

Evaluation of Soil Herbicides in Roundup Ready II Corn.

Project Code: 04-19B 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: 10-15-04

Objective:
 Evaluate the effects of soil herbicides and weed height at glyphosate application on weed control and grain yield in Roundup Ready II corn.

Weed Code Common Name Scientific Name
 1. SETFA foxtail, giant *Setaria faberi* Herrm.
 2. XANST cocklebur, common *Xanthium strumarium* L.
 3. ABUTH velvetleaf *Abutilon theophrasti* Medicus

Crop 1: ZEAMX corn, field Variety: DKC 60-17 RR
 Planting Method: Seeded Planting Date: 5-22-04
 Rate: 28000 S/A Depth: 1.5 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 25 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, K2O 100 LB/A

Soil Name: Ebbert % OM: 2.9 pH: 6.2 CEC: 14
 Texture: Silt loam Fert. Level: P1: 79 LB/A, K: 557 LB/A

APPLICATION DESCRIPTION	A	B	C	D	E	F	G	H	I	J	K	L	M
Application Date:	5-24-04	6-14-04	6-17-04	6-18-04	6-17-04	6-19-04	6-21-04	6-22-04	6-23-04	6-25-04	6-28-04		
Time of Day:	12:00	7:00	11:00	10:00	11:00	14:00	9:00	9:00	8:00	9:00	11:00	Not applied	Not applied
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	2-4"W	4-6"W-1	4-6"W-2	6-8"W	8-10"W	10-12"W	12-14"W	14-16"W	16-18"W	18-20"W	2WA2-4"-IN	2WA4-6"-IN
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	78 F	76 F	84 F	79 F	84 F	73 F	70 F	70 F	66 F	61 F	75 F		
% Relative Humidity:	50	98	80	81	80	59	74	92	98	80	60		
Wind Velocity, Unit:	5 MPH	0 MPH	0 MPH	0 MPH	0 MPH	0 MPH	3 MPH	3 MPH	0 MPH	5-9 MPH	4 MPH		
Soil Moisture:	NORMAL	ABONOR	ABONOR	ABONOR	ABONOR	ABONOR	NORMAL	NORMAL	NORMAL	NORMAL	ABONOR		
	N	O	P	Q	R	S	T						
Application Date:													
Time of Day:	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied	Not applied
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	2WA6-8"-IN	2WA8-10"-IN	2WA10-12"-IN	2WA12-14"-IN	2WA14-16"IN	2WA16-18"IN	2WA18-20"-IN						
Applic. Placement:	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL					
Air Temp., Unit:													
% Relative Humidity:													
Wind Velocity, Unit:													
Soil Moisture:													

CROP STAGE AT EACH APPLICATION	A	B	C	D	E	F	G	H	I	J	K	L	M
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX V5	ZEAMX V6	ZEAMX V6	ZEAMX V6	ZEAMX V7	ZEAMX V7	ZEAMX V8	ZEAMX V8	ZEAMX V8	ZEAMX V10	ZEAMX NA	ZEAMX NA
Height, Unit:	NA NA	12-16 IN	16-18 IN	16-18 IN	16-18 IN	20-24 IN	20-24 IN	26-28 IN	26-28 IN	34-36 IN	46-48 IN	NA NA	NA NA
	N	O	P	Q	R	S	T						
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA						
Height, Unit:	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA						

WEED STAGE AT EACH APPLICATION	A	B	C	D	E	F	G	H	I	J	K	L	M
Weed 1 Code:	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA
Stage(leaves):		2-3	5-6	5-6	5-6	5-8	5-8	5-8	5-10	5-7	12-14		
Height(inches):		1-4	4-6	4-6	4-8	5-8	5-8	10-12	12-16	10-12	16-18		
Density:		Low	Medium	Low	Low	Medium		Low	Medium	Low	Medium		
Weed 2 Code:	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST
Stage(leaves):		5-6	5-8	5-8	5-8	5-8	5-8	5-8	5-10				
Height(inches):		2-4	4-8	4-6	4-8	8-10	10-12	12-14	12-16				
Density:		Medium	Medium	Medium	Medium	Medium	Medium	Low	Medium				

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Weed 3 Code:	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Stage(leaves):	5-6	5-6	5-6	5-6	5-6	5-8	5-8	5-8	5-10	5-10	5-10	6-8	ABUTH
Height(inches):	2-4	4-6	4-6	4-6	4-8	6-10	10-12	12-14	12-16	16-24	16-24	24-28	ABUTH
Density:	Medium	Medium	Medium	Medium	High	High	High	High	High	High	High	Medium	ABUTH

Weed 1 Code:	N	O	P	Q	R	S	T
Stage(leaves):	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA
Height(inches):							
Density:							

Weed 2 Code:	XANST	XANST	XANST	XANST	XANST	XANST	XANST
Stage(leaves):							
Height(inches):							
Density:							

Weed 3 Code:	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Stage(leaves):							
Height(inches):							
Density:							

APPLICATION EQUIPMENT

	A	B	C	D	E	F	G	H	I	J	K	L	M
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8003	8002	8002	8002	8002	8002	8002	8002	8002	8002	8002	8002	8002
Boom Length, Unit:	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA

	N	O	P	Q	R	S	T
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8002	8002	8002	8002	8002	8002	8002
Boom Length, Unit:	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA

NOTES:
 Harvested 9-30-04, (2) 30 inch rows x 22 ft.

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Weed Code												SETFA	SETFA	SETFA	XANST	XANST	XANST	ABUTH	ABUTH	ABUTH
Crop Code																				
Rating Data Type												ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX			
Rating Unit												Injury	Injury	Injury	Height	Moisture	Yield	Control	Control	Control
Rating Date												Percent	Percent	Percent	Inches	Percent	bu/A	Percent	Percent	Percent
Trt-Eval Interval												9-24-04	9-30-04	9-30-04	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT
												EOS								

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code													
1	NONTREATED											0	0	0	87	18.4	85	0	0	0	0	0
2	DEGREE XTRA	4 L		3.2	LB A/A	3.2	QT/A	PRE	A			0	0	0	96	16.9	213	100	100	100	92	92
2	AATREX	90 WG		1	LB A/A	1.11	LB/A	PRE	A												94	93
3	DEGREE XTRA	4 L		1.6	LB A/A	1.6	QT/A	PRE	A			0	0	0	92	17.0	197	100	100	100	88	87
3	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	93
4	BICEP II MAGNUM	5.5 L		2.9	LB A/A	2.1	QT/A	PRE	A			0	0	0	92	17.7	208	100	100	100	98	98
4	AATREX	90 WG		0.4	LB A/A	0.444	LB/A	PRE	A												98	96
5	BICEP II MAGNUM	5.5 L		1.45	LB A/A	1.05	QT/A	PRE	A			0	0	0	94	17.1	207	100	100	100	90	88
5	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	92
6	KEYSTONE	5.25 L		3.7	LB A/A	2.82	QT/A	PRE	A			0	0	0	95	17.2	200	100	100	100	98	95
6	AATREX	90 WG		0.4	LB A/A	0.444	LB/A	PRE	A												98	95
7	KEYSTONE	5.25 L		1.85	LB A/A	1.41	QT/A	PRE	A			0	0	0	93	17.3	210	100	100	100	93	92
7	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	93
8	GUARDSMAN MAX	5 L		2.5	LB A/A	2	QT/A	PRE	A			0	0	0	93	18.0	208	100	100	100	99	99
8	AATREX	90 WG		0.4	LB A/A	0.444	LB/A	PRE	A												97	93
9	GUARDSMAN MAX	5 L		1.25	LB A/A	1	QT/A	PRE	A			0	0	0	95	17.3	200	100	100	100	94	94
9	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	92
10	USA 2005	4 SC		0.625	LB A/A	20	FL OZ/A	PRE	A			0	0	0	93	17.0	198	100	100	100	99	100
10	AATREX	90 WG		2.0	LB A/A	2.22	LB/A	PRE	A												100	99
11	USA 2005	4 SC		0.313	LB A/A	10	FL OZ/A	PRE	A			0	0	0	91	17.0	194	100	100	100	92	88
11	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	98
12	LEXAR	3.7 L		2.78	LB A/A	3	QT/A	PRE	A			0	0	0	95	17.4	213	100	100	100	100	100
12	AATREX	90 WG		0.7	LB A/A	0.78	LB/A	PRE	A												100	100
13	LEXAR	3.7 L		1.39	LB A/A	1.5	QT/A	PRE	A			0	0	0	91	17.5	208	100	95	100	92	92
13	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-2	D												100	92
14	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-1	C			0	0	0	96	17.0	207	100	100	100	100	100
15	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	2-4"W	B			0	0	0	95	16.9	210	100	100	100	100	100
15	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	2WA2-4"-IN	L												99	99
16	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	4-6"W-1	C			0	0	0	93	17.5	213	100	100	100	100	100
16	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	2WA4-6"-IN	M												100	97
17	ROUNDUP W-MAX	4.5 SL		1.12	LB AE/A	32	FL OZ/A	6-8"W	E			0	0	0	89	17.2	202	100	100	100	100	100
17	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	2WA6-8"-IN	N												100	100
18	ROUNDUP W-MAX	4.5 SL		1.12	LB AE/A	32	FL OZ/A	8-10"W	F			0	0	0	92	18.0	209	100	100	100	100	100
18	ROUNDUP W-MAX	4.5 SL		0.75	LB AE/A	21.3	FL OZ/A	2WA8-10"-IN	O												100	100

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	ZEAMX Injury Percent	ZEAMX Injury Percent	ZEAMX Injury Percent	ZEAMX Height Inches	ZEAMX Moisture Percent	ZEAMX Yield bu/A	SETFA Control Percent	SETFA Control Percent	SETFA Control Percent	XANST Control Percent	XANST Control Percent	XANST Control Percent	ABUTH Control Percent	ABUTH Control Percent	ABUTH Control Percent
						14 DAT	28 DAT	56 DAT	9-24-04 EOS	9-30-04	9-30-04	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code															
19	ROUNDUP W-MAX	4.5	SL	1.12 LB AE/A	32 FL OZ/A	10-12"W	G		0	0	0	95	16.8	196	100	100	100	100	100	100	88	88	88
19	ROUNDUP W-MAX	4.5	SL	0.75 LB AE/A	21.3 FL OZ/A	2WA10-12"-IN	P																
20	ROUNDUP W-MAX	4.5	SL	1.12 LB AE/A	32 FL OZ/A	12-14"W	H		0	0	0	95	16.7	205	100	100	100	100	100	100	90	90	90
20	ROUNDUP W-MAX	4.5	SL	0.75 LB AE/A	21.3 FL OZ/A	2WA12-14"-IN	Q																
21	ROUNDUP W-MAX	4.5	SL	1.12 LB AE/A	32 FL OZ/A	14-16"W	I		0	0	0	92	16.9	202	100	100	100	100	100	100	96	96	96
21	ROUNDUP W-MAX	4.5	SL	0.75 LB AE/A	21.3 FL OZ/A	2WA14-16"-IN	R																
22	ROUNDUP W-MAX	4.5	SL	1.12 LB AE/A	32 FL OZ/A	16-18"W	J		0	0	0	93	17.8	180	100	100	100	100	100	100	92	92	92
22	ROUNDUP W-MAX	4.5	SL	0.75 LB AE/A	21.3 FL OZ/A	2WA16-18"-IN	S																
23	ROUNDUP W-MAX	4.5	SL	1.12 LB AE/A	32 FL OZ/A	18-20"W	K		0	0	0	93	17.0	189	100	100	100	100	100	100	93	93	93
23	ROUNDUP W-MAX	4.5	SL	0.75 LB AE/A	21.3 FL OZ/A	2WA18-20"-IN	T																
24	NO HERBICIDE								0	0	0	94	17.6	208	100	100	100	100	100	100	100	100	100
24	HANDWEED																						
LSD (P=.05)									0.0	0.0	0.0	5.7	1.34	32.8	0.0	2.9	0.0	5.1	6.2	2.1	6.0	7.3	5.1
Replicate F									0.000	0.000	0.000	2.911	0.423	2.380	0.000	1.000	0.000	2.799	0.795	2.646	2.559	0.607	1.579
Replicate Prob(F)									1.0000	1.0000	1.0000	0.0652	0.6576	0.1053	1.0000	0.3757	1.0000	0.0713	0.4577	0.0817	0.0884	0.5492	0.2171
Treatment F									0.000	0.000	0.000	1.130	0.859	4.934	0.000	399.261	0.000	126.582	86.671	771.523	89.729	59.990	126.073
Treatment Prob(F)									1.0000	1.0000	1.0000	0.3550	0.6454	0.0001	1.0000	0.0001	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Trial Comments

1. Protocol: SIU/RFK.
2. Ratings: WC 14, 28, and 56 DAT and yield.
3. Application timings: 2WA = 2 weeks after; IN = if needed. EOS = End of season.
4. DAT = Days after treatment. Days after PRE for PRE/POST or PRE only treatments. Days after first POST for POST only treatments.
 Rating dates:
 14, 28, and 56 days after PRE on 6-7-04, 6-21-04, and 7-19-04, respectively.
 14, 28, and 56 days after 2-4"W on 6-28-04, 7-12-04, and 8-9-04, respectively.
 14, 28, and 56 days after 4-6"W-1 on 7-1-04, 7-15-04, and 8-12-04, respectively.
 14, 28, and 56 days after 6-8"W on 7-2-04, 7-16-04, and 8-13-04, respectively.
 14, 28, and 56 days after 8-10"W on 7-3-04, 7-17-04, and 8-14-04, respectively.
 14, 28, and 56 days after 10-12"W on 7-5-04, 7-19-04, and 8-16-04, respectively.
 14, 28, and 56 days after 12-14"W on 7-6-04, 7-20-04, and 8-17-04, respectively.
 14, 28, and 56 days after 14-16"W on 7-7-04, 7-21-04, and 8-18-04, respectively.
 14, 28, and 56 days after 16-18"W on 7-9-04, 7-23-04, and 8-20-04, respectively.
 14, 28, and 56 days after 18-20"W on 7-12-04, 7-26-04, and 8-23-04, respectively.
5. Harvested 9-30-04, (2) 30 inch rows x 22 ft.