

Purdue Weed Science

Efficacy of Ransom (MANA 31304) herbicide applied pre-emergence in soybeans

Trial ID: 15S-THP-CTS-17 Location: TPAC Trial Year: 2015
 Protocol ID: 15S-THP-CTS-17 Investigator: Dr. Bill Johnson
 Project ID: 2984215 Study Director: Joe Ikley
 Sponsor Contact: ADAMA

General Trial Information

Study Director: Joe Ikley **Title:** Research Associate
Investigator: Dr. Bill Johnson **Title:** Professor

Discipline: H herbicide
Trial Status: E established
Initiation Date: 5/12/2015

Trial Location

City: Lafayette **Country:** USA United States
State/Prov.: Indiana
Postal Code: 47909

Conducted Under GLP: No
Conducted Under GEP: No

Study Rules: Default

Contacts

Study Director: Joe Ikley **Title:** Research Associate
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Investigator: Dr. Bill Johnson **Title:** Professor
Organization: Purdue University
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Cooperator/Landowner

Cooperator: Throckmorton Purdue Ag Center **Role:** Purdue Ag Center
Organization: Purdue University
Address 1: 8343 US 231 S
City: Lafayette **Phone No.:** 765-538-3422
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Postal Code: 47909
Country: USA United States **E-mail:** jayyoung@purdue.edu

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: Asgrow 2933 **BBCH Scale:** BSOY
Description: RR
Planting Rate, Unit: 140000 S/A **Planting Date:** 5/14/2015
Depth, Unit: 1.25 IN **Planting Method:** SEEDED seeded
Row Spacing, Unit: 15 IN **Planting Equipment:** PP Plot Planter
Soil Temperature, Unit: 62 F **Emergence Date:** 5/21/2015
Soil Moisture: SLIDRY slightly dry **Harvested Width, Unit:** 10 FT
 Harvested Length, Unit: 25 FT
% Standard Moisture: 13

Pest Description

Pest 1 Type: W **Code:** AMBTR Ambrosia trifida
Common Name: Giant ragweed
Pest 2 Type: W **Code:** SETFA Setaria faberi
Common Name: Giant foxtail
Pest 3 Type: W **Code:** CHEAL Chenopodium album
Common Name: Common lambsquarters

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Site and Design	
Treated Plot Width: 10 FT	Site Type: FIELD field
Treated Plot Length: 30 FT	Experimental Unit: 1 PLOT plot
Treated Plot Area: 300 FT ²	Tillage Type: CONTIL conventional-till
Replications: 4	Study Design: RACOB� Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block	

Soil Description	
Description Name: TPAC -Field 4A	Texture: SIL silt loam
% OM: 3.1	Soil Name: Toronto-Millbrook
pH: 6	
CEC: 11.1	

Application Description		
	A	B
Application Date:	5/14/2015	6/9/2015
Appl. Start Time:	19:00	19:30
Appl. Stop Time:	19:30	20:00
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	POST
Application Placement:	SOIL	BROADC
Applied By:	PD	DJ
Air Temperature, Unit:	67 F	81 F
% Relative Humidity:	45	44
Wind Velocity, Unit:	5 MPH	3 MPH
Wind Direction:	SE	W
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	62 F	78 F
Soil Moisture:	SLIWET	WET
% Cloud Cover:	100	10

Crop Stage At Each Application		
	A	B
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:	BBCH	BBCH
Stage Majority, Percent:	00	13
Stage Minimum, Percent:		12
Stage Maximum, Percent:		13
Height, Unit:		5 IN
Height Minimum, Maximum:		4 6

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Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMBTR W	AMBTR W
Stage Majority, Percent:		33G
Stage Minimum, Percent:		31G
Stage Maximum, Percent:		34G
Height, Unit:		7 IN
Height Minimum, Maximum:		4 10
Density, Unit:		300 YD2
Pest 2 Code, Type, Scale:	SETFA W	SETFA W
Stage Majority, Percent:		15
Stage Minimum, Percent:		14
Stage Maximum, Percent:		16
Height, Unit:		3 IN
Height Minimum, Maximum:		2 4
Density, Unit:		90 YD2
Pest 3 Code, Type, Scale:	CHEAL W	CHEAL W
Stage Majority, Percent:		32G
Stage Minimum, Percent:		31G
Stage Maximum, Percent:		33G
Height, Unit:		2 IN
Height Minimum, Maximum:		1 3
Density, Unit:		25 YD2

Application Equipment

	A	B
Appl. Equipment:	CO2 BACKPACK	CO2 BACKPACK
Equipment Type:	BACSPR	BACSPR
Operation Pressure, Unit:	18 PSI	28 PSI
Nozzle Type:	FLAT FAN	TEEJAI
Nozzle Size:	XR 11002	TTI110015
Nozzle Spacing, Unit:	15 IN	15 IN
Nozzles/Row:	8	8
Boom Length, Unit:	10 FT	10 FT
Boom Height, Unit:	17 IN	17 IN
Ground Speed, Unit:	3 MPH	3 MPH
Carrier:	MEIGS	MEIGS
Spray Volume, Unit:	15 gal/ac	15 gal/ac
Mix Size, Unit:	1.8 liters	1.8 liters
Propellant:	CO2	CO2

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Efficacy of Ransom (MANA 31304) herbicide applied pre-emergence in soybeans

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 Protocol ID: 15S-THP-CTS-17 Investigator: Dr. Bill Johnson
 Project ID: 2984215 Study Director: Joe Ikley
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Reps: 4 Plots: 10 by 30 feet
 Spray vol: 15 GAL/AC Mix Size: 1.8 liters (calculated mix size 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Appl Code	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated Check							101	301	504	704
2	MANA 31304 (RANSOM)	68.7 %		WG	9 oz/a	A	8.088 g/mx	102	402	605	701
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
3	GLORY	75 %		WG	6.7 oz/a	A	6.021 g/mx	103	305	603	803
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
4	OUTFLANK	51 %W/W		DF	2.3 oz/a	A	2.067 g/mx	104	405	601	705
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
5	FIERCE	76 %		WG	3.5 oz/a	A	3.145 g/mx	105	304	606	806
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
6	FIERCE XLT	62.41 %		WG	4.5 oz/a	A	4.044 g/mx	106	406	503	802
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
7	VALOR XLT	40.3 %		WG	4 oz/a	A	3.595 g/mx	201	306	506	702
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
8	AUTHORITY MTZ	45 %		WG	11 oz/a	A	9.886 g/mx	202	403	505	706
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
9	PUMMEL	5.25 LBA/GAL		ME	2 pt/a	A	30.0 ml/mx	203	302	501	805
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
10	LATIR	55 %		WG	4.25 oz/a	A	3.819 g/mx	204	404	502	804
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
11	TORMENT	2.5 LBA/GAL		SL	1 pt/a	A	15.0 ml/mx	205	401	604	703
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx				
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				
12	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a	B	30.0 ml/mx	206	303	602	801
	N-PAK - AMS	3.4 LBA/GAL		SL	2.5 % v/v	B	45.0 ml/mx				

Sort Order: Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
10.110	g	MANA 31304 (RANSOM)	68.7	WG	
412.500	ml	ROUNDUP POWERMAX	4.5	SL	
618.683	ml	N-PAK - AMS	3.4	SL	
7.527	g	GLORY	75	WG	
2.584	g	OUTFLANK	51	DF	
3.932	g	FIERCE	76	WG	
5.055	g	FIERCE XLT	62.41	WG	
4.493	g	VALOR XLT	40.3	WG	

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Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
12.357	g	AUTHORITY MTZ	45	WG	
37.500	ml	PUMMEL	5.25	ME	
4.774	g	LATIR	55	WG	
18.750	ml	TORMENT	2.5	SL	

* 'Per area' calculations based on spray volume= 15 GAL/AC, mix size= 1.8 liters (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

* 'Per volume' calculations use spray volume= 15 GAL/AC, mix size= 1.8 liters.

Pest Type				W Weed SETPU yellow foxtail	W Weed AMBTR Giant ragweed	W Weed AMBTR Giant ragweed	W Weed SETPU yellow foxtail	W Weed CHEAL Common lambsqu>
Pest Code								
Pest Name								
Crop Code	GLXMA							
Crop Name	Soybean							
Part Rated	PLOT C		PLOT P		PLOT P		PLOT P	
Rating Date	5/29/2015		5/29/2015		5/29/2015		6/9/2015	
Rating Type	PHYGEN		CONTRO		CONTRO		CONTRO	
Rating Unit	%		%		%		%	
Number of Subsamples	1		1		1		1	
Days After First/Last Applic.	15 15		15 15		15 15		26 26	
Trt-Eval Interval	15 DA-A		15 DA-A		15 DA-A		0 DA-B	
Days After Emergence	8 DE-1		8 DE-1		8 DE-1		19 DE-1	
ARM Action Codes	P		P		P		P	
Number of Decimals	0		0		0		0	
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code Plot	1	2	3	4	5	6
1 Untreated Check		101	0	0	0	0	0	0
		301	0	0	0	0	0	0
		504	0	0	0	0	0	0
		704	0	0	0	0	0	0
		Mean =	0	0	0	0	0	0
2 MANA 31304 (RANSOM)	9 oz/a A	102	0	100	95	0	50	100
ROUNDUP POWERMAX	32 oz/a B	402	0	100	80	0	100	100
N-PAK - AMS	2.5 % v/v B	605	0	80	60	0	80	100
		701	0	90	30	0	80	100
		Mean =	0	93	66	0	78	100
3 GLORY	6.7 oz/a A	103	0	100	90	0	90	100
ROUNDUP POWERMAX	32 oz/a B	305	0	95	20	0	70	20
N-PAK - AMS	2.5 % v/v B	603	0	89*	80	0	66*	73*
		803	0	100	10	0	60	100
		Mean =	0	96	50	0	72	73
4 OUTFLANK	2.3 oz/a A	104	0	100	90	0	90	100
ROUNDUP POWERMAX	32 oz/a B	405	5	100	60	85	100	100
N-PAK - AMS	2.5 % v/v B	601	0	91*	50	0	50	100*
		705	0	100	10	55	100	100
		Mean =	1	98	53	35	85	100
5 FIERCE	3.5 oz/a A	105	0	95	80	0	80	100
ROUNDUP POWERMAX	32 oz/a B	304	0	100	30	0	100	100
N-PAK - AMS	2.5 % v/v B	606	5	75	75	0	100	100
		806	0	100	30	30	100	100
		Mean =	1	93	54	8	95	100
6 FIERCE XLT	4.5 oz/a A	106	0	100	95	40	80	100
ROUNDUP POWERMAX	32 oz/a B	406	0	100	95	70	100	100
N-PAK - AMS	2.5 % v/v B	503	0	100	85	0	100	100
		802	0	100	70	70	100	100
		Mean =	0	100	86	45	95	100
7 VALOR XLT	4 oz/a A	201	0	95	95	60	100	100
ROUNDUP POWERMAX	32 oz/a B	306	0	100	10	0	100	100
N-PAK - AMS	2.5 % v/v B	506	0	100	95	40	70	100
		702	0	90	50	0	100	100
		Mean =	0	96	63	25	93	100
8 AUTHORITY MTZ	11 oz/a A	202	0	100	20	0	100	100
ROUNDUP POWERMAX	32 oz/a B	403	0	100	97	0	100	100
N-PAK - AMS	2.5 % v/v B	505	0	90	100	0	100	100
		706	0	95	10	0	100	100
		Mean =	0	96	57	0	100	100

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Pest Type		W Weed	W Weed	W Weed	W Weed	W Weed								
Pest Code		SETPU	AMBTR	AMBTR	SETPU	CHEAL								
Pest Name		yellow foxtail	Giant ragweed	Giant ragweed	yellow foxtail	Common lambsqu>								
Crop Code	GLXMA													
Crop Name	Soybean													
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT P	PLOT P								
Rating Date	5/29/2015	5/29/2015	5/29/2015	6/9/2015	6/9/2015	6/9/2015								
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO								
Rating Unit	%	%	%	%	%	%								
Number of Subsamples	1	1	1	1	1	1								
Days After First/Last Applic.	15 15	15 15	15 15	26 26	26 26	26 26								
Trt-Eval Interval	15 DA-A	15 DA-A	15 DA-A	0 DA-B	0 DA-B	0 DA-B								
Days After Emergence	8 DE-1	8 DE-1	8 DE-1	19 DE-1	19 DE-1	19 DE-1								
ARM Action Codes	P	P	P	P	P	P								
Number of Decimals	0	0	0	0	0	0								
Trt Treatment	Rate	Appl	1		2		3		4		5		6	
No. Name	Rate Unit	Code Plot												
9 PUMMEL	2 pt/a	A 203	0	100	60	40	100	100						100
ROUNDUP POWERMAX	32 oz/a	B 302	0	100	80	0	100	100						100
N-PAK - AMS	2.5 % v/v	B 501	0	95	95	20	100	100						100
		805	0	100	30	0	100	100						100
		Mean =	0	99	66	15	100	100						100
10 LATIR	4.25 oz/a	A 204	0	100	90	4*	100	100						100
ROUNDUP POWERMAX	32 oz/a	B 404	0	100	95	0	100	100						100
N-PAK - AMS	2.5 % v/v	B 502	0	100	95	0	100	100						100
		804	0	100	50	0	100	100						100
		Mean =	0	100	83	1	100	100						100
11 TORMENT	1 pt/a	A 205	0	100	90	60	100	100						100
ROUNDUP POWERMAX	32 oz/a	B 401	0	95	100	0	100	100						100
N-PAK - AMS	2.5 % v/v	B 604	0	50	75	30	80	100						100
		703	0	90	20	70	100	100						100
		Mean =	0	84	71	40	95	100						100
12 ROUNDUP POWERMAX	32 oz/a	B 206	0	0	0	0	0	0						0
N-PAK - AMS	2.5 % v/v	B 303	0	0	0	0	0	0						0
		602	0	0	0	0	0	0						0
		801	0	0	0	0	0	0						0
		Mean =	0	0	0	0	0	0						0

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Pest Type		W Weed	W Weed	W Weed									
Pest Code		AMBTR	SETPU	CHEAL									
Pest Name		Giant ragweed	yellow foxtail	Common lambsqu>									
Crop Code	GLXMA				GLXMA	GLXMA							
Crop Name	Soybean				Soybean	Soybean							
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT C							
Rating Date	6/9/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	9/28/2015							
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	YIELD							
Rating Unit	%	%	%	%	%	lb/plot							
Number of Subsamples	1	1	1	1	1	1							
Days After First/Last Applic.	26 26	40 14	40 14	40 14	40 14	137 111							
Trt-Eval Interval	0 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B								
Days After Emergence	19 DE-1	33 DE-1	33 DE-1	33 DE-1	33 DE-1	130 DE-1							
ARM Action Codes	P	P	P	P	P								
Number of Decimals	0	0	0	0	0	2							
Trt Treatment	Rate Appl	7		8		9		10		11		12	
No. Name	Rate Unit Code Plot												
1 Untreated Check	101	0	0	0	0	0	0	0	0	0	0	18.63	
	301	0	0	0	0	0	0	0	0	0	0	12.13	
	504	0	0	0	0	0	0	0	0	0	0	15.46	
	704	0	0	0	0	0	0	0	0	0	0	.	
	Mean =	0	0	0	0	0	0	0	0	0	0	15.41	
2 MANA 31304 (RANSOM)	9 oz/a A 102	0	95	100	100	100	0	20.19					
ROUNDUP POWERMAX	32 oz/a B 402	0	95	100	100	100	5	22.55					
N-PAK - AMS	2.5 % v/v B 605	35	80	95	100	100	5	21.37*					
	701	25	80	95	100	100	5	.					
	Mean =	15	88	98	100	100	4	21.37					
3 GLORY	6.7 oz/a A 103	0	85	100	100	100	0	21.37					
ROUNDUP POWERMAX	32 oz/a B 305	0	80	95	95	95	0	16.27					
N-PAK - AMS	2.5 % v/v B 603	0	95	80	100	100	0	22.33					
	803	0	65	100	100	100	0	.					
	Mean =	0	81	94	99	99	0	19.99					
4 OUTFLANK	2.3 oz/a A 104	20	100	100	100	100	0	22.55					
ROUNDUP POWERMAX	32 oz/a B 405	20	90	95	100	100	0	22.87					
N-PAK - AMS	2.5 % v/v B 601	20	95	85	100	100	5	17.88					
	705	35	70	100	100	100	5	.					
	Mean =	24	89	95	100	100	3	21.10					
5 FIERCE	3.5 oz/a A 105	25	100	100	100	100	0	21.15					
ROUNDUP POWERMAX	32 oz/a B 304	30	95	100	100	100	5	20.67					
N-PAK - AMS	2.5 % v/v B 606	40	85	100	100	100	5	20.91*					
	806	40	70	100	100	100	5	.					
	Mean =	34	88	100	100	100	4	20.91					
6 FIERCE XLT	4.5 oz/a A 106	30	100	100	100	100	0	19.81					
ROUNDUP POWERMAX	32 oz/a B 406	30	95	100	100	100	5	19.65					
N-PAK - AMS	2.5 % v/v B 503	35	95	100	100	100	5	16.75					
	802	20	90	100	100	100	5	.					
	Mean =	29	95	100	100	100	4	18.74					
7 VALOR XLT	4 oz/a A 201	0	100	100	100	100	5	19.92					
ROUNDUP POWERMAX	32 oz/a B 306	10	85	95	100	100	0	13.26					
N-PAK - AMS	2.5 % v/v B 506	30	100	100	100	100	5	19.38					
	702	10	80	100	100	100	5	.					
	Mean =	13	91	99	100	100	4	17.52					
8 AUTHORITY MTZ	11 oz/a A 202	0	80	100	100	100	0	18.15					
ROUNDUP POWERMAX	32 oz/a B 403	10	95	100	100	100	0	23.51					
N-PAK - AMS	2.5 % v/v B 505	0	95	100	100	100	0	22.55					
	706	0	70	100	100	100	0	.					
	Mean =	3	85	100	100	100	0	21.40					

Purdue Weed Science

Pest Type		W Weed	W Weed	W Weed			
Pest Code		AMBTR	SETPU	CHEAL			
Pest Name		Giant ragweed	yellow foxtail	Common lambsqu>			
Crop Code	GLXMA				GLXMA	GLXMA	
Crop Name	Soybean				Soybean	Soybean	
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT C	
Rating Date	6/9/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	9/28/2015	
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	YIELD	
Rating Unit	%	%	%	%	%	lb/plot	
Number of Subsamples	1	1	1	1	1	1	
Days After First/Last Applic.	26 26	40 14	40 14	40 14	40 14	137 111	
Trt-Eval Interval	0 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B		
Days After Emergence	19 DE-1	33 DE-1	33 DE-1	33 DE-1	33 DE-1	130 DE-1	
ARM Action Codes	P	P	P	P	P		
Number of Decimals	0	0	0	0	0	2	
Trt Treatment	Rate Appl						
No. Name	Rate Unit Code Plot	7	8	9	10	11	12
9 PUMMEL	2 pt/a A 203	0	80	100	100	0	17.77
ROUNDUP POWERMAX	32 oz/a B 302	0	95	100	100	0	20.94
N-PAK - AMS	2.5 % v/v B 501	0	95	100	100	0	21.69
	805	0	65	100	100	0	.
	Mean =	0	84	100	100	0	20.13
10 LATIR	4.25 oz/a A 204	20	100	100	100	5	22.55
ROUNDUP POWERMAX	32 oz/a B 404	0	95	100	100	0	23.78
N-PAK - AMS	2.5 % v/v B 502	20	90	100	100	5	22.17
	804	10	80	100	100	0	.
	Mean =	13	91	100	100	3	22.83
11 TORMENT	1 pt/a A 205	0	100	100	100	0	24.11
ROUNDUP POWERMAX	32 oz/a B 401	0	95	95	100	0	23.41
N-PAK - AMS	2.5 % v/v B 604	0	100	100	100	0	23.09
	703	0	80	100	100	0	.
	Mean =	0	94	99	100	0	23.53
12 ROUNDUP POWERMAX	32 oz/a B 206	0	90	90	100	0	19.01
N-PAK - AMS	2.5 % v/v B 303	0	90	100	100	0	23.19
	602	0	95	80	100	0	17.72
	801	0	80	100	100	5	.
	Mean =	0	89	93	100	1	19.97

Purdue Weed Science

Pest Type					
Pest Code					
Pest Name					
Crop Code		GLXMA	GLXMA		
Crop Name		Soybean	Soybean		
Part Rated		PLOT C	PLOT C		
Rating Date		9/28/2015	9/28/2015		
Rating Type		MOICON	YIELD		
Rating Unit		%	BU		
Number of Subsamples		1	1		
Days After First/Last Applic.		137 111	137 111		
Trt-Eval Interval					
Days After Emergence		130 DE-1	130 DE-1		
ARM Action Codes			TY1		
Number of Decimals		2	1		
Trt Treatment	Rate Appl				
No. Name	Rate Unit Code Plot		13	14	
1 Untreated Check		101	14.02	53.5	
		301	15.51	34.2	
		504	19.90	41.3	
		704	.	.	
	Mean =		16.48	43.0	
2 MANA 31304 (RANSOM)	9 oz/a A	102	14.96	57.3	
ROUNDUP POWERMAX	32 oz/a B	402	16.67	62.7	
N-PAK - AMS	2.5 % v/v B	605	15.82*	60.0*	
		701	.	.	
	Mean =		15.82	60.0	
3 GLORY	6.7 oz/a A	103	17.89	58.6	
ROUNDUP POWERMAX	32 oz/a B	305	16.12	45.5	
N-PAK - AMS	2.5 % v/v B	603	21.60	58.4	
		803	.	.	
	Mean =		18.54	54.2	
4 OUTFLANK	2.3 oz/a A	104	13.19	65.3	
ROUNDUP POWERMAX	32 oz/a B	405	15.09	64.8	
N-PAK - AMS	2.5 % v/v B	601	16.74	49.7	
		705	.	.	
	Mean =		15.01	59.9	
5 FIERCE	3.5 oz/a A	105	13.90	60.8	
ROUNDUP POWERMAX	32 oz/a B	304	14.67	58.9	
N-PAK - AMS	2.5 % v/v B	606	14.28*	59.8*	
		806	.	.	
	Mean =		14.28	59.8	
6 FIERCE XLT	4.5 oz/a A	106	13.55	57.2	
ROUNDUP POWERMAX	32 oz/a B	406	13.71	56.6	
N-PAK - AMS	2.5 % v/v B	503	15.02	47.5	
		802	.	.	
	Mean =		14.09	53.8	
7 VALOR XLT	4 oz/a A	201	14.18	57.1	
ROUNDUP POWERMAX	32 oz/a B	306	14.52	37.8	
N-PAK - AMS	2.5 % v/v B	506	14.42	55.4	
		702	.	.	
	Mean =		14.37	50.1	
8 AUTHORITY MTZ	11 oz/a A	202	16.74	50.4	
ROUNDUP POWERMAX	32 oz/a B	403	14.79	66.9	
N-PAK - AMS	2.5 % v/v B	505	16.59	62.8	
		706	.	.	
	Mean =		16.04	60.0	

Purdue Weed Science

Pest Type					
Pest Code					
Pest Name					
Crop Code		GLXMA		GLXMA	
Crop Name		Soybean		Soybean	
Part Rated		PLOT C		PLOT C	
Rating Date		9/28/2015		9/28/2015	
Rating Type		MOICON		YIELD	
Rating Unit		%		BU	
Number of Subsamples		1		1	
Days After First/Last Applic.		137 111		137 111	
Trt-Eval Interval					
Days After Emergence		130 DE-1		130 DE-1	
ARM Action Codes				TY1	
Number of Decimals		2		1	
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code Plot	13	14	
9 PUMMEL	2 pt/a	A 203	16.11	49.8	
ROUNDUP POWERMAX	32 oz/a	B 302	15.76	58.9	
N-PAK - AMS	2.5 % v/v	B 501	16.04	60.8	
		805	.	.	
		Mean =	15.97	56.5	
10 LATIR	4.25 oz/a	A 204	13.16	65.4	
ROUNDUP POWERMAX	32 oz/a	B 404	14.20	68.1	
N-PAK - AMS	2.5 % v/v	B 502	18.00	60.7	
		804	.	.	
		Mean =	15.12	64.7	
11 TORMENT	1 pt/a	A 205	13.06	70.0	
ROUNDUP POWERMAX	32 oz/a	B 401	14.20	67.0	
N-PAK - AMS	2.5 % v/v	B 604	15.90	64.8	
		703	.	.	
		Mean =	14.38	67.3	
12 ROUNDUP POWERMAX	32 oz/a	B 206	15.60	53.5	
N-PAK - AMS	2.5 % v/v	B 303	16.63	64.5	
		602	19.62	47.5	
		801	.	.	
		Mean =	17.28	55.2	

Purdue Weed Science

Efficacy of Ransom (MANA 31304) herbicide applied pre-emergence in soybeans

Trial ID: 15S-THP-CTS-17 Location: TPAC Trial Year: 2015
 Protocol ID: 15S-THP-CTS-17 Investigator: Dr. Bill Johnson
 Project ID: 2984215 Study Director: Joe Ikley
 Sponsor Contact: ADAMA

Pest Type
 W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Pest Code
 SETPU, Setaria pumila, = US
 AMBTR, Ambrosia trifida, = US
 CHEAL, Chenopodium album, = US

Crop Code
 GLXMA, BSOY, Glycine max, = US

Part Rated
 PLOT = plot
 C = Crop is Part Rated
 P = Pest is Part Rated

Rating Type
 PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
 YIELD = yield
 MOICON = moisture content

Rating Unit
 % = percent
 lb/plot = pounds per plot
 BU = bushel

ARM Action Codes
 P = Rating scale of 0 to 100 (e.g. % control or injury)
 $TY1 = 2.904 * [12] * (100 - [13]) / 87$

Pest Type		W Weed	W Weed	W Weed	W Weed	W Weed
Pest Code		SETPU	AMBTR	AMBTR	SETPU	CHEAL
Pest Name		yellow foxtail	Giant ragweed	Giant ragweed	yellow foxtail	Common lambsqu>
Crop Code	GLXMA					
Crop Name	Soybean					
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT P	PLOT P
Rating Date	5/29/2015	5/29/2015	5/29/2015	6/9/2015	6/9/2015	6/9/2015
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%	%	%
Number of Subsamples	1	1	1	1	1	1
Days After First/Last Applic.	15 15	15 15	15 15	26 26	26 26	26 26
Trt-Eval Interval	15 DA-A	15 DA-A	15 DA-A	0 DA-B	0 DA-B	0 DA-B
Days After Emergence	8 DE-1	8 DE-1	8 DE-1	19 DE-1	19 DE-1	19 DE-1
ARM Action Codes	P	P	P	P	P	P
Number of Decimals	0	0	0	0	0	0
Trt Treatment	Rate Appl					
No. Name	Rate Unit Code	1	2	3	4	5
1 Untreated Check		0 a	0 c	0 c	0 c	0 d
2 MANA 31304 (RANSOM)	9 oz/a A	0 a	93 ab	66 ab	0 c	78 bc
ROUNDUP POWERMAX	32 oz/a B					100 a
N-PAK - AMS	2.5 % v/v B					
3 GLORY	6.7 oz/a A	0 a	96 a	50 b	0 c	72 c
ROUNDUP POWERMAX	32 oz/a B					73 b
N-PAK - AMS	2.5 % v/v B					
4 OUTFLANK	2.3 oz/a A	1 a	98 a	53 ab	35 ab	85 abc
ROUNDUP POWERMAX	32 oz/a B					100 a
N-PAK - AMS	2.5 % v/v B					
5 FIERCE	3.5 oz/a A	1 a	93 ab	54 ab	8 bc	95 a
ROUNDUP POWERMAX	32 oz/a B					100 a
N-PAK - AMS	2.5 % v/v B					
6 FIERCE XLT	4.5 oz/a A	0 a	100 a	86 a	45 a	95 a
ROUNDUP POWERMAX	32 oz/a B					100 a
N-PAK - AMS	2.5 % v/v B					
7 VALOR XLT	4 oz/a A	0 a	96 a	63 ab	25 abc	93 ab
ROUNDUP POWERMAX	32 oz/a B					100 a
N-PAK - AMS	2.5 % v/v B					

Purdue Weed Science

Pest Type Pest Code Pest Name		W Weed SETPU yellow foxtail	W Weed AMBTR Giant ragweed	W Weed AMBTR Giant ragweed	W Weed SETPU yellow foxtail	W Weed CHEAL Common lambsqu>		
Crop Code Crop Name Part Rated Rating Date	GLXMA Soybean PLOT C 5/29/2015	PLOT P 5/29/2015	PLOT P 5/29/2015	PLOT P 6/9/2015	PLOT P 6/9/2015	PLOT P 6/9/2015		
Rating Type Rating Unit Number of Subsamples Days After First/Last Applic. Trit-Eval Interval Days After Emergence ARM Action Codes Number of Decimals	PHYGEN % 1 15 15 15 DA-A 8 DE-1 P 0	CONTRO % 1 15 15 15 DA-A 8 DE-1 P 0	CONTRO % 1 15 15 15 DA-A 8 DE-1 P 0	CONTRO % 1 26 26 0 DA-B 19 DE-1 P 0	CONTRO % 1 26 26 0 DA-B 19 DE-1 P 0	CONTRO % 1 26 26 0 DA-B 19 DE-1 P 0		
Trit Treatment No. Name	Rate Rate Unit	Appl Code	1	2	3	4	5	6
8 AUTHORITY MTZ ROUNDUP POWERMAX N-PAK - AMS	11 oz/a 32 oz/a 2.5 % v/v	A B B	0 a	96 a	57 ab	0 c	100 a	100 a
9 PUMMEL ROUNDUP POWERMAX N-PAK - AMS	2 pt/a 32 oz/a 2.5 % v/v	A B B	0 a	99 a	66 ab	15 abc	100 a	100 a
10 LATIR ROUNDUP POWERMAX N-PAK - AMS	4.25 oz/a 32 oz/a 2.5 % v/v	A B B	0 a	100 a	83 ab	1 c	100 a	100 a
11 TORMENT ROUNDUP POWERMAX N-PAK - AMS	1 pt/a 32 oz/a 2.5 % v/v	A B B	0 a	84 b	71 ab	40 a	95 a	100 a
12 ROUNDUP POWERMAX N-PAK - AMS	32 oz/a 2.5 % v/v	B B	0 a	0 c	0 c	0 c	0 d	0 c
LSD P=.05	1.5	10.8	34.7	31.4	16.7	16.2		
Standard Deviation	1.0	7.5	24.1	21.8	11.6	11.2		
CV	497.27	9.46	44.67	155.42	15.28	13.85		
Bartlett's X2	0.0	19.073	6.074	3.605	4.42	0.0		
P(Bartlett's X2)	.	0.004*	0.732	0.608	0.62	.		
Skewness	4.7366*	-1.614*	-0.2662	1.5212*	-1.4052*	-1.6044*		
Kurtosis	21.3233*	0.8018	-1.593*	0.8846	0.3751	0.6234		
Replicate F	0.647	4.824	7.900	0.630	1.853	0.939		
Replicate Prob(F)	0.5904	0.0072	0.0004	0.6012	0.1575	0.4335		
Treatment F	0.882	98.809	5.236	2.590	39.810	47.354		
Treatment Prob(F)	0.5658	0.0001	0.0001	0.0176	0.0001	0.0001		

Purdue Weed Science

Pest Type Pest Code Pest Name		W Weed AMBTR Giant ragweed	W Weed SETPU yellow foxtail	W Weed CHEAL Common lambsqu>					
Crop Code Crop Name Part Rated Rating Date	GLXMA Soybean PLOT C 6/9/2015	PLOT P 6/23/2015	PLOT P 6/23/2015	PLOT P 6/23/2015	GLXMA Soybean PLOT C 6/23/2015	GLXMA Soybean PLOT C 9/28/2015	GLXMA Soybean PLOT C 9/28/2015		
Rating Type Rating Unit Number of Subsamples Days After First/Last Applic. Trt-Eval Interval Days After Emergence ARM Action Codes Number of Decimals	PHYGEN % 1 26 26 0 DA-B 19 DE-1 P 0	CONTRO % 1 40 14 14 DA-B 33 DE-1 P 0	CONTRO % 1 40 14 14 DA-B 33 DE-1 P 0	CONTRO % 1 40 14 14 DA-B 33 DE-1 P 0	PHYGEN % 1 40 14 14 DA-B 33 DE-1 P 0	YIELD lb/plot 1 137 111 130 DE-1 2	MOICON % 1 137 111 130 DE-1 2		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	7	8	9	10	11	12	13
1 Untreated Check			0 e	0 e	0 d	0 c	0 b	15.41 a	16.48 abc
2 MANA 31304 (RANSOM) ROUNDUP POWERMAX N-PAK - AMS	9 oz/a A 32 oz/a B 2.5 % v/v B		15 bc	88 a-d	98 abc	100 a	4 a	21.37 a	15.82 bcd
3 GLORY ROUNDUP POWERMAX N-PAK - AMS	6.7 oz/a A 32 oz/a B 2.5 % v/v B		0 e	81 d	94 bc	99 b	0 b	19.99 a	18.54 a
4 OUTFLANK ROUNDUP POWERMAX N-PAK - AMS	2.3 oz/a A 32 oz/a B 2.5 % v/v B		24 ab	89 a-d	95 abc	100 a	3 ab	21.10 a	15.01 bcd
5 FIERCE ROUNDUP POWERMAX N-PAK - AMS	3.5 oz/a A 32 oz/a B 2.5 % v/v B		34 a	88 a-d	100 a	100 a	4 a	20.91 a	14.28 cd
6 FIERCE XLT ROUNDUP POWERMAX N-PAK - AMS	4.5 oz/a A 32 oz/a B 2.5 % v/v B		29 a	95 a	100 a	100 a	4 a	18.74 a	14.09 d
7 VALOR XLT ROUNDUP POWERMAX N-PAK - AMS	4 oz/a A 32 oz/a B 2.5 % v/v B		13 cd	91 abc	99 ab	100 a	4 a	17.52 a	14.37 cd

Purdue Weed Science

Pest Type		W Weed AMBTR Giant ragweed	W Weed SETPU yellow foxtail	W Weed CHEAL Common lambsqu>				
Pest Code								
Pest Name								
Crop Code	GLXMA				GLXMA	GLXMA	GLXMA	
Crop Name	Soybean				Soybean	Soybean	Soybean	
Part Rated	PLOT C	PLOT P	PLOT P	PLOT P	PLOT C	PLOT C	PLOT C	
Rating Date	6/9/2015	6/23/2015	6/23/2015	6/23/2015	6/23/2015	9/28/2015	9/28/2015	
Rating Type	PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	YIELD	MOICON	
Rating Unit	%	%	%	%	%	lb/plot	%	
Number of Subsamples	1	1	1	1	1	1	1	
Days After First/Last Applic.	26 26	40 14	40 14	40 14	40 14	137 111	137 111	
Trt-Eval Interval	0 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	
Days After Emergence	19 DE-1	33 DE-1	33 DE-1	33 DE-1	33 DE-1	130 DE-1	130 DE-1	
ARM Action Codes	P	P	P	P	P	P	P	
Number of Decimals	0	0	0	0	0	2	2	
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	7	8	9	10	11	12
8 AUTHORITY MTZ	11 oz/a	A	3 de	85 bcd	100 a	100 a	0 b	21.40 a
ROUNDUP POWERMAX	32 oz/a	B						
N-PAK - AMS	2.5 % v/v	B						16.04 bcd
9 PUMMEL	2 pt/a	A	0 e	84 cd	100 a	100 a	0 b	20.13 a
ROUNDUP POWERMAX	32 oz/a	B						
N-PAK - AMS	2.5 % v/v	B						15.97 bcd
10 LATIR	4.25 oz/a	A	13 cd	91 abc	100 a	100 a	3 ab	22.83 a
ROUNDUP POWERMAX	32 oz/a	B						
N-PAK - AMS	2.5 % v/v	B						15.12 bcd
11 TORMENT	1 pt/a	A	0 e	94 ab	99 ab	100 a	0 b	23.53 a
ROUNDUP POWERMAX	32 oz/a	B						
N-PAK - AMS	2.5 % v/v	B						14.38 cd
12 ROUNDUP POWERMAX	32 oz/a	B	0 e	89 a-d	93 c	100 a	1 ab	19.97 a
N-PAK - AMS	2.5 % v/v	B						17.28 ab
LSD P=.05	10.7	9.6	6.1	1.0	2.7	4.455	2.302	
Standard Deviation	7.5	6.7	4.3	0.7	1.9	2.616	1.351	
CV	69.56	8.22	4.76	0.79	106.42	12.92	8.65	
Bartlett's X2	6.666	5.956	10.58	0.0	0.173	10.425	18.546	
P(Bartlett's X2)	0.353	0.819	0.06	.	1.00	0.493	0.07	
Skewness	0.8289*	-2.4293*	-2.9632*	-3.1096*	0.6297	-0.9365*	1.1921*	
Kurtosis	-0.8634	5.2793*	7.3797*	8.0106*	-1.6751*	0.4713	1.5341	
Replicate F	2.353	17.349	2.853	1.000	2.493	0.050	9.715	
Replicate Prob(F)	0.0900	0.0001	0.0522	0.4051	0.0771	0.9511	0.0011	
Treatment F	11.047	60.178	176.917	6386.455	3.347	2.174	3.014	
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001	0.0035	0.0633	0.0155	

Purdue Weed Science

Pest Type			
Pest Code			
Pest Name			
Crop Code		GLXMA	
Crop Name		Soybean	
Part Rated		PLOT C	
Rating Date		9/28/2015	
Rating Type		YIELD	
Rating Unit		BU	
Number of Subsamples		1	
Days After First/Last Applic.		137 111	
Trt-Eval Interval			
Days After Emergence		130 DE-1	
ARM Action Codes		TY1	
Number of Decimals		1	
Trt No.	Treatment Name	Rate Rate Unit	Appl Code
			14
1	Untreated Check		43.0 a
2	MANA 31304 (RANSOM) ROUNDUP POWERMAX N-PAK - AMS	9 oz/a A 32 oz/a B 2.5 % v/v B	60.0 a
3	GLORY ROUNDUP POWERMAX N-PAK - AMS	6.7 oz/a A 32 oz/a B 2.5 % v/v B	54.2 a
4	OUTFLANK ROUNDUP POWERMAX N-PAK - AMS	2.3 oz/a A 32 oz/a B 2.5 % v/v B	59.9 a
5	FIERCE ROUNDUP POWERMAX N-PAK - AMS	3.5 oz/a A 32 oz/a B 2.5 % v/v B	59.8 a
6	FIERCE XLT ROUNDUP POWERMAX N-PAK - AMS	4.5 oz/a A 32 oz/a B 2.5 % v/v B	53.8 a
7	VALOR XLT ROUNDUP POWERMAX N-PAK - AMS	4 oz/a A 32 oz/a B 2.5 % v/v B	50.1 a

Purdue Weed Science

Pest Type			
Pest Code			
Pest Name			
Crop Code		GLXMA	
Crop Name		Soybean	
Part Rated		PLOT C	
Rating Date		9/28/2015	
Rating Type		YIELD	
Rating Unit		BU	
Number of Subsamples		1	
Days After First/Last Applic.		137 111	
Tri-Eval Interval			
Days After Emergence		130 DE-1	
ARM Action Codes		TY1	
Number of Decimals		1	
Trt No.	Treatment Name	Rate Rate Unit	Appl Code
			14
8	AUTHORITY MTZ	11 oz/a	A
	ROUNDUP POWERMAX	32 oz/a	B
	N-PAK - AMS	2.5 % v/v	B
60.0			a
9	PUMMEL	2 pt/a	A
	ROUNDUP POWERMAX	32 oz/a	B
	N-PAK - AMS	2.5 % v/v	B
56.5			a
10	LATIR	4.25 oz/a	A
	ROUNDUP POWERMAX	32 oz/a	B
	N-PAK - AMS	2.5 % v/v	B
64.7			a
11	TORMENT	1 pt/a	A
	ROUNDUP POWERMAX	32 oz/a	B
	N-PAK - AMS	2.5 % v/v	B
67.3			a
12	ROUNDUP POWERMAX	32 oz/a	B
	N-PAK - AMS	2.5 % v/v	B
55.2			a
LSD P=.05			12.80
Standard Deviation			7.52
CV			13.18
Bartlett's X2			7.197
P(Bartlett's X2)			0.783
Skewness			-0.8294*
Kurtosis			0.2647
Replicate F			0.333
Replicate Prob(F)			0.7205
Treatment F			2.247
Treatment Prob(F)			0.0558

Purdue Weed Science

Efficacy of Ransom (MANA 31304) herbicide applied pre-emergence in soybeans

Trial ID: 15S-THP-CTS-17 Location: TPAC Trial Year: 2015
 Protocol ID: 15S-THP-CTS-17 Investigator: Dr. Bill Johnson
 Project ID: 2984215 Study Director: Joe Ikley
 Sponsor Contact: ADAMA

Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Pest Code

SETPU, Setaria pumila, = US
 AMBTR, Ambrosia trifida, = US
 CHEAL, Chenopodium album, = US

Crop Code

GLXMA, BSOY, Glycine max, = US

Part Rated

PLOT = plot
 C = Crop is Part Rated
 P = Pest is Part Rated

Rating Type

PHYGEN = phytotoxicity - general / injury
 CONTRO = control / burndown or knockdown
 YIELD = yield
 MOICON = moisture content

Rating Unit

% = percent
 lb/plot = pounds per plot
 BU = bushel

ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)
 TY1 = $2.904 * [12] * (100 - [13]) / 87$