

Atrazine-Free Herbicide Combinations in Glyphosate-Resistant Corn.

Project Code: 04-10C-E70 Location: Belleville Research Center
 Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
 Trial Status: Final Updated: 8-30-04

Objective:

Evaluate herbicide treatments that may be used in areas with atrazine restrictions.

Weed Code	Common Name	Scientific Name
1. SETFA	foxtail, giant	Setaria faberi Herrm.
2. CYPES	nutsedge, yellow	Cyperus esculentus L.
3. XANST	cocklebur, common	Xanthium strumarium L.
4. AMBEL	ragweed, common	Ambrosia artemisiifolia L.
5. IPOSS	morningglory, species	Ipomoea sp.

Crop 1: ZEAMX corn, field Variety: DKC 60-17 RR
 Planting Method: Seeded Planting Date: 5-11-04
 Rate: 28000 S/A Depth: 1.5 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 24 FT Reps: 3
 Tillage Type: Reduced-Till Study Design: Randomized complete block
 Previous Crop, Year: GLXMA, 2003

Field Prep./Maintenance: N 150 LB/A, P205 50 LB/A, K20 100 LB/A + 3 ton/A lime

Soil Name: Weir % OM: 2.1 pH: 5.6 CEC: 12
 Texture: Silt loam Fert. Level: P1: 80 LB/A, K: 435 LB/A

APPLICATION DESCRIPTION

	A	B	C	D	E
Application Date:	5-13-04	6-2-04	6-7-04	6-7-04	6-16-04
Time of Day:	11:00	9:00	11:00	11:00	11:00
Application Method:	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	2-4"W-1	2-4"W-2	4-6"W	2-4"RG
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	80 F				
Wind Velocity, Unit:	5 MPH	5 MPH			
Soil Moisture:	NORMAL	ABONOR			

CROP STAGE AT EACH APPLICATION

	A	B	C	D	E
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX V4	ZEAMX V4-V5	ZEAMX V4-V5	ZEAMX V6-V7
Height, Unit:	NA NA	8-10 IN	10-12 IN	10-12 IN	14-24 IN

WEED STAGE AT EACH APPLICATION

	A	B	C	D	E
Weed 1 Code:		SETFA		SETFA	
Stage(leaves):		4-5		3-5	
Height(inches):		2-3		2-4	
Density:		Low		Low	
Weed 2 Code:		CYPES	CYPES	CYPES	CYPES
Stage(leaves):		4-5	4-6	4-6	3-5
Height(inches):		2-3	2-4	2-4	6-7
Density:		High	High	High	High
Weed 3 Code:		XANST	XANST	XANST	XANST
Stage(leaves):		6-7	4-8	6-8	4-7
Height(inches):		3-4	3-8	6-8	3-5
Density:		High	Medium	High	Medium
Weed 4 Code:		AMBEL		AMBEL	AMBEL
Stage(leaves):		6-8		8-10	
Height(inches):		2-3		6-8	
Density:		Low		Medium	

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Weed 5 Code:	IPOSS	IPOSS	IPOSS	IPOSS
Stage (leaves):	3-4	4-6	4-6	4-6
Height (inches):	1-3	3-5	3-5	4-6
Density:	Low	Low	Low	Low

APPLICATION EQUIPMENT

	A	B	C	D	E
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8003	8002	8002	8002	8002
Boom Length, Unit:	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA

NOTES:

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Weed Code										SETFA	SETFA	SETFA	SETFA	CYPES	CYPES	CYPES	CYPES
Crop Code										ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
Rating Data Type										Injury	Injury	Injury	Injury	Injury	Injury	Injury	Injury
Rating Unit										Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date										6-7-04	6-10-04	6-14-04	6-21-04	7-5-04	6-7-04	6-14-04	6-21-04
Trt-Eval Interval										0 DA-C	3 DA-C	7 DA-C	14 DA-C	28 DA-C	0 DA-C	7 DA-C	14 DA-C

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	ZEAMX Injury Percent	ZEAMX Injury Percent	ZEAMX Injury Percent	ZEAMX Injury Percent	ZEAMX Injury Percent	SETFA Control Percent	SETFA Control Percent	SETFA Control Percent	SETFA Control Percent	CYPES Control Percent	CYPES Control Percent	CYPES Control Percent	CYPES Control Percent
1	NONTREATED									0	0	0	0	0	0	0	0	0	0	0	0	0
2	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-1	B			0	0	0	99	99	99	99	75	88	97	97
2	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-1	B													
2	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"RG	E													
2	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"RG	E													
3	TOUCHDOWN TOTAL	4.17	SC	0.78	LB AE/A	24	FL OZ/A	2-4"W-1	B			0	0	0	99	93	99	99	77	75	77	77
3	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	2-4"W-1	B													
3	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-1	B													
4	BALANCE PRO	4	SC	0.047	LB A/A	1.5	FL OZ/A	PRE	A	0		0	0	0	99	99	99	99	35	70	83	88
4	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-2	C													
4	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-2	C													
5	BALANCE PRO	4	SC	0.047	LB A/A	1.5	FL OZ/A	PRE	A	0		0	0	0	99	99	99	99	57	70	72	74
5	DEFINE	4	SC	0.375	LB A/A	12	FL OZ/A	PRE	A													
5	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-2	C													
5	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-2	C													
6	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	0	0	0	0	99	99	99	99	47	62	67	70
6	ROUNDUP W-MAX	4.5	SL	0.56	LB AE/A	16	FL OZ/A	4-6"W	D													
6	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D													
7	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	0	0	0	0	99	99	99	99	42	65	68	72
7	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-6"W	D													
7	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D													
8	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	13	16	9	3	99	99	99	99	37	57	63	72
8	ROUNDUP W-MAX	4.5	SL	0.56	LB AE/A	16	FL OZ/A	4-6"W	D													
8	AIM	2	EW	0.0078	LB A/A	0.5	FL OZ/A	4-6"W	D													
8	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D													
9	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	15	16	10	3	99	99	99	99	57	72	75	78
9	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-6"W	D													
9	AIM	2	EW	0.0078	LB A/A	0.5	FL OZ/A	4-6"W	D													
9	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D													
10	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	10	0	0	0	99	99	99	98	37	27	7	22
10	STARANE	2.16	EC	0.18	LB A/A	0.67	PT/A	4-6"W	D													
11	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	0	7	0	0	0	99	99	99	98	32	25	7	28
11	GF-1203	1.5	EC	0.25	LB AE/A	1.33	PT/A	4-6"W	D													
LSD (P=.05)										0.0	5.9	0.8	0.9	0.0	0.0	0.0	5.6	0.8	29.0	10.7	10.7	7.8
Replicate F										0.000	2.250	2.222	1.000	0.000	0.000	0.000	1.000	1.579	4.390	3.776	1.778	0.082
Replicate Prob(F)										1.0000	0.1480	0.1344	0.3855	1.0000	1.0000	1.0000	0.3855	0.2308	0.0302	0.0406	0.1946	0.9217
Treatment F										0.000	11.607	552.250	163.000	0.000	0.000	0.000	242.220	11561.974	3.044	49.353	83.836	133.879
Treatment Prob(F)										1.0000	0.0002	0.0001	0.0001	1.0000	1.0000	1.0000	0.0001	0.0001	0.0277	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	XANST Control Percent	XANST Control Percent	XANST Control Percent	XANST Control Percent	AMBEL Control Percent	AMBEL Control Percent	AMBEL Control Percent	AMBEL Control Percent
										6-7-04	6-14-04	6-21-04	7-5-04	6-7-04	6-14-04	6-21-04	7-5-04
										0 DA-C	7 DA-C	14 DA-C	28 DA-C	0 DA-C	7 DA-C	14 DA-C	28 DA-C
1	NONTREATED									0	0	0	0	0	0	0	0
2	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-1	B		97	98	99		99	99	99
2	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-1	B								
2	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"RG	E								
2	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"RG	E								
3	TOUCHDOWN TOTAL	4.17	SC	0.78	LB AE/A	24	FL OZ/A	2-4"W-1	B		97	89	91		99	99	99
3	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	2-4"W-1	B								
3	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-1	B								
4	BALANCE PRO	4	SC	0.047	LB A/A	1.5	FL OZ/A	PRE	A	90	98	95	97	99	99	99	99
4	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-2	C								
4	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-2	C								
5	BALANCE PRO	4	SC	0.047	LB A/A	1.5	FL OZ/A	PRE	A	93	98	96	97	99	99	99	99
5	DEFINE	4	SC	0.375	LB A/A	12	FL OZ/A	PRE	A								
5	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	2-4"W-2	C								
5	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	2-4"W-2	C								
6	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	17	95	95	97	18	98	97	99
6	ROUNDUP W-MAX	4.5	SL	0.56	LB AE/A	16	FL OZ/A	4-6"W	D								
6	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D								
7	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	17	97	97	97	20	99	98	99
7	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-6"W	D								
7	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D								
8	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	13	97	95	98	18	95	96	99
8	ROUNDUP W-MAX	4.5	SL	0.56	LB AE/A	16	FL OZ/A	4-6"W	D								
8	AIM	2	EW	0.0078	LB A/A	0.5	FL OZ/A	4-6"W	D								
8	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D								
9	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	17	97	98	98	22	93	96	99
9	ROUNDUP W-MAX	4.5	SL	0.77	LB AE/A	22	FL OZ/A	4-6"W	D								
9	AIM	2	EW	0.0078	LB A/A	0.5	FL OZ/A	4-6"W	D								
9	AMS	100	DRY	2.0	% W/W	17	LB/100 GAL	4-6"W	D								
10	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	12	95	98	99	15	88	90	99
10	STARANE	2.16	EC	0.18	LB A/A	0.67	PT/A	4-6"W	D								
11	SURPASS	6.4	EC	0.8	LB A/A	1	PT/A	PRE	A	17	96	99	99	23	93	98	99
11	GF-1203	1.5	EC	0.25	LB AE/A	1.33	PT/A	4-6"W	D								
LSD (P=.05)										17.6	1.2	3.5	1.7	19.3	3.6	2.3	0.0
Replicate F										3.475	2.294	4.780	4.856	2.334	1.169	1.287	0.000
Replicate Prob(F)										0.0558	0.1268	0.0201	0.0191	0.1290	0.3310	0.2981	1.0000
Treatment F										35.758	4957.000	614.559	2455.086	32.948	564.834	1392.023	0.000
Treatment Prob(F)										0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	1.0000

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Trial Comments

1. Protocol: Dow, FMC, Bayer.
2. Ratings: CI and WC prior to POST and 7, 14 and 28 DA "C" and "D"; CI 3 DA "D".
3. Target morningglory for POST timings.
4. DA-C = Days after 2-4"W-2. 0 DA-C is prior to the 2-4"W-2 and 4-6"W applications.
0 DA-C was also 25 days after the PRE application.
7 DA-C was also 32 and 12 days after the PRE and 2-4"W-1 applications.
14 DA-C was also 39, 19 and 5 days after the PRE, 2-4"W-1, and 2-4"RG applications.
28 DA-C was also 55, 33 and 19 days after the PRE, 2-4"W-1, and 2-4"RG applications.