

# Purdue Weed Science

**Trial ID:** 20S-MGS-SOY-15      **Valent Actives in a Roundup Xtend System - Reduced Tillage**  
**Protocol ID:** 20S-MGS-SOY-15      Location: Lafayette, IN      **Trial Year:** 2020  
**Project ID:**      **Investigator (Creator):** Eric Ott  
**Study Director:**  
**Sponsor Contact:**

**General Trial Information**  
**Investigator:** Eric Ott  
**Trial Status:** E established      **Trial Reliability:** 1 usable data  
**ARM Trial Created On:** 6/5/2020  
**Initiation Date:** 6/5/2020

**Trial Location**  
**City:** Lafayette      **Country:** USA United States  
**State/Prov.:** Indiana  
**Latitude of LL Corner °:** 40.270232 N  
**Longitude of LL Corner °:** -86.8820541 W

**Conducted Under GLP:** No  
**Conducted Under GEP:** No  
**Study Rules:** HERB-PREE

No.	Guideline	Discipline	Description
1.	ADM-C-PUB	CO	Confidentiality - Public Trial - No Secrecy Agreement Required

**Objectives:**  
To compare Valent PREE and POST actives in a program approach in a Roundup Xtend cropping system. Fierce EZ (6 fl oz/A) and Fierce MTZ (1 pt/A) will be compared to Authority MTZ (11 oz/A) and Zidua Pro (6.0 fl oz/A). Perpetuo (6 fl oz/A) will be compared to Anthem Maxx @ 2.5 fl oz/A. Measures of success are weed control at 21, 42 & 56 DAP with acceptable crop response.

**Conclusions:**  
Roundup Ready  
See test subject list  
Roundup Ready  
See test subject list

**Role:** INVEST investigator  
**Investigator:** Eric Ott

**Crop Description**  
**Crop 1:** C GLXM06 Glycine max GMO Soybean, Glyph./Dicamba Tol.      **BBCH Scale:** BSOY  
**Entry Date:** 10/16/2020      **Stage Scale:** BBCH  
**Variety:** AG 29X9  
**Seed Size:** 150 TSWG  
**Planting Date:** 6/25/2020      **Planting Rate:** 157000 S/A  
**Depth:** 4.5 cm  
**Rows per Plot:** 4      **Planting Method:** PLANTD planted  
**Row Spacing:** 30 IN      **Planting Equipment:** PP plot planter  
**Soil Temperature:** 89 F      **Soil Moisture:** NORMAL normal, adequate  
**Emergence Date:** 7/3/2020

**Pest Description**  
**Pest 1 Type:** W      **Code:** AMATA *Amaranthus tamariscinus*      **Stage Scale:** BBCH  
**Common Name:** Common waterhemp  
**Pest 2 Type:** W      **Code:** ERICA *Erigeron canadensis*      **Entry Date:** 10/16/2020  
**Common Name:** Canada horseweed      **Stage Scale:** BBCH

**Site and Design**

Treated Plot Width: 6.67 FT

Treated Plot Length: 30 FT

Treated Plot Area: 200.1 FT<sup>2</sup> Treatments: 9 Tillage Type: NOTILL no-till  
Replications: 4 Study Design: RACOB� Randomized Complete Block (RCB)**Soil Description**

Description Name: Crosby-Miami Silt

% Sand: 27 % OM: 2.4 Texture: SIL silt loam

% Silt: 52 pH: 7.1

% Clay: 21 CEC: 9.3

**Application Description**

	A	B
Application Date	6/5/2020	7/21/2020
Appl. Start Time	10:40 AM	12:30 PM
Appl. Stop Time	11:10 AM	1:05 PM
Interval to Prev. Appl.		46 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREPOS	POSPOS
Application Placement	BROADC	BROADC
Applied By	J. Haarmann	B. Mansfield
Appl. Entry Date	10/16/2020	10/16/2020
Air Temperature Start, Stop	81, 81 F	86, 86 F
% Relative Humidity Start, Stop	64, 64	66, 66
Wind Velocity+Dir. Start	2 MPH, W	7 MPH, ESE
Wind Velocity+Dir. Stop	2.5 MPH, W	5.5 MPH, ESE
Wind Velocity+Dir. Max	2.5 MPH, W	8 MPH, ESE
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	80 F	88 F
Soil Moisture	NORMAL	NORMAL
% Cloud Cover	35	100

**Protocol Application Directions:**

One burndown application fb one postemergence application, except for RPM fb RP treatment, which is two postemergence applications.

**Crop Stage At Each Application**

	A	B
Crop 1 Code, BBCH Scale	GLXM06, BSOY	GLXM06, BSOY
Days after Emergence	-28	18
Stage Majority, Percent		14, 80
Stage Minimum, Percent		13, 10
Stage Maximum, Percent		15, 10
Height Average		5 IN
Height Minimum, Maximum		4, 6

**Pest Stage At Each Application**

	A	B
Pest 1 Code, Type, Scale	AMATA, W, BBCH	AMATA, W, BBCH
Stage Majority, Percent	16, 90	18, 85
Stage Minimum, Percent	11, 5	14, 15
Stage Maximum, Percent	18, 5	18, 85
Height Average	2 IN	8 IN
Height Minimum, Maximum	0.5, 3.5	1, 16
Density Average	35 FT <sup>2</sup>	15 FT <sup>2</sup>
Pest 2 Code, Type, Scale	ERICA, W, BBCH	ERICA, W, BBCH
Stage Majority, Percent	19, -	19, -
Stage Minimum, Percent	19, -	19, -
Stage Maximum, Percent	19, -	19, -
Height Average	5.5 IN	7 IN
Height Minimum, Maximum	1, 10	6, 8
Density Average	15 FT <sup>2</sup>	3 FT <sup>2</sup>

Application Equipment		
	A	B
Appl. Equipment	CO2 BACKPACK	CO2 BACKPACK
Equipment Type	BACSPR	BACSPR
Nozzle Model	TTI110015	TTI110015
Nozzle Type	TEEJAI	TEEJAI
Nozzle Spacing	15 IN	15 IN
Nozzles/Row	8	8
Boom Length	6.67 FT	6.67 FT
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Overage	0 mL	0 mL
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes			
Context	Date	By	Notes
GENTRI	10/16/2020	Dr. Bill Johnson	Trial was planted on June 8th, but due to dry conditions and poor seed to soil contact trial was replanted on June 25th.

**Instructions:**

1. Please include all treatments in test, even if they do not fit the area in which the test is conducted.
2. Make RPM application when weeds are 2" in the Fierce trt (4" if the weed is G. Rag).
3. Soybean row spacing should be 30".
4. Select Max does not need to be applied if v. corn is not in test area.

**Data to Collect:**

Efficacy: 21, 42 and 56 days after pree application. Crop tolerance: 21, 42 and 56 days after pree application.

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Trial ID: 20S-MGS-SOY-15 Protocol ID: 20S-MGS-SOY-15 Project ID:	<b>Valent Actives in a Roundup Xtend System - Reduced Tillage</b> Location: Lafayette, IN Trial Year: 2020 Investigator (Creator): Eric Ott	Study Director: Sponsor Contact:
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Pest Type	C, GLXM06	W, Weed AMATA Amaranthus x ta> Common waterhemp	W, Weed ERICA Erigeron canad> Canada horseweed	C, GLXM06			
Pest Code							
Pest Scientific Name							
Pest Name							
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06			
BBCH Scale	BSOY	BSOY	BSOY	BSOY			
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO			
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>			
Rating Date	7/21/2020	7/21/2020	7/21/2020	8/11/2020			
Part Rated	PLANT, C	PLANT, P	PLANT, P	PLANT, C			
Rating Type	PHYGEN	CONTRO	CONTRO	PHYGEN			
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100			
Number of Subsamples	1	1	1	1			
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020			
Rating Timing	0 DAB	0 DAB	0 DAB	21 DAT			
Days After First/Last Applic.	46, 46	46, 46	46, 46	67, 21			
Plant-Eval Interval	26 DP-1	26 DP-1	26 DP-1	47 DP-1			
Days After Emergence	18 DE-1	18 DE-1	18 DE-1	39 DE-1			
Trt No.	Treatment Name	Rate	Appl Code	1	2	3	4
		Rate Unit					
1	UNTREATED CHECK			0.0	0.0	0.0	0.0
2	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	42.5 d	95.0 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.25 % V/V	B				
3	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	37.5 d	93.8 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				
4	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	76.3 abc	93.8 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE EZ (2065)	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				
5	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	83.8 ab	91.3 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE MTZ SC (2030)	1 PT/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				

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.  
 Untreated treatment(s) 1 excluded from analysis.  
 Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
 ^Calculated from residual.

Pest Type			W, Weed	W, Weed			
Pest Code			AMATA	ERICA			
Pest Scientific Name			Amaranthus x ta>	Erigeron canad>			
Pest Name			Common waterhemp	Canada horseweed			
Crop Type, Code	C, GLXM06		C, GLXM06	C, GLXM06			
BBCH Scale	BSOY		BSOY	BSOY			
Crop Scientific Name	Glycine max GMO		Glycine max GMO	Glycine max GMO			
Crop Name	Soybean, Glyph.>		Soybean, Glyph.>	Soybean, Glyph.>			
Rating Date	7/21/2020		7/21/2020	8/11/2020			
Part Rated	PLANT, C		PLANT, P	PLANT, C			
Rating Type	PHYGEN		CONTRO	PHYGEN			
Rating Unit/Min/Max	%, 0, 100		%, 0, 100	%, 0, 100			
Number of Subsamples	1		1	1			
Data Entry Date	10/16/2020		10/16/2020	10/16/2020			
Rating Timing	0 DAB		0 DAB	21 DAT			
Days After First/Last Applic.	46, 46		46, 46	67, 21			
Plant-Eval Interval	26 DP-1		26 DP-1	47 DP-1			
Days After Emergence	18 DE-1		18 DE-1	39 DE-1			
Trt No.	Treatment Name	Rate Unit	Appl Code	1	2	3	4
6	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	68.8 bc	92.5 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	AUTHORITY MTZ	11 OZ WT/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	ANTHEM MAXX	2.5 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
7	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	57.5 cd	94.3 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	ZIDUA PRO	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
8	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	91.3 a	93.8 -	0.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE EZ (2065)	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				

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Pest Type		W, Weed	W, Weed	
Pest Code		AMATA	ERICA	
Pest Scientific Name		Amaranthus x ta>	Erigeron canad>	
Pest Name		Common waterhemp	Canada horseweed	
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06
BBCH Scale	BSOY	BSOY	BSOY	BSOY
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>
Rating Date	7/21/2020	7/21/2020	7/21/2020	8/11/2020
Part Rated	PLANT, C	PLANT, P	PLANT, P	PLANT, C
Rating Type	PHYGEN	CONTRO	CONTRO	PHYGEN
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020
Rating Timing	0 DAB	0 DAB	0 DAB	21 DAT
Days After First/Last Applic.	46, 46	46, 46	46, 46	67, 21
Plant-Eval Interval	26 DP-1	26 DP-1	26 DP-1	47 DP-1
Days After Emergence	18 DE-1	18 DE-1	18 DE-1	39 DE-1
Trt Treatment				
No. Name	Rate	Appl		
	Rate Unit	Code	1	2
9 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	0.0 -	88.8 ab
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A		90.0 -
FIERCE MTZ SC (2030)	1 PT/A	A		0.0 -
INDUCE	0.25 % V/V	A		
INTACT	0.5 % V/V	A		
ROUNDUP PWR MAX(S)	32 FL OZ/A	B		
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B		
PERPETUO	6 FL OZ/A	B		
INTACT	0.5 % V/V	B		
INDUCE	0.25 % V/V	B		
LSD P=.05				
Standard Deviation			22.50	3.79
CV	0.00		15.30	2.58
Grand Mean	0.0		22.41	2.77
Levene's F^	0.00		68.28	93.03
Levene's Prob(F)			0.691	0.622
Rank X2			0.679	0.733
P(Rank X2)			.	.
Skewness^			.	.
Kurtosis^			-0.8458*	-0.2036
Replicate F			0.2404	-0.3557
Replicate Prob(F)	0.000		1.641	1.859
Treatment F	1.0000		0.2102	0.1675
Treatment Prob(F)	0.000		7.269	1.680
	1.0000		0.0002	0.1683

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^Calculated from residual.

Pest Type	W, Weed	W, Weed		W, Weed			
Pest Code	AMATA	ERICA		AMATA			
Pest Scientific Name	Amaranthus x ta>	Erigeron canad>		Amaranthus x ta>			
Pest Name	Common waterhemp	Canada horseweed		Common waterhemp			
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06			
BBCH Scale	BSOY	BSOY	BSOY	BSOY			
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO			
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>			
Rating Date	8/11/2020	8/11/2020	9/1/2020	9/1/2020			
Part Rated	PLANT, P	PLANT, P	PLANT, C	PLANT, P			
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO			
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100			
Number of Subsamples	1	1	1	1			
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020			
Rating Timing	21 DAT	21 DAT	42 DAT	42 DAT			
Days After First/Last Applic.	67, 21	67, 21	88, 42	88, 42			
Plant-Eval Interval	47 DP-1	47 DP-1	68 DP-1	68 DP-1			
Days After Emergence	39 DE-1	39 DE-1	60 DE-1	60 DE-1			
Trt No.	Treatment Name	Rate	Appl Code	5	6	7	8
1	UNTREATED CHECK			0.0	0.0	0.0	0.0
2	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	96.3 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.25 % V/V	B				
3	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	96.3 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				
4	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	97.5 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE EZ (2065)	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				
5	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	96.3 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE MTZ SC (2030)	1 PT/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	INDUCE	0.25 % V/V	B				
	INTACT	0.5 % V/V	B				

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^Calculated from residual.

Pest Type	W, Weed	W, Weed	W, Weed				
Pest Code	AMATA	ERICA	AMATA				
Pest Scientific Name	Amaranthus x ta>	Erigeron canad>	Amaranthus x ta>				
Pest Name	Common waterhemp	Canada horseweed	Common waterhemp				
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06				
BBCH Scale	BSOY	BSOY	BSOY				
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO				
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>				
Rating Date	8/11/2020	8/11/2020	9/1/2020				
Part Rated	PLANT, P	PLANT, P	PLANT, C				
Rating Type	CONTRO	CONTRO	PHYGEN				
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100				
Number of Subsamples	1	1	1				
Data Entry Date	10/16/2020	10/16/2020	10/16/2020				
Rating Timing	21 DAT	21 DAT	42 DAT				
Days After First/Last Applic.	67, 21	67, 21	88, 42				
Plant-Eval Interval	47 DP-1	47 DP-1	68 DP-1				
Days After Emergence	39 DE-1	39 DE-1	60 DE-1				
Trt No.	5	6	7	8			
Treatment Name							
Rate							
Unit							
Appl Code							
6	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	98.8 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	AUTHORITY MTZ	11 OZ WT/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	ANTHEM MAXX	2.5 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
7	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	98.8 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	ZIDUA PRO	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
8	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	100.0 -	0.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE EZ (2065)	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				

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.  
Untreated treatment(s) 1 excluded from analysis.  
Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
^Calculated from residual.

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code	AMATA	ERICA	AMATA	AMATA
Pest Scientific Name	Amaranthus x ta>	Erigeron canad>	Amaranthus x ta>	Amaranthus x ta>
Pest Name	Common waterhemp	Canada horseweed	Common waterhemp	Common waterhemp
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06
BBCH Scale	BSOY	BSOY	BSOY	BSOY
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>
Rating Date	8/11/2020	8/11/2020	9/1/2020	9/1/2020
Part Rated	PLANT, P	PLANT, P	PLANT, C	PLANT, P
Rating Type	CONTRO	CONTRO	PHYGEN	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020
Rating Timing	21 DAT	21 DAT	42 DAT	42 DAT
Days After First/Last Applic.	67, 21	67, 21	88, 42	88, 42
Plant-Eval Interval	47 DP-1	47 DP-1	68 DP-1	68 DP-1
Days After Emergence	39 DE-1	39 DE-1	60 DE-1	60 DE-1
Trt Treatment				
No. Name	Rate	Appl		
	Rate Unit	Code	5	6
9 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A		0.0 -
FIERCE MTZ SC (2030)	1 PT/A	A		
INDUCE	0.25 % V/V	A		
INTACT	0.5 % V/V	A		
ROUNDUP PWR MAX(S)	32 FL OZ/A	B		
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B		
PERPETUO	6 FL OZ/A	B		
INTACT	0.5 % V/V	B		
INDUCE	0.25 % V/V	B		
LSD P=.05	4.51	.	.	.
Standard Deviation	3.07	0.00	0.00	0.00
CV	3.13	0.0	0.0	0.0
Grand Mean	97.97	100.00	0.00	100.00
Levene's F^	1.156	.	.	.
Levene's Prob(F)	0.364	.	.	.
Rank X2	.	.	.	.
P(Rank X2)	.	.	.	.
Skewness^	-0.9799*	.	.	.
Kurtosis^	1.2785	.	.	.
Replicate F	0.747	0.000	0.000	0.000
Replicate Prob(F)	0.5362	1.0000	1.0000	1.0000
Treatment F	1.126	0.000	0.000	0.000
Treatment Prob(F)	0.3840	1.0000	1.0000	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.  
Untreated treatment(s) 1 excluded from analysis.  
Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
^Calculated from residual.

Pest Type	W, Weed		W, Weed	W, Weed		
Pest Code	ERICA		AMATA	ERICA		
Pest Scientific Name	Erigeron canadensis		Amaranthus x ta	Erigeron canadensis		
Pest Name	Canada horseweed		Common waterhemp	Canada horseweed		
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06		
BBCH Scale	BSOY	BSOY	BSOY	BSOY		
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO		
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>		
Rating Date	9/1/2020	9/15/2020	9/15/2020	9/15/2020		
Part Rated	PLANT, P	PLANT, C	PLANT, P	PLANT, P		
Rating Type	CONTRO	PHYGEN	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1		
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020		
Rating Timing	42 DAT	56 DAT	56 DAT	56 DAT		
Days After First/Last Applic.	88, 42	102, 56	102, 56	102, 56		
Plant-Eval Interval	68 DP-1	82 DP-1	82 DP-1	82 DP-1		
Days After Emergence	60 DE-1	74 DE-1	74 DE-1	74 DE-1		
Trt Treatment No. Name	Rate	Appl Code	9	10	11	12
1 UNTREATED CHECK			0.0	0.0	0.0	0.0
2 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
INDUCE	0.25 % V/V	A				
INTACT	0.5 % V/V	A				
ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
INDUCE	0.25 % V/V	B				
INTACT	0.25 % V/V	B				
3 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
INDUCE	0.25 % V/V	A				
INTACT	0.5 % V/V	A				
ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
PERPETUO	6 FL OZ/A	B				
INDUCE	0.25 % V/V	B				
INTACT	0.5 % V/V	B				
4 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
FIERCE EZ (2065)	6 FL OZ/A	A				
INDUCE	0.25 % V/V	A				
INTACT	0.5 % V/V	A				
ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
INDUCE	0.25 % V/V	B				
INTACT	0.5 % V/V	B				
5 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
FIERCE MTZ SC (2030)	1 PT/A	A				
INDUCE	0.25 % V/V	A				
INTACT	0.5 % V/V	A				
ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
INDUCE	0.25 % V/V	B				
INTACT	0.5 % V/V	B				

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.  
Untreated treatment(s) 1 excluded from analysis.  
Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
^Calculated from residual.

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed			
Pest Code	ERICA	AMATA	ERICA	ERICA			
Pest Scientific Name	Erigeron canadensis	Amaranthus x ta	Erigeron canadensis	Erigeron canadensis			
Pest Name	Canada horseweed	Common waterhemp	Canada horseweed	Canada horseweed			
Crop Type, Code	C, GLXM06	C, GLXM06	C, GLXM06	C, GLXM06			
BBCH Scale	BSOY	BSOY	BSOY	BSOY			
Crop Scientific Name	Glycine max GMO	Glycine max GMO	Glycine max GMO	Glycine max GMO			
Crop Name	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>			
Rating Date	9/1/2020	9/15/2020	9/15/2020	9/15/2020			
Part Rated	PLANT, P	PLANT, C	PLANT, P	PLANT, P			
Rating Type	CONTRO	PHYGEN	CONTRO	CONTRO			
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100			
Number of Subsamples	1	1	1	1			
Data Entry Date	10/16/2020	10/16/2020	10/16/2020	10/16/2020			
Rating Timing	42 DAT	56 DAT	56 DAT	56 DAT			
Days After First/Last Applic.	88, 42	102, 56	102, 56	102, 56			
Plant-Eval Interval	68 DP-1	82 DP-1	82 DP-1	82 DP-1			
Days After Emergence	60 DE-1	74 DE-1	74 DE-1	74 DE-1			
Trt No.	Treatment Name	Rate Unit	Appl Code	9	10	11	12
6	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	AUTHORITY MTZ	11 OZ WT/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	ANTHEM MAXX	2.5 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
7	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	ZIDUA PRO	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				
8	ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -	100.0 -
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A				
	FIERCE EZ (2065)	6 FL OZ/A	A				
	INDUCE	0.25 % V/V	A				
	INTACT	0.5 % V/V	A				
	ROUNDUP PWR MAX(S)	32 FL OZ/A	B				
	XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B				
	PERPETUO	6 FL OZ/A	B				
	INTACT	0.5 % V/V	B				
	INDUCE	0.25 % V/V	B				

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.  
Untreated treatment(s) 1 excluded from analysis.  
Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
^Calculated from residual.

Pest Type			W, Weed		W, Weed		W, Weed
Pest Code			ERICA		AMATA		ERICA
Pest Scientific Name			Erigeron canadese>		Amaranthus x ta>		Erigeron canadese>
Pest Name			Canada horseweed		Common waterhemp		Canada horseweed
Crop Type, Code			C, GLXM06	C, GLXM06	C, GLXM06		C, GLXM06
BBCH Scale			BSOY	BSOY	BSOY		BSOY
Crop Scientific Name			Glycine max GMO	Glycine max GMO	Glycine max GMO		Glycine max GMO
Crop Name			Soybean, Glyph.>	Soybean, Glyph.>	Soybean, Glyph.>		Soybean, Glyph.>
Rating Date			9/1/2020	9/15/2020	9/15/2020		9/15/2020
Part Rated			PLANT, P	PLANT, C	PLANT, P		PLANT, P
Rating Type			CONTRO	PHYGEN	CONTRO		CONTRO
Rating Unit/Min/Max			%, 0, 100	%, 0, 100	%, 0, 100		%, 0, 100
Number of Subsamples			1	1	1		1
Data Entry Date			10/16/2020	10/16/2020	10/16/2020		10/16/2020
Rating Timing			42 DAT	56 DAT	56 DAT		56 DAT
Days After First/Last Applic.			88, 42	102, 56	102, 56		102, 56
Plant-Eval Interval			68 DP-1	82 DP-1	82 DP-1		82 DP-1
Days After Emergence			60 DE-1	74 DE-1	74 DE-1		74 DE-1
Trt Treatment			9	10	11		12
No. Name	Rate	Appl					
	Rate Unit	Code					
9 ROUNDUP PWR MAX(S)	32 FL OZ/A	A	100.0 -	0.0 -	100.0 -		100.0 -
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	A					
FIERCE MTZ SC (2030)	1 PT/A	A					
INDUCE	0.25 % V/V	A					
INTACT	0.5 % V/V	A					
ROUNDUP PWR MAX(S)	32 FL OZ/A	B					
XTENDIMAX WITH VAPORGRIP TECH	22 FL OZ/A	B					
PERPETUO	6 FL OZ/A	B					
INTACT	0.5 % V/V	B					
INDUCE	0.25 % V/V	B					
LSD P=.05			.	.	.		.
Standard Deviation			0.00	0.00	0.00		0.00
CV			0.0	0.0	0.0		0.0
Grand Mean			100.00	0.00	100.00		100.00
Levene's F^			.	.	.		.
Levene's Prob(F)			.	.	.		.
Rank X2			.	.	.		.
P(Rank X2)			.	.	.		.
Skewness^			.	.	.		.
Kurtosis^			.	.	.		.
Replicate F			0.000	0.000	0.000		0.000
Replicate Prob(F)			1.0000	1.0000	1.0000		1.0000
Treatment F			0.000	0.000	0.000		0.000
Treatment Prob(F)			1.0000	1.0000	1.0000		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.  
Untreated treatment(s) 1 excluded from analysis.  
Could not calculate LSD (% mean diff) for columns 1,4,6,7,8,9,10,11,12 because error mean square = 0.  
^Calculated from residual.

# Purdue Weed Science

Trial ID: 20S-MGS-SOY-15 Protocol ID: 20S-MGS-SOY-15 Project ID:	<b>Valent Actives in a Roundup Xtend System - Reduced Tillage</b> Location: Lafayette, IN    Trial Year: 2020 Investigator (Creator): Eric Ott  Study Director: Sponsor Contact:
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Pest Type  
W, Weed = Weed or volunteer crop

Pest Code  
AMATA, Amaranthus x tamariscinus, Common waterhemp = US  
ERICA, Erigeron canadensis, Canada horseweed = US

Crop Type Code  
C = EPP0 species (Bayer) codes

Part Rated  
PLANT = plant  
C = Crop is Part Rated  
P = Pest is Part Rated

Rating Type  
PHYGEN = phytotoxicity - general / injury  
CONTRO = control / burndown or knockdown

Rating Unit/Min/Max  
%, 0, 100 = percent

Plant-Eval Interval  
26 DP-1 = 1 GLXM06 6/25/2020  
47 DP-1 = 1 GLXM06 6/25/2020  
68 DP-1 = 1 GLXM06 6/25/2020  
82 DP-1 = 1 GLXM06 6/25/2020