

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
Investigator: Karla L. Gage, Ph.D.

<p><b>Trial Status:</b> F one-year/final <b>Initiation Date:</b> 5-7-16 <b>Completion Date:</b> 10-9-16</p> <p><b>City:</b> De Soto <b>Country:</b> USA <b>State/Prov.:</b> Illinois IL <b>Postal Code:</b> 62924</p> <p><b>Latitude of LL Corner</b> °: 37.795232 N <b>Longitude of LL Corner</b> °: 89261034 W <b>Altitude of LL Corner, Unit:</b> 380.00 FT <b>Angle y-axis to North</b> °: 90.00</p>	<p><b>Trial Location</b></p>
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<p><b>Objectives:</b> To evaluate the new increased use rates and their effectiveness on amaranthus species alone and in tankmix combinations with FMC programs.</p>
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<p><b>Contacts</b></p>
<p><b>Study Director:</b> Karla Gage, Ph.D. <b>Title:</b> Assistant Professor of Weed Science <b>Organization:</b> Southern Illinois University Carbondale <b>Address:</b> 1205 Lincoln Drive MC 4415 <b>Phone No.:</b> 618-453-7679 <b>City+State/Prov:</b> Carbondale, IL <b>Postal Code:</b> 62901 <b>E-mail:</b> kgage@siu.edu <b>Country:</b> USA</p>

<p><b>Crop Description</b></p>
<p><b>Crop 1:</b> GLXMA Glycine max Soybean <b>Variety:</b> P37T09L <b>BBCH Scale:</b> BSOY <b>Description:</b> LL - P37T09L</p> <p><b>Planting Rate, Unit:</b> 140000 S/A <b>Depth, Unit:</b> 1 IN <b>Row Spacing, Unit:</b> 30 IN <b>Soil Temperature, Unit:</b> 63 F <b>Soil Moisture:</b> N <b>Seed Bed:</b> SMOTRA</p> <p><b>Planting Date:</b> 5-7-16 <b>Planting Method:</b> SEEDED</p>

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

<p><b>Site and Design</b></p>						
<p><b>Treated Plot Width:</b> 6.67 FT <b>Total Plot Width:</b> 10 FT <b>Site Type:</b> FIELD <b>Treated Plot Length:</b> 30 FT <b>Total Plot Length:</b> 30 FT <b>Experimental Unit:</b> 1 PLOT <b>Tillage Type:</b> NOTILL no-till <b>Study Design:</b> RACOBL Randomized Complete Block (RCB)</p> <p><b>Replications:</b> 3 <b>Untreated Arrangement:</b> INCLUDED single control randomized in each block</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Previous Crop</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>GLXMA</td> <td>2015</td> </tr> </tbody> </table>	No.	Previous Crop	Year	1.	GLXMA	2015
No.	Previous Crop	Year				
1.	GLXMA	2015				

<p><b>Maintenance</b></p>				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Maintenance Product Name</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A</td> </tr> </tbody> </table>	No.	Maintenance Product Name	1.	N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A
No.	Maintenance Product Name			
1.	N 0 LB/A, P2O5 0 LB/A, K2O 0 LB/A			

<p><b>Soil Description</b></p>									
<p><b>Description Name:</b> DSO_east_2016 <b>% Sand:</b> 14 <b>% OM:</b> 1.93 <b>Texture:</b> SIL silt loam <b>% Silt:</b> 67 <b>pH:</b> 7 <b>Soil Name:</b> Okaw <b>% Clay:</b> 19 <b>CEC:</b> 9.01</p> <p style="text-align: center;"><b>Additional Measured Elements</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Element</th> <th>Quantity</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>58</td> <td>lb/A</td> </tr> <tr> <td>K</td> <td>234</td> <td>lb/A</td> </tr> </tbody> </table>	Element	Quantity	Unit	P1	58	lb/A	K	234	lb/A
Element	Quantity	Unit							
P1	58	lb/A							
K	234	lb/A							

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
Investigator: Karla L. Gage, Ph.D.**Moisture and Weather Conditions****Overall Moisture Conditions: NORMAL****Closest Weather Station: SOUTHERN IL AIRPORT (93810)****Distance, Unit: 1.5 MI**

No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-1-16					7	DAY	31	67	F
2.	4-6-16	0.27	IN	RAIN	rain	2	DAY			
3.	4-8-16					7	DAY	30	73	F
4.	4-10-16	0.99	IN	RAIN	rain	2	DAY			
5.	4-15-16					7	DAY	47	80	F
6.	4-20-16	1.76	IN	RAIN	rain	2	DAY			
7.	4-22-16					7	DAY	47	81	F
8.	4-26-16	1.59	IN	RAIN	rain	6	DAY			
9.	4-29-16					7	DAY	45	78	F
10.	5-4-16	0.03	IN	RAIN	rain	1	DAY			
11.	5-6-16					7	DAY	44	86	F
12.	5-9-16	2.92	IN	RAIN	rain	4	DAY			
13.	5-13-16					7	DAY	39	74	F
14.	5-16-16	1.27	IN	RAIN	rain	2	DAY			
15.	5-20-16					7	DAY	49	82	F
16.	5-20-16	0.1	IN	RAIN	rain	1	DAY			
17.	5-25-16	2.12	IN	RAIN	rain	3	DAY			
18.	5-27-16					7	DAY	61	86	F
19.	6-1-16	0.11	IN	RAIN	rain	1	DAY			
20.	6-3-16					7	DAY	55	87	F
21.	6-3-16	0.83	IN	RAIN	rain	2	DAY			
22.	6-6-16	0.36	IN	RAIN	rain	1	DAY			
23.	6-10-16					7	DAY	62	97	F
24.	6-15-16	0.21	IN	RAIN	rain	1	DAY			
25.	6-17-16					7	DAY	66	94	F
26.	6-24-16					7	DAY	59	93	F
27.	6-25-16	0.36	IN	RAIN	rain	3	DAY			
28.	6-30-16	0.02	IN	RAIN	rain	1	DAY			
29.	7-1-16					7	DAY	60	90	F
30.	7-2-16	2.98	IN	RAIN	rain	3	DAY			
31.	7-6-16	4.48	IN	RAIN	rain	3	DAY			
32.	7-8-16					7	DAY	68	92	F
33.	7-12-16	0.82	IN	RAIN	rain	2	DAY			
34.	7-15-16					7	DAY	69	93	F
35.	7-22-16	0.47	IN	RAIN	rain	1	DAY			
36.	7-26-16	0.09	IN	RAIN	rain	1	DAY			

**Comment:**

Rainfall and air temperature were recorded at SOUTHERN ILLINOIS AIRPORT (93810) 1.5 miles SSE and provided by NOAA's National Centers for Environmental Information. Air temperatures given are summarized as weekly high and low, detailed weather data is available on request.

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Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
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## Application Description

	A	B	C	D	E
Application Date:	5-7-16	6-14-16	6-14-16	6-28-16	7-6-16
Appl. Start Time:	10:45	11:15	11:15	11:15	9:00
Appl. Stop Time:	11:15	11:45	11:45	11:40	9:30
Application Method:	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	2-3"WH	6-8"WH1	6-8"WH2	21DA-D
Application Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL
Applied By:	MCG	KNW	KNW	RLS	KNW
Air Temperature, Unit:	85 F	90 F	90 F	93 F	84 F
% Relative Humidity:	43	57	57	46	78
Wind Velocity, Unit:	4 MPH	3 MPH	3 MPH	1 MPH	2 MPH
Wind Direction:	NW	SW	SW	NW	W
Dew Presence (Y/N):	N	N	N	N	N
Soil Temperature, Unit:	62 F	84 F	84 F	81 F	82 F
Soil Moisture:	NORMAL	NORMAL	NORMAL	NORMAL	ABONOR
% Cloud Cover:	0	5	5	0	50
Next Moisture Occurred On:	5-7-16	6-15-16	6-15-16	6-30-16	7-6-16
Time to Next Moisture, Unit:	4 HR	25 HR	25 HR	2 DAY	2 HR

## Crop Stage At Each Application

	A	B	C	D	E
Crop 1 Code, BBCH Scale:	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Stage Scale Used:	DESC	DESC	DESC	DESC	DESC
Stage Majority, Percent:	NA	V5	V5	V6	R2
Stage Minimum, Percent:		V4	V4	V6	R2
Stage Maximum, Percent:		V5	V5	R1	R2
Height, Unit:		8 IN	8 IN	15 IN	19 IN
Height Minimum, Maximum:		6 8	6 8	14 15	17 19

## Pest Stage At Each Application

	A	B	C	D	E
Pest 1 Code, Type, Scale:	AMATA W	AMATA W	AMATA W	AMATA W	AMATA W
Stage Majority, Percent:	NA	6	6	10+	8
Stage Minimum, Percent:		4	4	2	3
Stage Maximum, Percent:		10+	10+	10+	10+
Height, Unit:		2 IN	2 IN	9 IN	3 IN
Height Minimum, Maximum:		0.5 4	0.5 4	1 26	0.5 12
Density, Unit:		25 FT2	25 FT2	40 FT2	0.2 FT2
Pest 2 Code, Type, Scale:	PANDI W	PANDI W	PANDI W	PANDI W	PANDI W
Stage Majority, Percent:	NA	4	4	5	5
Stage Minimum, Percent:		3	3	2	4
Stage Maximum, Percent:		5	5	11	7
Height, Unit:		3 IN	3 IN	3 IN	3 IN
Height Minimum, Maximum:		0.25 8	0.25 8	2 4	1 6
Density, Unit:		10 FT2	10 FT2	0.2 FT2	0.5 FT2

## Application Equipment

	A	B	C	D	E
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Equipment Type:	BACSPR	BACSPR	BACSPR	BACSPR	BACSPR
Operation Pressure, Unit:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	AIXR	AIXR	AIXR	AIXR	AIXR
Nozzle Size:	110015	110015	110015	110015	110015
Boom Length, Unit:	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

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Pest Code								GLXMA	GLXMA	GLXMA		
Crop Code								10-9-16	10-9-16	10-9-16		
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 Rate	Other Rate	Other Rate	Growth Unit	Stage	Appl Code			
1	NONTREATED									14.4 a		37 c
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.8 a	51.1 a	51 ab
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E				
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.8 a	51.2 a	51 ab
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E				
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.4 a	51.1 a	53 ab
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E				
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.9 a	51.9 a	54 ab
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.9 a	51.5 a	58 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		14.4 a	52.0 a	55 ab
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D				
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		14.0 a	52.3 a	49 b
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B				
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B				
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		13.7 a	52.0 a	53 ab
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B				
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B				
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A		14.0 a	51.9 a	53 ab
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B				
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B				
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E				
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A		13.5 a	51.0 a	52 ab
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C				
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E				
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E				

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=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

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Pest Code								GLXMA	GLXMA	GLXMA		
Crop Code								10-9-16	10-9-16	10-9-16		
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	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code			
12	AUTHORITY FIRST DF	70	WG	0.284	lb ai/a	6.5	oz/a	PRE	A	13.9 a	52.0 a	53 ab
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B			
	ANTHEM	2.15	SE	0.084	lb ai/a	5	fl oz/a	2-3"WH	B			
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B			
13	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE	A	13.9 a	51.3 a	55 ab
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE	A			
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B			
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	2-3"WH	B			
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B			
14	BOUNDARY	6.5	EC	1.22	lb ai/a	1.5	pt/a	PRE	A	13.7 a	50.8 a	54 ab
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	6-8"WH1	C			
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	6-8"WH1	C			
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	21DA-D	E			
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	21DA-D	E			
LSD P=.05								0.66	1.02	7.5		
Standard Deviation								0.40	0.61	4.5		
CV								2.85	1.18	8.56		
Replicate F								0.917	3.322	0.906		
Replicate Prob(F)								0.4124	0.0540	0.4167		
Treatment F								1.623	1.871	3.699		
Treatment Prob(F)								0.1420	0.0952	0.0022		

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Crop Code				5-20-16	6-14-16	6-21-16	6-28-16	7-5-16	7-13-16
Rating Date				Injury	Injury	Injury	Injury	Injury	Injury
Rating Type				Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit				8 DAE	38 DA-A	45 DA-A	14 DA-B+C	0 DA-E	29 DA-B+C
Rating Timing									
Trt-Eval Interval				13 DA-A	0 DA-B+C	7 DA-B+C	0 DA-D	7 DA-D	7 DA-E
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Unit	Stage	Appl Code
1	NONTREATED								
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	

Means followed by same letter or symbol do not significantly differ (P=0.05, LSD)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
Missing data estimates are included in columns: Average=8,10,12,11,13,17  
Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code							GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Code							5-20-16	6-14-16	6-21-16	6-28-16	7-5-16	7-13-16		
Rating Date							Injury	Injury	Injury	Injury	Injury	Injury		
Rating Type							Percent	Percent	Percent	Percent	Percent	Percent		
Rating Unit							8 DAE	38 DA-A	45 DA-A	14 DA-B+C	0 DA-E	29 DA-B+C		
Rating Timing														
Trt-Eval Interval							13 DA-A	0 DA-B+C	7 DA-B+C	0 DA-D	7 DA-D	7 DA-E		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate Unit	Growth Stage	Appl Code						
12	AUTHORITY FIRST DF	70	WG	0.284 lb ai/a	6.5 oz/a		PRE	A	45 a	20 ab	23 a	19 a	0 b	0 c
	LIBERTY 280	2.34	EC	0.53 lb ai/a	29 fl oz/a		2-3"WH	B						
	ANTHEM	2.15	SE	0.084 lb ai/a	5 fl oz/a		2-3"WH	B						
	N-PAK AMS	100	SL	2.5 % v/v	2.5 % v/v		2-3"WH	B						
13	OPTILL	68	WG	0.085 lb ai/a	2 oz/a		PRE	A	0 d	0 c	8 bc	3 cd	0 b	0 c
	OUTLOOK	6	EC	0.47 lb ai/a	10 fl oz/a		PRE	A						
	LIBERTY 280	2.34	EC	0.53 lb ai/a	29 fl oz/a		2-3"WH	B						
	ZIDUA	85	WG	0.106 lb ai/a	2 oz/a		2-3"WH	B						
	N-PAK AMS	100	SL	2.5 % v/v	2.5 % v/v		2-3"WH	B						
14	BOUNDARY	6.5	EC	1.22 lb ai/a	1.5 pt/a		PRE	A	0 d	0 c	0 d	0 d	0 b	2 b
	LIBERTY 280	2.34	EC	0.53 lb ai/a	29 fl oz/a		6-8"WH1	C						
	N-PAK AMS	100	SL	2.5 % v/v	2.5 % v/v		6-8"WH1	C						
	LIBERTY 280	2.34	EC	0.53 lb ai/a	29 fl oz/a		21DA-D	E						
	N-PAK AMS	100	SL	2.5 % v/v	2.5 % v/v		21DA-D	E						
LSD P=.05							24.4	18.2	6.7	6.7	1.2	1.1		
Standard Deviation							14.4	10.7	4.0	4.0	0.7	0.6		
CV							58.96	110.32	43.08	85.41	170.13	56.18		
Replicate F							2.293	0.039	3.284	1.009	1.000	0.447		
Replicate Prob(F)							0.1245	0.9620	0.0549	0.3796	0.3827	0.6449		
Treatment F							3.473	2.510	17.622	6.081	7.658	12.106		
Treatment Prob(F)							0.0055	0.0279	0.0001	0.0001	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=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code							GLXMA 7-26-16 Injury Percent 28 DA-D		
Crop Code									
Rating Date									
Rating Type									
Rating Unit									
Rating Timing									
Trt-Eval Interval							20 DA-E		
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Other Rate	Other Unit	Growth Stage	Appl Code	
1	NONTREATED								0
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D	
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B	
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A	0 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C	
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E	
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E	

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=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.



Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code								GLXMA		
Crop Code								7-26-16		
Rating Date								Injury		
Rating Type								Percent		
Rating Unit								28 DA-D		
Rating Timing										
Trt-Eval Interval								20 DA-E		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	
12	AUTHORITY FIRST DF	70	WG	0.284	lb ai/a	6.5	oz/a	PRE	A	0 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B	
	ANTHEM	2.15	SE	0.084	lb ai/a	5	fl oz/a	2-3"WH	B	
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B	
13	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE	A	0 a
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE	A	
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B	
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	2-3"WH	B	
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B	
14	BOUNDARY	6.5	EC	1.22	lb ai/a	1.5	pt/a	PRE	A	0 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	6-8"WH1	C	
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	6-8"WH1	C	
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	21DA-D	E	
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	21DA-D	E	
LSD P=.05										.
Standard Deviation										0.0
CV										0.0
Replicate F										0.000
Replicate Prob(F)										1.0000
Treatment F										0.000
Treatment Prob(F)										1.0000

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=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code							AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR
Crop Code							5-20-16	6-14-16	6-21-16	6-28-16	7-5-16
Rating Date							Control	Control	Control	Control	Control
Rating Type							Percent	Percent	Percent	Percent	Percent
Rating Unit							8 DAE	38 DA-A	45 DA-A	14 DA-B+C	0 DA-E
Rating Timing							13 DA-A	0 DA-B+C	7 DA-B+C	0 DA-D	7 DA-D
Trt-Eval Interval											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Stage	Appl Code			
1	NONTREATED								0	0	0
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	86 a	75 b
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D			58 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			95 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E			
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E			
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	83 a	62 bc
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D			47 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			97 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E			
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E			
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	98 a	83 a	67 bc
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D			40 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			98 a
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E			
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E			
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	80 ab	55 c
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D			43 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			94 a
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	83 a	70 bc
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D			45 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			96 a
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	82 a	65 bc
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D			50 b
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D			98 a
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	99 a	84 a	99 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B			99 a
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B			95 a
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B			
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A	98 a	87 a	99 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B			99 a
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B			99 a
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B			
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A	93 ab	63 bc	98 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B			99 a
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B			98 a
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B			
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E			
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E			
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A	99 a	50 c	98 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C			96 a
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C			93 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E			
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E			

Means followed by same letter or symbol do not significantly differ (P=0.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Missing data estimates are included in columns: Average=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

								AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR	AMATA-HR		
								5-20-16	6-14-16	6-21-16	6-28-16	7-5-16		
								Control	Control	Control	Control	Control		
								Percent	Percent	Percent	Percent	Percent		
								8 DAE	38 DA-A	45 DA-A	14 DA-B+C	0 DA-E		
Trt-Eval Interval								13 DA-A	0 DA-B+C	7 DA-B+C	0 DA-D	7 DA-D		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code					
12	AUTHORITY FIRST DF	70	WG	0.284	lb ai/a	6.5	oz/a	PRE	A	99 a	79 ab	99 a	99 a	97 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B					
	ANTHEM	2.15	SE	0.084	lb ai/a	5	fl oz/a	2-3"WH	B					
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B					
13	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE	A	88 bc	10 d	98 a	98 a	98 a
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE	A					
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B					
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	2-3"WH	B					
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B					
14	BOUNDARY	6.5	EC	1.22	lb ai/a	1.5	pt/a	PRE	A	80 c	13 d	95 a	92 a	92 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	6-8"WH1	C					
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	6-8"WH1	C					
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	21DA-D	E					
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	21DA-D	E					
LSD P=.05								9.2	18.8	19.3	31.2	4.7		
Standard Deviation								5.5	11.1	11.4	18.5	2.8		
CV								5.7	16.37	13.75	24.92	2.92		
Replicate F								1.110	2.341	2.179	4.259	5.640		
Replicate Prob(F)								0.3464	0.1188	0.1351	0.0261	0.0098		
Treatment F								3.318	17.728	7.007	6.127	1.953		
Treatment Prob(F)								0.0065	0.0001	0.0001	0.0001	0.0787		

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=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code							AMATA-HR	AMATA-HR
Crop Code							7-13-16	7-26-16
Rating Date							Control	Control
Rating Type							Percent	Percent
Rating Unit							29 DA-B+C	28 DA-D
Rating Timing							7 DA-E	20 DA-E
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Other Rate	Other Rate	Growth Stage	Appl Code
1	NONTREATED							
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E

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 Missing data estimates are included in columns: Average=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

Pest Code								AMATA-HR	AMATA-HR		
Crop Code								7-13-16	7-26-16		
Rating Date								Control	Control		
Rating Type								Percent	Percent		
Rating Unit								29 DA-B+C	28 DA-D		
Rating Timing											
Trt-Eval Interval								7 DA-E	20 DA-E		
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code		
12	AUTHORITY FIRST DF	70	WG	0.284	lb ai/a	6.5	oz/a	PRE	A	98 ab	97 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B		
	ANTHEM	2.15	SE	0.084	lb ai/a	5	fl oz/a	2-3"WH	B		
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B		
13	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE	A	98 a	99 a
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE	A		
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B		
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	2-3"WH	B		
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B		
14	BOUNDARY	6.5	EC	1.22	lb ai/a	1.5	pt/a	PRE	A	99 a	99 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	6-8"WH1	C		
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	6-8"WH1	C		
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	21DA-D	E		
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	21DA-D	E		
LSD P=.05								1.6	1.8		
Standard Deviation								1.0	1.1		
CV								0.97	1.1		
Replicate F								1.214	1.143		
Replicate Prob(F)								0.3146	0.3357		
Treatment F								4.734	1.220		
Treatment Prob(F)								0.0006	0.3258		

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 Missing data estimates are included in columns: Average=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

## Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
Investigator: Karla L. Gage, Ph.D.

Pest Code							PANDI	PANDI	PANDI	PANDI
Crop Code							6-28-16	7-5-16	7-13-16	7-26-16
Rating Date							Control	Control	Control	Control
Rating Type							Percent	Percent	Percent	Percent
Rating Unit							14 DA-B+C	0 DA-E	29 DA-B+C	28 DA-D
Rating Timing							0 DA-D	7 DA-D	7 DA-E	20 DA-E
Trt-Eval Interval										
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Other Rate	Other Rate	Growth Unit	Stage	Appl Code	
1	NONTREATED									0 0 0 0
2	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		83 abc 93 abc 99 a 98 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E		
3	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		62 c 94 ab 98 a 98 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		21DA-D	E		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E		
4	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		85 abc 96 a 99 a 99 a
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		21DA-D	E		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E		
5	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		68 bc 94 ab 95 abc 96 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
6	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		63 c 95 a 97 a 98 a
	LIBERTY 280	2.34 EC		0.66 lb ai/a	36 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
7	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		82 abc 95 a 97 a 98 a
	LIBERTY 280	2.34 EC		0.79 lb ai/a	43 fl oz/a		6-8"WH2	D		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH2	D		
8	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		97 a 93 abc 92 bc 88 c
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B		
	CADET	0.91 EC		0.00356 lb ai/a	0.5 fl oz/a		2-3"WH	B		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B		
9	AUTHORITY FIRST DF	70 WG		0.284 lb ai/a	6.5 oz/a		PRE	A		97 a 96 a 97 a 97 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B		
	ANTHEM	2.15 SE		0.118 lb ai/a	7 fl oz/a		2-3"WH	B		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B		
10	AUTHORITY MTZ	45 WG		0.45 lb ai/a	16 oz/a		PRE	A		95 a 97 a 98 a 99 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		2-3"WH	B		
	ZIDUA	85 WG		0.106 lb ai/a	2 oz/a		2-3"WH	B		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		2-3"WH	B		
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E		
11	FIERCE	76 WG		0.166 lb ai/a	3.5 oz/a		PRE	A		94 a 88 cd 96 ab 98 a
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		6-8"WH1	C		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		6-8"WH1	C		
	LIBERTY 280	2.34 EC		0.53 lb ai/a	29 fl oz/a		21DA-D	E		
	N-PAK AMS	100 SL		2.5 % v/v	2.5 % v/v		21DA-D	E		

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Missing data estimates are included in columns: Average=8,10,12,11,13,17  
Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK Location: De Soto, IL Trial Year: 2016  
 Investigator: Karla L. Gage, Ph.D.

								PANDI	PANDI	PANDI	PANDI		
								6-28-16	7-5-16	7-13-16	7-26-16		
								Control	Control	Control	Control		
								Percent	Percent	Percent	Percent		
								14 DA-B+C	0 DA-E	29 DA-B+C	28 DA-D		
Trt-Eval Interval								0 DA-D	7 DA-D	7 DA-E	20 DA-E		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code				
12	AUTHORITY FIRST DF	70	WG	0.284	lb ai/a	6.5	oz/a	PRE	A	97 a	94 ab	96 ab	95 ab
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B				
	ANTHEM	2.15	SE	0.084	lb ai/a	5	fl oz/a	2-3"WH	B				
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B				
13	OPTILL	68	WG	0.085	lb ai/a	2	oz/a	PRE	A	89 ab	89 bcd	91 c	89 bc
	OUTLOOK	6	EC	0.47	lb ai/a	10	fl oz/a	PRE	A				
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	2-3"WH	B				
	ZIDUA	85	WG	0.106	lb ai/a	2	oz/a	2-3"WH	B				
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	2-3"WH	B				
14	BOUNDARY	6.5	EC	1.22	lb ai/a	1.5	pt/a	PRE	A	89 ab	87 d	96 ab	98 a
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	6-8"WH1	C				
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	6-8"WH1	C				
	LIBERTY 280	2.34	EC	0.53	lb ai/a	29	fl oz/a	21DA-D	E				
	N-PAK AMS	100	SL	2.5	% v/v	2.5	% v/v	21DA-D	E				
LSD P=.05								24.8	5.3	4.4	6.0		
Standard Deviation								14.7	3.1	2.6	3.6		
CV								17.34	3.35	2.72	3.71		
Replicate F								6.056	14.935	2.760	3.686		
Replicate Prob(F)								0.0077	0.0001	0.0834	0.0402		
Treatment F								2.261	3.015	2.407	2.794		
Treatment Prob(F)								0.0448	0.0103	0.0323	0.0155		

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 Missing data estimates are included in columns: Average=8,10,12,11,13,17  
 Could not calculate LSD (% mean diff) for columns 25 because error mean square = 0.

## Trial Comments

1. Protocol: Bayer (WGK).
2. Ratings:  
CI 7-10 and 28 DA-B or 0 DA-C+D; 7-10 and 28 DA-C+D or 0 DA-E and 7-10 DA-E; Describe crop injury if observed.  
WC 1-18 DAE or 0 DA-B and 7-10 and 28 DA-B or 0 DA-C+D; 7-10 and 28 DA-C+D or 0 DA-E and 7-10 DA-E.  
Rate before spray applications C, D and E. Rate all plots each time.  
Record percent ground cover for each weed in each nontreated plot at each evaluation.
3. Yield if possible.
4. Blanket burndown application and start clean was Gramoxone SL 2.0 (40 floz/A) + COC (1%) on 5-5-16.  
Blanket POST possible if needed after last evaluation, was not needed.
5. Application B, 2-3"WH = less than 3 inch waterhemp.  
Application C, 6-8"WH1 = less than 8 inch waterhemp, treatments 11 and 14, had new emergence before treatments 2-7 so POST was sprayed sooner.  
Application D, 6-8"WH2 = less than 8 inch waterhemp, treatments 2-7, PRE application held longer than treatments 11 and 14, as well as dry growing conditions, POST sprayed later.  
Application E, 21DA-D = 21 days after application D but before R1 soybean stage was 22 days after C, 7 days after D, and R2 soybean stage.
6. Nozzles: AIXR 110015 @ 40 PSI (or other medium to coarse nozzle).
7. Photos at B and at C and D applications and 7-10 DA-E.
8. Rainfall following the PRE application A was 2.92 inch over 4 days beginning 2 days later.  
Rainfall following the 2-3"WH application B was 0.21 inch over 1 day beginning 1 day later.  
Rainfall following the 6-8"WH1 application C was 0.21 inch over 1 day beginning 1 day later.  
Rainfall following the 6-8"WH2 application D was 3.0 inch over 5 days beginning 2 days later.  
Rainfall following the 21DA-D application E was 4.48 inch over 3 days beginning 2 hours later.
9. Crop injury 5/20 (8 DAE, 13 DA-A) and 6/14 (38 DA-A) was in the form of stunting and delayed emergence.  
Crop injury 6/21 (7 DA-B+C) and 6/28 (14 DA-B+C) included chlorosis, necrosis, and some leaf cupping, as well as stunting.  
Crop injury 7/5 (7 DA-D) and 7/13 (7 DA-E, 15 DA-D) was minor chlorosis of the newer trifoliates, and is believed to be viral in nature, rather than a result of the herbicide application.  
Pictures of the injury can be provided.  
AMATA-HR = Herbicide-resistant waterhemp (glyphosate).
10. Missing data for plot 301 at 14 DA-A and 0 DA-B+C was because the PRE application A was misapplied.  
However, the control provided by subsequent applications (C+E) proved to provide weed control equal to the other plots in that treatment at rating after the various POST applications, data included.
11. Percent ground cover in nontreated plots for each evaluation date:

Date	Plot	AMATA	PANDI	Bare
05-20-16	101	30	1	69
	213	30	1	69
	311	30	1	69
06-14-16	101	90	2	8
	213	90	5	5
	311	50	10	40
06-21-16	101	50	25	25
	213	85	5	10
	311	85	5	10
06-28-16	101	40	50	5
	213	90	5	5
	311	90	0	10
07-05-16	101	40	50	10
	213	90	5	5
	311	90	0	10
07-13-16	101	40	50	10
	213	90	5	5
	311	90	0	10
07-26-16	101	40	50	10
	213	90	5	5
	311	90	0	10



Liberty Link Soybean Tolerance and Weed Control with New Rates of Liberty and Tank-Mixes.

Trial ID: 16-DSO-Bayer-WGK      Location: De Soto, IL      Trial Year: 2016  
Investigator: Karla L. Gage, Ph.D.

12. Harvested 10-9-16, (2) 30 inch rows by 27 ft.