

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Trial Status: F one-year/final
Initiation Date: 6-3-16
Completion Date: 10-23-16

Trial Location

City: Belleville **Country:** USA
State/Prov.: Illinois IL
Postal Code: 62221

Latitude of LL Corner °: 38.517778 N
Longitude of LL Corner °: 89.841252 W
Altitude of LL Corner, Unit: 430.00 FT
Angle y-axis to North °: 180.00

Objectives:

Demonstrate Engenia weed control system benefits in dicamba-tolerant soybeans versus non-dicamba-tolerant competitor systems.

Contacts

Study Director: Karla Gage, Ph.D. **Title:** Assistant Professor of Weed Science
Organization: Southern Illinois University Carbondale
Address: 1205 Lincoln Drive MC 4415 **Phone No.:** 618-453-7679
City+State/Prov: Carbondale, IL
Postal Code: 62901 **E-mail:** kgage@siu.edu
Country: USA

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: AG42X6 **BBCH Scale:** BSOY
Description: RR2X

Planting Rate, Unit: 140000 S/A **Planting Date:** 6-3-16
Depth, Unit: 1 IN **Planting Method:** SEEDED
Row Spacing, Unit: 30 IN
Soil Temperature, Unit: 61 F
Soil Moisture: NORMAL

Pest Description

Pest 1 Type: W **Code:** PANDI *Panicum dichotomiflorum* Michx.
Common Name: panicum, fall

Pest 2 Type: W **Code:** ABUTH *Abutilon theophrasti* Medik.
Common Name: velvetleaf

Pest 3 Type: W **Code:** AMATA *Amaranthus rudis* Sauer
Common Name: waterhemp, common

Pest 4 Type: W **Code:** IPOHE *Ipomoea hederacea* (L.) Jacq.
Common Name: morningglory, ivyleaf

Site and Design

Treated Plot Width: 7.5 FT **Total Plot Width:** 10 FT **Site Type:** FIELD
Treated Plot Length: 27 FT **Total Plot Length:** 27 FT **Experimental Unit:** 1 PLOT
Tillage Type: REDTIL reduced-till
Replications: 3 **Study Design:** RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

No.	Previous Crop	Year
1.	ZEAMD	2015

Maintenance

No.	Maintenance Product Name
1.	N 0 LB/A, P2O5 50 LB/A, K2O 200 LB/A

Soil Description

Description Name: 24B_2013
% OM: 3 **Texture:** SIL silt loam
pH: 6.5 **Soil Name:** Bethalto
CEC: 12

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Additional Measured Elements

Element	Quantity	Unit
P1	56	lb/A
K	297	lb/A

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL
Closest Weather Station: ICN - Belleville IL

Distance, Unit: 0.5 MI

No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-1-16					7	DAY	32	75	F
2.	4-6-16	0.49	IN	RAIN	rain	1	DAY			
3.	4-8-16					7	DAY	28	71	F
4.	4-10-16	0.97	IN	RAIN	rain	2	DAY			
5.	4-15-16					7	DAY	48	81	F
6.	4-20-16	0.45	IN	RAIN	rain	3	DAY			
7.	4-22-16					7	DAY	47	85	F
8.	4-26-16	1.74	IN	RAIN	rain	2	DAY			
9.	4-29-16					7	DAY	46	75	F
10.	4-29-16	1.94	IN	RAIN	rain	2	DAY			
11.	5-4-16	0.02	IN	RAIN	rain	1	DAY			
12.	5-6-16					7	DAY	44	87	F
13.	5-7-16	0.07	IN	RAIN	rain	1	DAY			
14.	5-9-16	2.12	IN	RAIN	rain	5	DAY			
15.	5-13-16					7	DAY	41	76	F
16.	5-16-16	1.06	IN	RAIN	rain	2	DAY			
17.	5-20-16					7	DAY	51	83	F
18.	5-20-16	0.06	IN	RAIN	rain	1	DAY			
19.	5-25-16	0.68	IN	RAIN	rain	3	DAY			
20.	5-27-16					7	DAY	62	88	F
21.	5-31-16	0.03	IN	RAIN	rain	2	DAY			
22.	6-3-16					7	DAY	55	89	F
23.	6-3-16	0.01	IN	RAIN	rain	1	DAY			
24.	6-4-16	0.72	IN	RAIN	rain	1	DAY			
25.	6-10-16					7	DAY	65	96	F
26.	6-13-16	0.03	IN	RAIN	rain	1	DAY			
27.	6-17-16					7	DAY	67	97	F
28.	6-21-16	0.01	IN	RAIN	rain	1	DAY			
29.	6-24-16					7	DAY	57	95	F
30.	6-25-16	0.02	IN	RAIN	rain	1	DAY			
31.	6-30-16	0.03	IN	RAIN	rain	1	DAY			
32.	7-1-16					7	DAY	60	91	F
33.	7-1-16	2.26	IN	RAIN	rain	4	DAY			
34.	7-6-16	0.32	IN	RAIN	rain	3	DAY			
35.	7-8-16					7	DAY	67	93	F
36.	7-13-16	0.49	IN	RAIN	rain	2	DAY			
37.	7-15-16					7	DAY	68	93	F
38.	7-17-16	0.02	IN	RAIN	rain	1	DAY			
39.	7-19-16	1.47	IN	RAIN	rain	2	DAY			
40.	7-25-16	0.1	IN	RAIN	rain	1	DAY			
41.	7-29-16					7	DAY	69	91	F
42.	7-31-16	0.52	IN	RAIN	rain	3	DAY			
43.	8-3-16	0.75	IN	RAIN	rain	1	DAY			
44.	8-5-16	0.06	IN	RAIN	rain	1	DAY			

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Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
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Application Description

	A	B	C
Application Date:	6-3-16	6-20-16	6-23-16
Appl. Start Time:	15:10	6:45	6:15
Appl. Stop Time:	15:25	6:50	6:35
Application Method:	Spray	Spray	Spray
Application Timing:	PRE	3-4"W-1	3-4"W-2
Application Placement:	BROSOI	BROFOL	BROFOL
Applied By:	MCG	MCG	KNW
Air Temperature, Unit:	76 F	80 F	85 F
% Relative Humidity:	62	85	72
Wind Velocity, Unit:	1 MPH	3 MPH	4 MPH
Wind Direction:	SE	SW	WSW
Dew Presence (Y/N):	N	N	N
Soil Temperature, Unit:	72 F	80 F	81 F
Soil Moisture:	NORMAL	BELNOR	BELNOR
% Cloud Cover:	50	0	50
Next Moisture Occurred On:	6-4-16	6-30-16	6-30-16
Time to Next Moisture, Unit:	15 HR	10 DAY	7 DAY

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA	GLXMA	GLXMA
Stage Scale Used:	DESC	DESC	DESC
Stage Majority, Percent:	NA	V2	V2
Stage Minimum, Percent:		V1	V2
Stage Maximum, Percent:		V2	V2
Height, Unit:		3 IN	4 IN
Height Minimum, Maximum:		2 3	3 4

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	PANDI W	PANDI W	PANDI W
Stage Majority, Percent:	NA	4	3
Stage Minimum, Percent:		2	2
Stage Maximum, Percent:		4	5
Height, Unit:		2 IN	2 IN
Height Minimum, Maximum:		0.5 3	1 3
Density, Unit:		2 FT2	0.5 FT2
Pest 2 Code, Type, Scale:	ABUTH W	ABUTH W	ABUTH W
Stage Majority, Percent:	NA	4	6
Stage Minimum, Percent:		COTY	4
Stage Maximum, Percent:		5	8
Height, Unit:		3 IN	3 IN
Height Minimum, Maximum:		0.5 4	1 6
Density, Unit:		15 FT2	15 FT2
Pest 3 Code, Type, Scale:	AMATA W	AMATA W	AMATA W
Stage Majority, Percent:	NA	5	6
Stage Minimum, Percent:		2	6
Stage Maximum, Percent:		7	8
Height, Unit:		2 IN	2 IN
Height Minimum, Maximum:		0.5 3	2 4
Density, Unit:		15 FT2	0.5 FT2
Pest 4 Code, Type, Scale:	IPOHE W	IPOHE W	IPOHE W
Stage Majority, Percent:	NA	4	10+
Stage Minimum, Percent:		4	4
Stage Maximum, Percent:		6	10+
Height, Unit:		1 IN	2 IN
Height Minimum, Maximum:		1 3	1 3
Density, Unit:		1 FT2	2 FT2

Application Equipment

	A	B	C
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer
Equipment Type:	BACSPR	BACSPR	BACSPR
Operation Pressure, Unit:	30 PSI	30 PSI	30 PSI
Nozzle Type:	TTI	TTI	TTI
Nozzle Size:	11002	11002	11002
Boom Length, Unit:	7.5 FT	7.5 FT	7.5 FT
Spray Volume, Unit:	15 GPA	15 GPA	15 GPA

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Pest Code								GLXMA	GLXMA	GLXMA	
Crop Code								10-23-16	10-23-16	10-23-16	
Rating Date								Moisture	Test wt.	Yield	
Rating Type								Percent	lb/bu	bu/A	
Rating Unit											
Rating Timing											
Trt-Eval Interval											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Unit	Growth Stage	Appl Code			
1	NONTREATED									0 c	
2	BAS 18309H	4 SL		0.5 lb ae/a	16 fl oz/a		3-4"W-1 B		16.1 a	55.3 a	48 ab
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-1 B				
3	VERDICT	5.57 EC		0.218 lb ai/a	5 fl oz/a		PRE A		17.1 a	54.5 a	57 a
	OUTLOOK	6 EC		0.47 lb ai/a	10 fl oz/a		PRE A				
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a	12.8 fl oz/a		3-4"W-2 C				
4	VERDICT	5.57 EC		0.218 lb ai/a	5 fl oz/a		PRE A		16.3 a	55.3 a	48 ab
	OUTLOOK	6 EC		0.47 lb ai/a	10 fl oz/a		PRE A				
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a	12.8 fl oz/a		3-4"W-2 C				
	OUTLOOK	6 EC		0.47 lb ai/a	10 fl oz/a		3-4"W-2 C				
5	VERDICT	5.57 EC		0.218 lb ai/a	5 fl oz/a		PRE A		16.3 a	55.2 a	44 b
	ZIDUA SC	4.17 SC		0.106 lb ai/a	3.25 fl oz/a		PRE A				
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a	12.8 fl oz/a		3-4"W-2 C				
6	OPTILL	68 WG		0.085 lb ai/a	2 oz/a		PRE A		16.1 a	55.3 a	50 ab
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		PRE A				
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a	12.8 fl oz/a		3-4"W-2 C				
7	OPTILL	68 WG		0.085 lb ai/a	2 oz/a		PRE A		17.0 a	54.9 a	48 ab
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		PRE A				
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a	12.8 fl oz/a		3-4"W-2 C				
	OUTLOOK	6 EC		0.56 lb ai/a	12 fl oz/a		3-4"W-2 C				
8	SONIC	70 WG		0.219 lb ai/a	5 oz/a		PRE A		16.4 a	55.1 a	46 b
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a	60 fl oz/a		3-4"W-2 C				
	COC	100 SL		1 % v/v	1 % v/v		3-4"W-2 C				
	AMS - LIQUID	100 SL		2.5 % v/v	2.5 % v/v		3-4"W-2 C				
9	BOUNDARY	6.5 EC		1.63 lb ai/a	32 fl oz/a		PRE A		16.2 a	55.3 a	42 b
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a	60 fl oz/a		3-4"W-2 C				
	COC	100 SL		1 % v/v	1 % v/v		3-4"W-2 C				
	AMS - LIQUID	100 SL		2.5 % v/v	2.5 % v/v		3-4"W-2 C				
10	PREFIX	5.29 EC		1.32 lb ai/a	32 fl oz/a		3-4"W-1 B		16.4 a	55.2 a	41 b
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-1 B				
	NIS	100 SL		0.25 % v/v	0.25 % v/v		3-4"W-1 B				
11	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a	32 fl oz/a		3-4"W-1 B		16.4 a	55.2 a	45 b
	AMS - LIQUID	100 SL		2.5 % v/v	2.5 % v/v		3-4"W-1 B				
LSD P=.05								1.42	0.84	10.7	
Standard Deviation								0.83	0.49	6.3	
CV								5.03	0.89	14.71	
Replicate F								1.350	1.362	7.435	
Replicate Prob(F)								0.2843	0.2813	0.0039	
Treatment F								0.503	0.791	16.621	
Treatment Prob(F)								0.8537	0.6284	0.0001	

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns: Average=14
Could not calculate LSD (% mean diff) for columns 10 because error mean square = 0.

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Pest Code	Crop Code	Rating Date	Rating Type	Rating Unit	Rating Timing	Trt-Eval Interval	GLXMA 6-23-16 Injury Percent 3 DA-B 0 DA-C	GLXMA 6-30-16 Injury Percent 10 DA-B 7 DA-C	GLXMA 7-14-16 Injury Percent 24 DA-B 21 DA-C	GLXMA 8-4-16 Injury Percent 45 DA-B 42 DA-C			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	NONTREATED									0	0	0	0
2	BAS 18309H ROUNDUP POWERMAX	4 SL 4.5 SL		0.5 lb 1.13 lb	ae/a ae/a	16 fl 32 fl	oz/a oz/a	3-4"W-1 B 3-4"W-1 B		0 a	7 bc	7 b	5 a
3	VERDICT OUTLOOK ROUNDUP POWERMAX ENGENIA	5.57 EC 6 EC 4.5 SL 5 SL		0.218 lb 0.47 lb 1.13 lb 0.5 lb	ai/a ai/a ae/a ae/a	5 fl 10 fl 32 fl 12.8 fl	oz/a oz/a oz/a oz/a	PRE A PRE A 3-4"W-2 C 3-4"W-2 C		0 a	11 bc	0 b	0 a
4	VERDICT OUTLOOK ROUNDUP POWERMAX ENGENIA OUTLOOK	5.57 EC 6 EC 4.5 SL 5 SL 6 EC		0.218 lb 0.47 lb 1.13 lb 0.5 lb 0.47 lb	ai/a ai/a ae/a ae/a ai/a	5 fl 10 fl 32 fl 12.8 fl 10 fl	oz/a oz/a oz/a oz/a oz/a	PRE A PRE A 3-4"W-2 C 3-4"W-2 C 3-4"W-2 C		0 a	15 b	0 b	0 a
5	VERDICT ZIDUA SC ROUNDUP POWERMAX ENGENIA	5.57 EC 4.17 SC 4.5 SL 5 SL		0.218 lb 0.106 lb 1.13 lb 0.5 lb	ai/a ai/a ae/a ae/a	5 fl 3.25 fl 32 fl 12.8 fl	oz/a oz/a oz/a oz/a	PRE A PRE A 3-4"W-2 C 3-4"W-2 C		0 a	6 bc	0 b	0 a
6	OPTILL ZIDUA ROUNDUP POWERMAX ENGENIA	68 WG 85 WG 4.5 SL 5 SL		0.085 lb 0.106 lb 1.13 lb 0.5 lb	ai/a ai/a ae/a ae/a	2 oz 2 oz 32 fl 12.8 fl	oz/a oz/a oz/a oz/a	PRE A PRE A 3-4"W-2 C 3-4"W-2 C		0 a	6 bc	0 b	0 a
7	OPTILL ZIDUA ROUNDUP POWERMAX ENGENIA OUTLOOK	68 WG 85 WG 4.5 SL 5 SL 6 EC		0.085 lb 0.106 lb 1.13 lb 0.5 lb 0.56 lb	ai/a ai/a ae/a ae/a ai/a	2 oz 2 oz 32 fl 12.8 fl 12 fl	oz/a oz/a oz/a oz/a oz/a	PRE A PRE A 3-4"W-2 C 3-4"W-2 C 3-4"W-2 C		0 a	12 bc	0 b	0 a
8	SONIC FLEXSTAR GT 3.5 COC AMS - LIQUID	70 WG 2.82 SL 100 SL 100 SL		0.219 lb 1.32 lb 1 % 2.5 %	ai/a ae/a v/v v/v	5 oz 60 fl 1 % 2.5 %	oz/a oz/a v/v v/v	PRE A 3-4"W-2 C 3-4"W-2 C 3-4"W-2 C		0 a	37 a	0 b	0 a
9	BOUNDARY FLEXSTAR GT 3.5 COC AMS - LIQUID	6.5 EC 2.82 SL 100 SL 100 SL		1.63 lb 1.32 lb 1 % 2.5 %	ai/a ae/a v/v v/v	32 fl 60 fl 1 % 2.5 %	oz/a oz/a v/v v/v	PRE A 3-4"W-2 C 3-4"W-2 C 3-4"W-2 C		0 a	33 a	2 b	0 a
10	PREFIX ROUNDUP POWERMAX NIS	5.29 EC 4.5 SL 100 SL		1.32 lb 1.13 lb 0.25 %	ai/a ae/a v/v	32 fl 32 fl 0.25 %	oz/a oz/a v/v	3-4"W-1 B 3-4"W-1 B 3-4"W-1 B		0 a	30 a	15 a	3 a
11	ROUNDUP POWERMAX AMS - LIQUID	4.5 SL 100 SL		1.13 lb 2.5 %	ae/a v/v	32 fl 2.5 %	oz/a v/v	3-4"W-1 B 3-4"W-1 B		0 a	0 c	0 b	0 a
LSD P=.05							.	11.9	6.8	5.8			
Standard Deviation							0.0	6.9	4.0	3.4			
CV							0.0	44.27	171.03	404.97			
Replicate F							0.000	3.485	1.465	0.512			
Replicate Prob(F)							1.0000	0.0526	0.2573	0.6077			
Treatment F							0.000	10.534	4.558	0.854			
Treatment Prob(F)							1.0000	0.0001	0.0030	0.5798			

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Missing data estimates are included in columns: Average=14
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Pest Code					PANDI	PANDI	PANDI	PANDI					
Crop Code					6-23-16	6-30-16	7-14-16	8-4-16					
Rating Date					Control	Control	Control	Control					
Rating Type					Percent	Percent	Percent	Percent					
Rating Unit					3 DA-B	10 DA-B	24 DA-B	45 DA-B					
Rating Timing					0 DA-C	7 DA-C	21 DA-C	42 DA-C					
Trt-Eval Interval													
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	NONTREATED									0	0	0	0
2	BAS 18309H	4 SL		0.5 lb ae/a		16 fl oz/a		3-4"W-1 B		87 a	97 b	77 c	65 d
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B					
3	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		90 a	99 a	99 a	98 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
4	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		96 a	99 a	99 a	99 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		3-4"W-2 C					
5	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		90 a	99 a	99 a	99 a
	ZIDUA SC	4.17 SC		0.106 lb ai/a		3.25 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
6	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		85 a	99 a	99 a	99 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
7	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		82 a	99 a	99 a	99 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
	OUTLOOK	6 EC		0.56 lb ai/a		12 fl oz/a		3-4"W-2 C					
8	SONIC	70 WG		0.219 lb ai/a		5 oz/a		PRE A		90 a	99 a	99 a	99 a
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C					
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C					
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C					
9	BOUNDARY	6.5 EC		1.63 lb ai/a		32 fl oz/a		PRE A		93 a	99 a	99 a	99 a
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C					
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C					
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C					
10	PREFIX	5.29 EC		1.32 lb ai/a		32 fl oz/a		3-4"W-1 B		99 a	99 a	91 b	88 b
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B					
	NIS	100 SL		0.25 % v/v		0.25 % v/v		3-4"W-1 B					
11	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B		90 a	97 b	88 b	77 c
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-1 B					
LSD P=.05										11.7	1.4	3.7	7.7
Standard Deviation										6.8	0.8	2.2	4.5
CV										7.56	0.81	2.29	4.87
Replicate F										4.029	0.474	0.795	0.617
Replicate Prob(F)										0.0358	0.6302	0.4668	0.5504
Treatment F										1.703	3.368	35.332	21.335
Treatment Prob(F)										0.1607	0.0136	0.0001	0.0001

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

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Missing data estimates are included in columns: Average=14

Could not calculate LSD (% mean diff) for columns 10 because error mean square = 0.

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Pest Code								ABUTH	ABUTH	ABUTH	ABUTH		
Crop Code													
Rating Date								6-23-16	6-30-16	7-14-16	8-4-16		
Rating Type								Control	Control	Control	Control		
Rating Unit								Percent	Percent	Percent	Percent		
Rating Timing								3 DA-B	10 DA-B	24 DA-B	45 DA-B		
Trt-Eval Interval								0 DA-C	7 DA-C	21 DA-C	42 DA-C		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	NONTREATED									0	0	0	0
2	BAS 18309H	4	SL	0.5	lb ae/a	16	fl oz/a	3-4"W-1 B		70 b	77 c	94 d	93 b
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-1 B					
3	VERDICT	5.57	EC	0.218	lb ai/a	5	fl oz/a	PRE A		52 c	90 b	97 bc	98 a
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE A					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-2 C					
	ENGENIA	5	SL	0.5	lb ae/a	12.8	fl oz/a	3-4"W-2 C					
4	VERDICT	5.57	EC	0.218	lb ai/a	5	fl oz/a	PRE A		58 c	95 ab	98 ab	99 a
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE A					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-2 C					
	ENGENIA	5	SL	0.5	lb ae/a	12.8	fl oz/a	3-4"W-2 C					
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	3-4"W-2 C					
5	VERDICT	5.57	EC	0.218	lb ai/a	5	fl oz/a	PRE A		53 c	96 ab	99 ab	99 a
	ZIDUA SC	4.17	SC	0.106	lb ai/a	3.25	fl oz/a	PRE A					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-2 C					
	ENGENIA	5	SL	0.5	lb ae/a	12.8	fl oz/a	3-4"W-2 C					
6	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE A		85 a	98 ab	99 ab	99 a
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	PRE A					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-2 C					
	ENGENIA	5	SL	0.5	lb ae/a	12.8	fl oz/a	3-4"W-2 C					
7	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE A		87 a	99 a	99 a	99 a
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	PRE A					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-2 C					
	ENGENIA	5	SL	0.5	lb ae/a	12.8	fl oz/a	3-4"W-2 C					
	OUTLOOK	6	EC	0.56	lb ai/a	12	fl oz/a	3-4"W-2 C					
8	SONIC	70	WG	0.219	lb ai/a	5	oz/a	PRE A		93 a	96 ab	98 ab	99 a
	FLEXSTAR GT 3.5	2.82	SL	1.32	lb ae/a	60	fl oz/a	3-4"W-2 C					
	COC	100	SL	1	% v/v	1	% v/v	3-4"W-2 C					
	AMS - LIQUID	100	SL	2.5	% v/v	2.5	% v/v	3-4"W-2 C					
9	BOUNDARY	6.5	EC	1.63	lb ai/a	32	fl oz/a	PRE A		17 d	93 ab	98 ab	99 a
	FLEXSTAR GT 3.5	2.82	SL	1.32	lb ae/a	60	fl oz/a	3-4"W-2 C					
	COC	100	SL	1	% v/v	1	% v/v	3-4"W-2 C					
	AMS - LIQUID	100	SL	2.5	% v/v	2.5	% v/v	3-4"W-2 C					
10	PREFIX	5.29	EC	1.32	lb ai/a	32	fl oz/a	3-4"W-1 B		92 a	94 ab	90 e	88 b
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-1 B					
	NIS	100	SL	0.25	% v/v	0.25	% v/v	3-4"W-1 B					
11	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	3-4"W-1 B		20 d	94 ab	95 cd	93 b
	AMS - LIQUID	100	SL	2.5	% v/v	2.5	% v/v	3-4"W-1 B					
LSD P=.05								9.6	8.1	2.3	4.9		
Standard Deviation								5.6	4.7	1.3	2.9		
CV								8.97	5.1	1.37	2.97		
Replicate F								4.858	5.978	2.797	1.803		
Replicate Prob(F)								0.0206	0.0102	0.0875	0.1933		
Treatment F								74.338	5.172	13.000	5.065		
Treatment Prob(F)								0.0001	0.0015	0.0001	0.0017		

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

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Missing data estimates are included in columns: Average=14

Could not calculate LSD (% mean diff) for columns 10 because error mean square = 0.

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Pest Code						AMATA	AMATA	AMATA	AMATA				
Crop Code						6-23-16	6-30-16	7-14-16	8-4-16				
Rating Date						Control	Control	Control	Control				
Rating Type						Percent	Percent	Percent	Percent				
Rating Unit						3 DA-B	10 DA-B	24 DA-B	45 DA-B				
Rating Timing						0 DA-C	7 DA-C	21 DA-C	42 DA-C				
Trt-Eval Interval													
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
1	NONTREATED									0	0	0	0
2	BAS 18309H	4 SL		0.5 lb ae/a		16 fl oz/a		3-4"W-1 B		80 a	95 b	89 b	88 b
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B					
3	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		93 a	99 a	98 a	98 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
4	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		96 a	99 a	99 a	99 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		3-4"W-2 C					
5	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		85 a	99 a	99 a	99 a
	ZIDUA SC	4.17 SC		0.106 lb ai/a		3.25 fl oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
6	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		96 a	99 a	99 a	99 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
7	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		91 a	99 a	99 a	99 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A					
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C					
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C					
	OUTLOOK	6 EC		0.56 lb ai/a		12 fl oz/a		3-4"W-2 C					
8	SONIC	70 WG		0.219 lb ai/a		5 oz/a		PRE A		93 a	99 a	99 a	98 a
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C					
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C					
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C					
9	BOUNDARY	6.5 EC		1.63 lb ai/a		32 fl oz/a		PRE A		96 a	99 a	99 a	99 a
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C					
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C					
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C					
10	PREFIX	5.29 EC		1.32 lb ai/a		32 fl oz/a		3-4"W-1 B		99 a	99 a	88 b	87 b
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B					
	NIS	100 SL		0.25 % v/v		0.25 % v/v		3-4"W-1 B					
11	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B		88 a	93 b	83 c	82 c
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-1 B					
LSD P=.05										14.8	3.3	3.3	2.9
Standard Deviation										8.6	1.9	1.9	1.7
CV										9.4	1.99	2.02	1.78
Replicate F										0.480	2.019	2.216	0.294
Replicate Prob(F)										0.6267	0.1618	0.1379	0.7487
Treatment F										1.393	4.188	29.851	45.675
Treatment Prob(F)										0.2622	0.0047	0.0001	0.0001

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

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Missing data estimates are included in columns: Average=14

Could not calculate LSD (% mean diff) for columns 10 because error mean square = 0.

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Pest Code								IPOHE	IPOHE	IPOHE	IPOHE	
Crop Code								6-23-16	6-30-16	7-14-16	8-4-16	
Rating Date								Control	Control	Control	Control	
Rating Type								Percent	Percent	Percent	Percent	
Rating Unit								3 DA-B	10 DA-B	24 DA-B	45 DA-B	
Rating Timing								0 DA-C	7 DA-C	21 DA-C	42 DA-C	
Trt-Eval Interval												
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code			
1	NONTREATED									0	0	0
2	BAS 18309H	4 SL		0.5 lb ae/a		16 fl oz/a		3-4"W-1 B		70 bc	99 a	72 b
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B				88 b
3	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		55 de	99 a	90 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A				98 a
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C				
4	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		63 cd	99 a	93 a
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		PRE A				98 a
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C				
	OUTLOOK	6 EC		0.47 lb ai/a		10 fl oz/a		3-4"W-2 C				
5	VERDICT	5.57 EC		0.218 lb ai/a		5 fl oz/a		PRE A		50 e	98 a	95 a
	ZIDUA SC	4.17 SC		0.106 lb ai/a		3.25 fl oz/a		PRE A				98 a
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C				
6	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		73 b	98 a	94 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A				99 a
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C				
7	OPTILL	68 WG		0.085 lb ai/a		2 oz/a		PRE A		60 d	99 a	98 a
	ZIDUA	85 WG		0.106 lb ai/a		2 oz/a		PRE A				98 a
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-2 C				
	ENGENIA	5 SL		0.5 lb ae/a		12.8 fl oz/a		3-4"W-2 C				
	OUTLOOK	6 EC		0.56 lb ai/a		12 fl oz/a		3-4"W-2 C				
8	SONIC	70 WG		0.219 lb ai/a		5 oz/a		PRE A		63 cd	99 a	99 a
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C				99 a
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C				
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C				
9	BOUNDARY	6.5 EC		1.63 lb ai/a		32 fl oz/a		PRE A		3 g	78 b	65 bc
	FLEXSTAR GT 3.5	2.82 SL		1.32 lb ae/a		60 fl oz/a		3-4"W-2 C				98 a
	COC	100 SL		1 % v/v		1 % v/v		3-4"W-2 C				
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-2 C				
10	PREFIX	5.29 EC		1.32 lb ai/a		32 fl oz/a		3-4"W-1 B		98 a	99 a	50 c
	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B				90 b
	NIS	100 SL		0.25 % v/v		0.25 % v/v		3-4"W-1 B				
11	ROUNDUP POWERMAX	4.5 SL		1.13 lb ae/a		32 fl oz/a		3-4"W-1 B		15 f	50 c	15 d
	AMS - LIQUID	100 SL		2.5 % v/v		2.5 % v/v		3-4"W-1 B				93 ab
LSD P=.05								9.2	6.8	15.3	7.1	
Standard Deviation								5.3	3.9	8.9	4.1	
CV								9.68	4.29	11.57	4.31	
Replicate F								0.762	1.941	0.365	1.924	
Replicate Prob(F)								0.4819	0.1725	0.6990	0.1749	
Treatment F								80.091	49.417	28.081	2.771	
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0314	

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

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Missing data estimates are included in columns: Average=14

Could not calculate LSD (% mean diff) for columns 10 because error mean square = 0.

Weed Control with Engenia in RR2 Xtend Soybeans - BASF.

Trial ID: 16-24B Location: Belleville Res. Center Trial Year: 2016
Investigator: Karla L. Gage, Ph.D.

Trial Comments

1. Protocol: BASF (D-04).
2. Ratings:
CI 0, 7, 21, and 42 DA-C, rate all plots.
WC 0, 7, 21, and 42 DA-C, rate all plots.
Rate before spray application C.
3. Yield, do not sell grain.
4. Special instructions at each rating;
Record weed size and density for each weed species rated, each rating time, from each nontreated plot.
5. Applications B is 3-4 inch broadleaf weeds where no PRE was applied, but at or before soybean R1.
Applications C is 3-4 inch broadleaf weeds following the PRE, but at or before soybean R1.
6. Photos requested.
7. Rainfall following the PRE application A was 0.73 inch over 2 days beginning 15 hours later.
Rainfall following the 3-4"W-1 application B was 2.61 inch over 9 days beginning 10 days later.
Rainfall following the 3-4"W-2 application C was 2.61 inch over 9 days beginning 7 days later.
8. Crop injury at 21 and 42 DA-C is reduction in crop canopy (soybean row width).
Weed control ratings that increase from 21 to 42 DA-C are due to competition from the crop canopy, especially in the case of IPOHE.
9. Weeds sizes and densities in the nontreated plots were as follows:

Date	DAT	Plot	ABUTH	ABUTH	AMATA	AMATA	PANDI	PANDI	IPOHE	IPOHE
			Height (inch)	Ground cover (%)	Height (inch)	Ground cover (%)	Height (inch)	Ground cover (%)	Height (inch)	Ground cover (%)
6-23-16	0 DA-C	101	8	70	6	10	10	10	6	5
		209	8	10	8	80	12	5	6	5
		306	8	50	8	30	12	5	6	5
6-30-16	7 DA-C	101	10	90	8	3	12	5	6	2
		209	14	20	12	60	16	5	8	10
		306	14	45	8	30	16	10	6	10
7-14-16	21 DA-C	101	36	90	10	5	15	3	6	2
		209	36	10	28	70	24	3	10	5
		306	30	45	28	30	24	10	6	10
8-4-16	42 DA-C	101	60	90	30	3	12	5	6	2
		209	60	10	48	70	48	3	6	5
		306	72	45	60	30	48	10	6	10

10. Harvested 10-23-16, (2) 30 inch rows by 24 ft.