v/v	5	% v/v		4-6"RG-2	F												
4	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		2WAP	A	37	b	28	ab	4	b	0	b	2	b	6	b
4	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		2WAP	A												
4	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		4WAP	B												
4	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		4WAP	B												
4	GRAMOXONE INTEON	2	SL	0.75	lb ai/a	3	pt/a		6WAP	C												
4	COC (PRIME OIL)	100	SL	1	% v/v	1	% v/v		6WAP	C												
4	ROUNDUP POWERMAX	4.5	SL	1.55	lb ae/a	44	fl oz/a		4-6"RG-3	G												
4	N-PAK AMS	100	SL	5	% v/v	5	% v/v		4-6"RG-3	G												
LSD (P=.05)											41.3		37.3		20.3		25.7		25.3		16.5	
Replicate F											1.230		0.411		1.542		0.895		0.589		0.855	
Replicate Prob(F)											0.3431		0.8341		0.2360		0.5091		0.7085		0.5330	
Treatment F											128.560		2.595		7.520		8.420		9.323		17.622	
Treatment Prob(F)											0.0001		0.0909		0.0027		0.0016		0.0010		0.0001	

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

Emergence Timing and Glyphosate Efficacy.

Trial ID: 10-DSO-EmergTime Location: De Soto, IL

Pest Code		AMATA-HR		AMATA-HR		AMATA-HR		AMATA-HR	
Crop Code		07-06-10		07-09-10		07-16-10		07-28-10	
Rating Date		Plants		Plants		Plants		Plants	
Rating Data Type		0.5 m2		0.5 m2		0.5 m2		0.5 m2	
Rating Unit		0.5 m2		0.5 m2		0.5 m2		0.5 m2	
Rating Timing		21 DA-E		0 DA-G		7 DA-G		21 DA-G	
Trt-Eval Interval		21 DA-E		0 DA-G		21 DA-F		21 DA-G	
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	
1	ROUNDUP POWERMAX	4.5	SL	1.55 lb ae/a	44	fl oz/a	4-6"WH	D	52 a
1	N-PAK AMS	100	SL	5 % v/v	5	% v/v	4-6"WH	D	
2	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	2WAP	A	5 b
2	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	2WAP	A	
2	ROUNDUP POWERMAX	4.5	SL	1.55 lb ae/a	44	fl oz/a	4-6"RG-1	E	
2	N-PAK AMS	100	SL	5 % v/v	5	% v/v	4-6"RG-1	E	
3	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	2WAP	A	4 b
3	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	2WAP	A	6 a
3	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	4WAP	B	
3	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	4WAP	B	
3	ROUNDUP POWERMAX	4.5	SL	1.55 lb ae/a	44	fl oz/a	4-6"RG-2	F	
3	N-PAK AMS	100	SL	5 % v/v	5	% v/v	4-6"RG-2	F	
4	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	2WAP	A	8 b
4	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	2WAP	A	9
4	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	4WAP	B	3 a
4	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	4WAP	B	4
4	GRAMOXONE INTEON	2	SL	0.75 lb ai/a	3	pt/a	6WAP	C	
4	COC (PRIME OIL)	100	SL	1 % v/v	1	% v/v	6WAP	C	
4	ROUNDUP POWERMAX	4.5	SL	1.55 lb ae/a	44	fl oz/a	4-6"RG-3	G	
4	N-PAK AMS	100	SL	5 % v/v	5	% v/v	4-6"RG-3	G	
LSD (P=.05)		17.0		.		7.2		.	
Replicate F		0.778		.		0.755		.	
Replicate Prob(F)		0.5806		.		0.6173		.	
Treatment F		16.728		.		0.908		.	
Treatment Prob(F)		0.0001		.		0.3843		.	

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

Trial Comments

1. Protocol: SIU(BGY).
2. Ratings: Weed counts as 2 (0.5 m2) quadrats per plot at 0, 7, and 21 DA-D, E, F and G.
Use stakes to mark the location of the quadrats and count the same area each time.
3. Blanket burndown application of glyphosate (1.12 lbae/A) plus 2,4-D (0.475 lbae/A) plus AMS was applied 4-13-10.
4. AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
Plants 0.5 m2 = Plants per 0.5 square meter.
5. Not harvested, non-crop.