

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09 Location: Meigs
 Protocol ID: 19S-MGS-SOY-09 Investigator (Creator): Dr. Bill Johnson
 Project ID: VUSA2019FIERCCEMD64.03 Study Director: Dustin Johnson & Marcelo Zimmer
 Sponsor Contact: E. Ott - Valent

General Trial Information

Study Director: Dustin Johnson & Marcelo Zimmer **Title:** Research Associate
Investigator: Dr. Bill Johnson **Title:** Professor

Discipline: H herbicide
Trial Status: E established

ARM Trial Created On: Apr-23-2019
Initiation Date: May-16-2019

Trial Location

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

Latitude of LL Corner °: 40.27152 N
Longitude of LL Corner °: -86.88143 W

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR

Study Director: Dustin Johnson & Marcelo Zimmer **Title:** Research Associate
Organization: Purdue University
Address 1: 915 W. State Street
Country: USA United States **E-mail:** john1357@purdue.edu
City: West Lafayette, IN **Postal Code:** 47907

Role: INVEST

Investigator: Dr. Bill Johnson **Title:** Professor
Organization: Purdue University
Address 1: 915 W. State Street
Country: USA United States **E-mail:** wgj@purdue.edu
City: West Lafayette, IN **Postal Code:** 47907

Role: SPONSR

Sponsor: E. Ott - Valent

Role: COOPER

Cooperator: Jay Young **Title:** Superintendent
Organization: Purdue University
Address 1: 8343 US 231 S **Phone No.:** 765-538-3422
Country: USA United States **Fax No.:** 765-538-3423
City: Lafayette **E-mail:** jayyoung@purdue.edu
State/Prov: IN **Postal Code:** 47909

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Crop Description

Crop 1: C	GLXMA Glycine max	Soybean	BBCH Scale: BSOY
	Entry Date: May-20-2019		
	Variety: XTEND AG30X8		
	Attributes: DICAMBA/RR		
	Planting Date: May-16-2019	Planting Rate: 150000	S/A
	Depth: 1.75 IN		
	Rows per Plot: 4	Planting Method: PLANTD	planted
	Row Spacing: 30 IN	Planting Equipment: PP	plot planter
	Soil Temperature: 72 F	Soil Moisture: SLIWET	slightly wet, moist
	Emergence Date: May-27-2019		

Pest Description

Pest 1 Type: W	Code: AMATA	Amaranthus tamariscinus	Entry Date: Jun-14-2019
	Common Name: Common waterhemp		Stage Scale: BBCH
Pest 2 Type: W	Code: SETFA	Setaria faberi	Entry Date: Jun-14-2019
	Common Name: Giant foxtail		Stage Scale: BBCH

Site and Design

Treated Plot Width: 6.67 FT	Site Type: FIELD	field
Treated Plot Length: 25 FT	Experimental Unit: 1	PLOT plot
Treated Plot Area: 166.75 FT ²	Treatments: 10	Tillage Type: NOTILL
Replications: 4		Study Design: RACOB
		Randomized Co

Soil Description

Description Name: MGS-S3		
% Sand: 40.7	% OM: 2.3	Texture: L loam
% Silt: 38.6	pH: 6.62	Soil Name: Starks-Fincastle complex
% Clay: 20.7	CEC: 8.5	Fert. Level: G good

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Application Description

	A	B	C	D
Application Date	May-16-2019	Jun-11-2019	Jun-26-2019	Jul-1-2019
Appl. Start Time	3:00 PM	12:42 PM	1:40 PM	12:50 PM
Appl. Stop Time	3:15 PM	12:46 PM	2:00 PM	12:55 PM
Interval to Prev. Appl.		26 DAYS	15 DAYS	5 DAYS
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing		POSPOS	POSPOS	POSPOS
Application Placement	BROADC	BROADC	BROADC	BROADC
Applied By	C. HODGSKISS	J. HAARMANN	L. MAIA	J. HAARMANN
Appl. Entry Date	May-20-2019	Jun-14-2019	Jun-27-2019	Jul-2-2019
Air Temperature Start, Stop	77 C	76	87 F	91 F
% Relative Humidity Start, Stop	55	35	50	62
Wind Velocity+Dir. Start	3.5 MPH S	3 MPH SW	3 MPH SW	3 MPH S
Soil Temperature	74 F	75 F	88 F	88 F
Soil Moisture	SLIWET	DRY	DRY	VERDRY
% Cloud Cover	90	40	10	0

Crop Stage At Each Application

	A	B	C	D
Crop 1 Code, BBCH Scale	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Days after Emergence	-11	15	30	35
Stage Scale Used	BBCH	BBCH	BBCH	BBCH
Stage Majority, Percent	00	11	14	15
Stage Minimum, Percent	00	10	13	14
Stage Maximum, Percent	00	11	15	51
Diameter Average	0 IN	0 IN	0 IN	0 IN
Height Average	0 IN	3.5 IN	8 IN	10 IN
Height Minimum, Maximum	0 0	3 4	6 10	6 12

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Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09

Location: Meigs

Protocol ID: 19S-MGS-SOY-09

Investigator (Creator): Dr. Bill Johnson

Project ID: VUSA2019FIERCCEMD64.03

Study Director: Dustin Johnson & Marcelo Zimmer

Sponsor Contact: E. Ott - Valent

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale	AMATA W BBCH	AMATA W BBCH	AMATA W BBCH
Stage Majority, Percent	00	16	15
Stage Minimum, Percent	00	10	10
Stage Maximum, Percent	00	19	18
Diameter Average	00 IN	00 IN	00 IN
Height Average	00 IN	3 IN	2 IN
Height Minimum, Maximum	00 00	0 6	0 4
Density Average	00 FT2	20 FT2	5 FT2
Density Minimum, Maximum	00 00	10 30	0 8
Pest 2 Code, Type, Scale	SETFA W BBCH	SETFA W BBCH	SETFA W BBCH
Stage Majority, Percent	00	14	14
Stage Minimum, Percent	00	10	10
Stage Maximum, Percent	00	16	18
Diameter Average	00 IN	00 IN	00 IN
Height Average	00 IN	5 IN	3 IN
Height Minimum, Maximum	00 00	0 6	0 6
Density Average	00 FT2	4 FT2	3 FT2
Density Minimum, Maximum	00 00	0 20	0 6

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	D
Pest 1 Code, Type, Scale	AMATA W BBCH
Stage Majority, Percent	19
Stage Minimum, Percent	10
Stage Maximum, Percent	19
Diameter Average	00 IN
Height Average	6 IN
Height Minimum, Maximum	0 12
Density Average	12 FT2
Density Minimum, Maximum	5 20
Pest 2 Code, Type, Scale	SETFA W BBCH
Stage Majority, Percent	11
Stage Minimum, Percent	10
Stage Maximum, Percent	12
Diameter Average	00 IN
Height Average	2 IN
Height Minimum, Maximum	0 3
Density Average	3 FT2
Density Minimum, Maximum	0 5

Application Equipment

	A	B	C	D
Appl. Equipment	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK	CO2 BACKPACK
Equipment Type	BACSPR	BACSPR	BACSPR	BACSPR
Operation Pressure	27 PSI	27 PSI	27 PSI	27 PSI
Nozzle Type	FLAFXR	FLAFXR	FLAFXR	FLAFXR
Nozzle Size	XR8002	XR8002	XR8002	XR8002
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN
Nozzles/Row	4	4	4	4
Boom Length	6.67 FT	6.67 FT	6.67 FT	6.67 FT
Boom Height	17 IN	17 IN	17 IN	17 IN
Ground Speed	3 MPH	3 MPH	3 MPH	3 MPH
Carrier	WATER	WATER	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Size	946 mL	946 mL	946 mL	946 mL
Propellant	COMCO2	COMCO2	COMCO2	COMCO2

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Protocol ID: 19S-MGS-SOY-09

Investigator (Creator): Dr. Bill Johnson

Project ID: VUSA2019FIERCCEMD64.03

Study Director: Dustin Johnson & Marcelo Zimmer

Sponsor Contact: E. Ott - Valent

Context	Date	By	Notes
STATUS	Apr-23-2019	Dr. Bill Johnson	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2019	Dr. Bill Johnson	Automatically added by ARM: Trial Status updated to 'E' when Initiation Date entered.
MAINT	May-5-2019	D. JOHNSON	Burndown 32 oz of Roundup Power Max, 1 pt of 2,4-D Shredder LV-4 (ester formulation), and 8.5 lbs/100 gal Dry AMS @ 15 gpa, 10 mph @ 40 psi with Wilger SR11008 nozzles using PWM on a UTV with a 30 ft boom with 20" spacing. Burndown 32 oz of Roundup Power
WEATH	May-16-2019	D. JOHNSON	Shortly after PRE "A" application a storm came through dropping approx. .3" of rain that was unexpected.
APPLIC	Jun-26-2019	D. JOHNSON	Application "C" was made a little early due to slow AMATA emergence, but AMBTR that was in plots had blown through application timing. AMBTR not in ratings because not targeted weed of site and trying to eradicate it.
GENTRI	Jul-9-2019	D. JOHNSON	Plot #103 rating crop injury was thrown out due to contamination.

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Reps: 4

Plots: 6.67 by 25 feet

Appl. Amount: 15 GAL/AC

Mix Size: 946 mL (total for 4 plots; minimum=869.4 mL)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate Unit	Amt Product to Measure	Rep 1	2	3	4
1	UNTREATED CHECK						101	303	502	704
2	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx	102	402	604	803
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
3	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx	103	403	601	703
	PERPETUO	2.3 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
4	FIERCE EZ	3.04 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx	104	305	602	701
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
5	FIERCE MTZ	2.64 LBA/GAL	SC		16 fl oz/a	7.883 mL/mx	105	304	503	804
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
6	FIERCE EZ	3.04 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx	201	401	605	802
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	PERPETUO	2.3 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
7	FIERCE MTZ	2.64 LBA/GAL	SC		16 fl oz/a	7.883 mL/mx	202	405	603	805
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	PERPETUO	2.3 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
8	AUTHORITY MTZ	45 %	WG		11 oz/a	5.195 g/mx	203	404	505	702
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	ANTHEM MAXX	4.3 LB/GAL	SC		2.5 fl oz/a	1.232 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				
9	ZIDUA PRO	4.09 LB/GAL	SC		4.5 fl oz/a	2.217 mL/mx	204	302	504	801
	ROUNDUP POWERMAX	4.5 LBAE/GAL	SL		32 fl oz/a	15.77 mL/mx				
	PERPETUO	2.3 LBA/GAL	SC		6 fl oz/a	2.956 mL/mx				
	ACTIVATOR 90 NIS	100 %	SL		0.25 % v/v	2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL	L		2.5 % v/v	23.65 mL/mx				

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Reps: 4

Plots: 6.67 by 25 feet

Appl. Amount: 15 GAL/AC

Mix Size: 946 mL (total for 4 plots; minimum=869.4 mL)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Amt Product to Measure	Rep 1	2	3	4
10	FIERCE XLT	62.41 %		WG	4 oz/a		1.889 g/mx	205	301	501	705
	ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 fl oz/a		15.77 mL/mx				
	PERPETUO	2.3 LBA/GAL		SC	6 fl oz/a		2.956 mL/mx				
	ACTIVATOR 90 NIS	100 %		SL	0.25 % v/v		2.365 mL/mx				
	N-PAK AMS	3.4 LBA/GAL		L	2.5 % v/v		23.65 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 Unit	Form Type	Lot Code
216.791	mL	ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	
325.152	mL	N-PAK AMS	3.4	LBA/GAL	L	
26.603	mL	ACTIVATOR 90 NIS	100	%	SL	
18.477	mL	PERPETUO	2.3	LBA/GAL	SC	
7.391	mL	FIERCE EZ	3.04	LBA/GAL	SC	
19.708	mL	FIERCE MTZ	2.64	LBA/GAL	SC	
6.494	g	AUTHORITY MTZ	45	%	WG	
1.540	mL	ANTHEM MAXX	4.3	LB/GAL	SC	
2.771	mL	ZIDUA PRO	4.09	LB/GAL	SC	
2.362	g	FIERCE XLT	62.41	%	WG	

* 'Per area' calculations based on application amount= 15 GAL/AC, mix size= 946 mL (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

* 'Per volume' calculations use spray volume= 15 GAL/AC, mix size= 946 mL.

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Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-6-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-25-2019
Rating Timing	A1	A1
Days After First/Last Applic.	21 21	21 21
Plant-Eval Interval	21 DP-1	21 DP-1
Days After Emergence	10 DE-1	10 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	1	2
1 UNTREATED CHECK	0	0
2 ROUNDUP POWERMAX 32 fl oz/a B N-PAK AMS 2.5 % v/v B ROUNDUP POWERMAX 32 fl oz/a D ACTIVATOR 90 NIS 0.25 % v/v D N-PAK AMS 2.5 % v/v D	0 d	0 c
3 ROUNDUP POWERMAX 32 fl oz/a B PERPETUO 6 fl oz/a B N-PAK AMS 2.5 % v/v B ROUNDUP POWERMAX 32 fl oz/a D ACTIVATOR 90 NIS 0.25 % v/v D N-PAK AMS 2.5 % v/v D	0 d	0 c
4 FIERCE EZ 6 fl oz/a A ROUNDUP POWERMAX 32 fl oz/a C ACTIVATOR 90 NIS 0.25 % v/v C N-PAK AMS 2.5 % v/v C	14 b	100 a

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.

Missing data estimates are included in columns: Average=4,7

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Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-6-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-25-2019
Rating Timing	A1	A1
Days After First/Last Applic.	21 21	21 21
Plant-Eval Interval	21 DP-1	21 DP-1
Days After Emergence	10 DE-1	10 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
		1 2
5 FIERCE MTZ	16 fl oz/a A	20 a 100 a
ROUNDUP POWERMAX	32 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
6 FIERCE EZ	6 fl oz/a A	15 ab 100 a
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
7 FIERCE MTZ	16 fl oz/a A	20 a 100 a
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	

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Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
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Part Rated	PLOT -	PLOT -
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Rating Unit	%	%
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Assessed By	J. HAARMANN	J. HAARMANN
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Days After First/Last Applic.	21 21	21 21
Plant-Eval Interval	21 DP-1	21 DP-1
Days After Emergence	10 DE-1	10 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	1	2
8 AUTHORITY MTZ	11 oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	5 cd
ANTHEM MAXX	2.5 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	97 b
9 ZIDUA PRO	4.5 fl oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	8 c
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	99 a

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Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-6-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-25-2019
Rating Timing	A1	A1
Days After First/Last Applic.	21 21	21 21
Plant-Eval Interval	21 DP-1	21 DP-1
Days After Emergence	10 DE-1	10 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	1	2
10 FIERCE XLT	4 oz/a A	100 a
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
LSD P=.05	5.9	1.4
Standard Deviation	4.0	0.9
CV	35.65	1.22
Grand Mean	11.3	77.2
Levene's F	1.382	0.993
Levene's Prob(F)	0.249	0.464
Rank X2	.	.
P(Rank X2)	.	.
Skewness	0.1668	-1.3917*
Kurtosis	-1.4166	-0.0645
Replicate F	4.302	2.772

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-6-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-25-2019
Rating Timing	A1	A1
Days After First/Last Applic.	21 21	21 21
Plant-Eval Interval	21 DP-1	21 DP-1
Days After Emergence	10 DE-1	10 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	1	2
Replicate Prob(F)	0.0145	0.0634
Treatment F	17.288	8697.505
Treatment Prob(F)	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.

Untreated treatment(s) 1 excluded from analysis.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	
Pest Code	SETFA	
Pest Scientific Name	Setaria faberi	
Pest Name	Giant foxtail	
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	PHYGEN
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-27-2019
Rating Timing	A1	A2
Days After First/Last Applic.	21 21	41 15
Plant-Eval Interval	21 DP-1	41 DP-1
Days After Emergence	10 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate	Appl
No. Name	Rate Unit	Code
		3
		4
1 UNTREATED CHECK		0
2 ROUNDUP POWERMAX	32 fl oz/a B	0 c
N-PAK AMS	2.5 % v/v B	
ROUNDUP POWERMAX	32 fl oz/a D	
ACTIVATOR 90 NIS	0.25 % v/v D	
N-PAK AMS	2.5 % v/v D	
3 ROUNDUP POWERMAX	32 fl oz/a B	0 c
PERPETUO	6 fl oz/a B	
N-PAK AMS	2.5 % v/v B	
ROUNDUP POWERMAX	32 fl oz/a D	
ACTIVATOR 90 NIS	0.25 % v/v D	
N-PAK AMS	2.5 % v/v D	
4 FIERCE EZ	6 fl oz/a A	99 a
ROUNDUP POWERMAX	32 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	13 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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	
Pest Code	SETFA	
Pest Scientific Name	Setaria faberi	
Pest Name	Giant foxtail	
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	PHYGEN
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-27-2019
Rating Timing	A1	A2
Days After First/Last Applic.	21 21	41 15
Plant-Eval Interval	21 DP-1	41 DP-1
Days After Emergence	10 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate	Appl
No. Name	Rate Unit	Code
		3
		4
5 FIERCE MTZ	16 fl oz/a A	100 a
ROUNDUP POWERMAX	32 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	9 bc
6 FIERCE EZ	6 fl oz/a A	100 a
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	10 bc
7 FIERCE MTZ	16 fl oz/a A	100 a
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	9 bc

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	
Pest Code	SETFA	
Pest Scientific Name	Setaria faberi	
Pest Name	Giant foxtail	
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	PHYGEN
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-27-2019
Rating Timing	A1	A2
Days After First/Last Applic.	21 21	41 15
Plant-Eval Interval	21 DP-1	41 DP-1
Days After Emergence	10 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit Appl Code	
	3	4
8 AUTHORITY MTZ	11 oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	
ANTHEM MAXX	2.5 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
	96 b	0 c
9 ZIDUA PRO	4.5 fl oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
	100 a	0 c

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	
Pest Code	SETFA	
Pest Scientific Name	Setaria faberi	
Pest Name	Giant foxtail	
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	PHYGEN
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-27-2019
Rating Timing	A1	A2
Days After First/Last Applic.	21 21	41 15
Plant-Eval Interval	21 DP-1	41 DP-1
Days After Emergence	10 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit	Appl Code
		3
		4
10 FIERCE XLT	4 oz/a A	100 a
ROUNDUP POWERMAX	32 fl oz/a C	24 a
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
LSD P=.05	1.6	11.2
Standard Deviation	1.1	7.7
CV	1.42	108.12
Grand Mean	77.2	7.1
Levene's F	3.693	6.051
Levene's Prob(F)	0.005*	0.001*
Rank X2	.	.
P(Rank X2)	.	.
Skewness	-1.3896*	0.9487*
Kurtosis	-0.0673	-0.6427
Replicate F	1.572	1.938

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	
Pest Code	SETFA	
Pest Scientific Name	Setaria faberi	
Pest Name	Giant foxtail	
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-6-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	PHYGEN
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-25-2019	Jun-27-2019
Rating Timing	A1	A2
Days After First/Last Applic.	21 21	41 15
Plant-Eval Interval	21 DP-1	41 DP-1
Days After Emergence	10 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit Appl Code	
	3	4
Replicate Prob(F)	0.2220	0.1530
Treatment F	6378.712	4.449
Treatment Prob(F)	0.0001	0.0025

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

	W Weed	W Weed
Pest Type	AMATA	SETFA
Pest Code	AMATA	SETFA
Pest Scientific Name	Amaranthus tamariscinus	Setaria faberi
Pest Name	Common waterhemp	Giant foxtail
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-26-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-25-2019
Rating Timing	A2	A2
Days After First/Last Applic.	41 15	41 15
Plant-Eval Interval	41 DP-1	41 DP-1
Days After Emergence	30 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit	Appl Code
		5
		6
1 UNTREATED CHECK	0	0
2 ROUNDUP POWERMAX 32 fl oz/a B	75 c	100 a
N-PAK AMS 2.5 % v/v B		
ROUNDUP POWERMAX 32 fl oz/a D		
ACTIVATOR 90 NIS 0.25 % v/v D		
N-PAK AMS 2.5 % v/v D		
3 ROUNDUP POWERMAX 32 fl oz/a B	83 bc	100 a
PERPETUO 6 fl oz/a B		
N-PAK AMS 2.5 % v/v B		
ROUNDUP POWERMAX 32 fl oz/a D		
ACTIVATOR 90 NIS 0.25 % v/v D		
N-PAK AMS 2.5 % v/v D		
4 FIERCE EZ 6 fl oz/a A	93 a	78 c
ROUNDUP POWERMAX 32 fl oz/a C		
ACTIVATOR 90 NIS 0.25 % v/v C		
N-PAK AMS 2.5 % v/v C		

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	W Weed
Pest Code	AMATA	SETFA
Pest Scientific Name	Amaranthus tamariscinus	Setaria faberi
Pest Name	Common waterhemp	Giant foxtail
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-26-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-25-2019
Rating Timing	A2	A2
Days After First/Last Applic.	41 15	41 15
Plant-Eval Interval	41 DP-1	41 DP-1
Days After Emergence	30 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Appl Rate Unit Code	
	5	6
5 FIERCE MTZ	16 fl oz/a A	91 ab
ROUNDUP POWERMAX	32 fl oz/a C	85 bc
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
6 FIERCE EZ	6 fl oz/a A	93 a
ROUNDUP POWERMAX	32 fl oz/a C	94 ab
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
7 FIERCE MTZ	16 fl oz/a A	91 ab
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	W Weed
Pest Code	AMATA	SETFA
Pest Scientific Name	Amaranthus tamariscinus	Setaria faberi
Pest Name	Common waterhemp	Giant foxtail
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-26-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-25-2019
Rating Timing	A2	A2
Days After First/Last Applic.	41 15	41 15
Plant-Eval Interval	41 DP-1	41 DP-1
Days After Emergence	30 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit Appl Code	
		5
8 AUTHORITY MTZ	11 oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	88 ab
ANTHEM MAXX	2.5 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	78 c
9 ZIDUA PRO	4.5 fl oz/a A	
ROUNDUP POWERMAX	32 fl oz/a C	90 ab
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	94 ab

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	W Weed
Pest Code	AMATA	SETFA
Pest Scientific Name	Amaranthus tamariscinus	Setaria faberi
Pest Name	Common waterhemp	Giant foxtail
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-26-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-25-2019
Rating Timing	A2	A2
Days After First/Last Applic.	41 15	41 15
Plant-Eval Interval	41 DP-1	41 DP-1
Days After Emergence	30 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Unit Code	
	5	6
10 FIERCE XLT	4 oz/a A	96 a
ROUNDUP POWERMAX	32 fl oz/a C	96 ab
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
LSD P=.05	8.8	13.8
Standard Deviation	6.0	9.5
CV	6.8	10.41
Grand Mean	88.7	90.9
Levene's F	0.747	3.106
Levene's Prob(F)	0.651	0.013*
Rank X2	.	.
P(Rank X2)	.	.
Skewness	-1.0446*	-2.2853*
Kurtosis	0.6665	5.4732*
Replicate F	2.155	2.795

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed	W Weed
Pest Code	AMATA	SETFA
Pest Scientific Name	Amaranthus tamariscinus	Setaria faberi
Pest Name	Common waterhemp	Giant foxtail
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jun-26-2019	Jun-26-2019
Part Rated	PLOT -	PLOT -
Rating Type	CONTRO	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-25-2019
Rating Timing	A2	A2
Days After First/Last Applic.	41 15	41 15
Plant-Eval Interval	41 DP-1	41 DP-1
Days After Emergence	30 DE-1	30 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment		
No. Name	Rate Appl Rate Unit Code	
	5	6
Replicate Prob(F)	0.1197	0.0619
Treatment F	4.479	3.287
Treatment Prob(F)	0.0020	0.0112

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Trt No.	Treatment Name	Rate	Appl Code	7	8
1	UNTREATED CHECK			0	0
2	ROUNDUP POWERMAX N-PAK AMS ROUNDUP POWERMAX ACTIVATOR 90 NIS N-PAK AMS	32 fl oz/a B 2.5 % v/v B 32 fl oz/a D 0.25 % v/v D 2.5 % v/v D		0 b	56 c
3	ROUNDUP POWERMAX PERPETUO N-PAK AMS ROUNDUP POWERMAX ACTIVATOR 90 NIS N-PAK AMS	32 fl oz/a B 6 fl oz/a B 2.5 % v/v B 32 fl oz/a D 0.25 % v/v D 2.5 % v/v D		0 b	66 b
4	FIERCE EZ ROUNDUP POWERMAX ACTIVATOR 90 NIS N-PAK AMS	6 fl oz/a A 32 fl oz/a C 0.25 % v/v C 2.5 % v/v C		3 b	95 a

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jul-9-2019	Jul-9-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-27-2019
Rating Timing	A3	A3
Days After First/Last Applic.	54 8	54 8
Plant-Eval Interval	54 DP-1	54 DP-1
Days After Emergence	43 DE-1	43 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment No. Name	Rate Appl Rate Unit Code	
		7 8
5 FIERCE MTZ	16 fl oz/a A	5 b
ROUNDUP POWERMAX	32 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	95 a
6 FIERCE EZ	6 fl oz/a A	9 b
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	94 a
7 FIERCE MTZ	16 fl oz/a A	5 b
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	99 a

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jul-9-2019	Jul-9-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-27-2019
Rating Timing	A3	A3
Days After First/Last Applic.	54 8	54 8
Plant-Eval Interval	54 DP-1	54 DP-1
Days After Emergence	43 DE-1	43 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate	Appl
No. Name	Rate Unit	Code
		7
		8
8 AUTHORITY MTZ	11 oz/a A	0 b
ROUNDUP POWERMAX	32 fl oz/a C	
ANTHEM MAXX	2.5 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	97 a
9 ZIDUA PRO	4.5 fl oz/a A	0 b
ROUNDUP POWERMAX	32 fl oz/a C	
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	96 a

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jul-9-2019	Jul-9-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-27-2019
Rating Timing	A3	A3
Days After First/Last Applic.	54 8	54 8
Plant-Eval Interval	54 DP-1	54 DP-1
Days After Emergence	43 DE-1	43 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	7	8
10 FIERCE XLT	4 oz/a A	19 a
ROUNDUP POWERMAX	32 fl oz/a C	100 a
PERPETUO	6 fl oz/a C	
ACTIVATOR 90 NIS	0.25 % v/v C	
N-PAK AMS	2.5 % v/v C	
LSD P=.05	9.8	9.7
Standard Deviation	6.7	6.6
CV	149.68	7.47
Grand Mean	4.4	88.6
Levene's F	1.202	1.972
Levene's Prob(F)	0.337	0.09
Rank X2	.	.
P(Rank X2)	.	.
Skewness	1.3875*	-1.6825*
Kurtosis	0.2197	1.4902
Replicate F	1.046	1.619

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type		W Weed
Pest Code		AMATA
Pest Scientific Name		Amaranthus tamariscinus
Pest Name		Common waterhemp
Crop Type, Code	C GLXMA	C GLXMA
BBCH Scale	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max
Crop Name	Soybean	Soybean
Rating Date	Jul-9-2019	Jul-9-2019
Part Rated	PLOT -	PLOT -
Rating Type	PHYGEN	CONTRO
Rating Unit	%	%
Number of Subsamples	1	1
Assessed By	J. HAARMANN	J. HAARMANN
Data Entry Date	Jun-27-2019	Jun-27-2019
Rating Timing	A3	A3
Days After First/Last Applic.	54 8	54 8
Plant-Eval Interval	54 DP-1	54 DP-1
Days After Emergence	43 DE-1	43 DE-1
ARM Action Codes	P	P
Number of Decimals	0	0
Trt Treatment	Rate Appl	
No. Name	Rate Unit Code	
	7	8
Replicate Prob(F)	0.3919	0.2112
Treatment F	3.464	22.755
Treatment Prob(F)	0.0098	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.

Untreated treatment(s) 1 excluded from analysis.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed
Pest Code	SETFA
Pest Scientific Name	Setaria faberi
Pest Name	Giant foxtail
Crop Type, Code	C GLXMA
BBCH Scale	BSOY
Crop Scientific Name	Glycine max
Crop Name	Soybean
Rating Date	Jul-9-2019
Part Rated	PLOT -
Rating Type	CONTRO
Rating Unit	%
Number of Subsamples	1
Assessed By	J. HAARMANN
Data Entry Date	Jun-25-2019
Rating Timing	A3
Days After First/Last Applic.	54 8
Plant-Eval Interval	54 DP-1
Days After Emergence	43 DE-1
ARM Action Codes	P
Number of Decimals	0
Trt Treatment	Rate Appl
No. Name	Rate Unit Code
1 UNTREATED CHECK	0
2 ROUNDUP POWERMAX	32 fl oz/a B
N-PAK AMS	2.5 % v/v B
ROUNDUP POWERMAX	32 fl oz/a D
ACTIVATOR 90 NIS	0.25 % v/v D
N-PAK AMS	2.5 % v/v D
3 ROUNDUP POWERMAX	32 fl oz/a B
PERPETUO	6 fl oz/a B
N-PAK AMS	2.5 % v/v B
ROUNDUP POWERMAX	32 fl oz/a D
ACTIVATOR 90 NIS	0.25 % v/v D
N-PAK AMS	2.5 % v/v D
4 FIERCE EZ	6 fl oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed
Pest Code	SETFA
Pest Scientific Name	Setaria faberi
Pest Name	Giant foxtail
Crop Type, Code	C GLXMA
BBCH Scale	BSOY
Crop Scientific Name	Glycine max
Crop Name	Soybean
Rating Date	Jul-9-2019
Part Rated	PLOT -
Rating Type	CONTRO
Rating Unit	%
Number of Subsamples	1
Assessed By	J. HAARMANN
Data Entry Date	Jun-25-2019
Rating Timing	A3
Days After First/Last Applic.	54 8
Plant-Eval Interval	54 DP-1
Days After Emergence	43 DE-1
ARM Action Codes	P
Number of Decimals	0
Trt Treatment No. Name	Rate Appl Rate Unit Code
5 FIERCE MTZ	16 fl oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C
6 FIERCE EZ	6 fl oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
PERPETUO	6 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C
7 FIERCE MTZ	16 fl oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
PERPETUO	6 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed
Pest Code	SETFA
Pest Scientific Name	Setaria faberi
Pest Name	Giant foxtail
Crop Type, Code	C GLXMA
BBCH Scale	BSOY
Crop Scientific Name	Glycine max
Crop Name	Soybean
Rating Date	Jul-9-2019
Part Rated	PLOT -
Rating Type	CONTRO
Rating Unit	%
Number of Subsamples	1
Assessed By	J. HAARMANN
Data Entry Date	Jun-25-2019
Rating Timing	A3
Days After First/Last Applic.	54 8
Plant-Eval Interval	54 DP-1
Days After Emergence	43 DE-1
ARM Action Codes	P
Number of Decimals	0
Trt Treatment	Rate Appl
No. Name	Rate Unit Code
	9
8 AUTHORITY MTZ	11 oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
ANTHEM MAXX	2.5 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C
9 ZIDUA PRO	4.5 fl oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
PERPETUO	6 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed
Pest Code	SETFA
Pest Scientific Name	Setaria faberi
Pest Name	Giant foxtail
Crop Type, Code	C GLXMA
BBCH Scale	BSOY
Crop Scientific Name	Glycine max
Crop Name	Soybean
Rating Date	Jul-9-2019
Part Rated	PLOT -
Rating Type	CONTRO
Rating Unit	%
Number of Subsamples	1
Assessed By	J. HAARMANN
Data Entry Date	Jun-25-2019
Rating Timing	A3
Days After First/Last Applic.	54 8
Plant-Eval Interval	54 DP-1
Days After Emergence	43 DE-1
ARM Action Codes	P
Number of Decimals	0
Trt Treatment	
No. Name	Rate Appl Rate Unit Code
10 FIERCE XLT	4 oz/a A
ROUNDUP POWERMAX	32 fl oz/a C
PERPETUO	6 fl oz/a C
ACTIVATOR 90 NIS	0.25 % v/v C
N-PAK AMS	2.5 % v/v C
LSD P=.05	1.6
Standard Deviation	1.1
CV	1.11
Grand Mean	99.7
Levene's F	0.00
Levene's Prob(F)	0.00*
Rank X2	.
P(Rank X2)	.
Skewness	-4.0514*
Kurtosis	15.2595*
Replicate F	2.286

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type	W Weed
Pest Code	SETFA
Pest Scientific Name	Setaria faberi
Pest Name	Giant foxtail
Crop Type, Code	C GLXMA
BBCH Scale	BSOY
Crop Scientific Name	Glycine max
Crop Name	Soybean
Rating Date	Jul-9-2019
Part Rated	PLOT -
Rating Type	CONTRO
Rating Unit	%
Number of Subsamples	1
Assessed By	J. HAARMANN
Data Entry Date	Jun-25-2019
Rating Timing	A3
Days After First/Last Applic.	54 8
Plant-Eval Interval	54 DP-1
Days After Emergence	43 DE-1
ARM Action Codes	P
Number of Decimals	0
Trt Treatment	Rate Appl
No. Name	Rate Unit Code
	9
Replicate Prob(F)	0.1044
Treatment F	1.000
Treatment Prob(F)	0.4613

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.

Missing data estimates are included in columns: Average=4,7

Purdue Weed Science

Valent Herbicide Programs for Control of Waterhemp in Xtend Soybean

Trial ID: 19S-MGS-SOY-09	Location: Meigs
Protocol ID: 19S-MGS-SOY-09	Investigator (Creator): Dr. Bill Johnson
Project ID: VUSA2019FIERCCEMD64.03	Study Director: Dustin Johnson & Marcelo Zimmer
	Sponsor Contact: E. Ott - Valent

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMATA, Amaranthus tamariscinus, Common waterhemp = US

SETFA, Setaria faberi, Giant foxtail = US

Crop Type, Code

C = EPPO species (Bayer) codes

GLXMA, BSOY, Glycine max, Soybean = US

Part Rated

PLOT = plot

Rating Type

PHYGEN = phytotoxicity - general / injury

CONTRO = control / burndown or knockdown

Rating Unit

% = percent

Rating Timing

A1 = 1st Assessment According to Trial Schedule

A2 = 2nd Assessment According to trial Schedule

A3 = 3rd Assessment According to Trial Schedule

Plant-Eval Interval

21 DP-1 = 1 GLXMA May-16-2019

41 DP-1 = 1 GLXMA May-16-2019

54 DP-1 = 1 GLXMA May-16-2019

ARM Action Codes

P = Rating scale of 0 to 100 (e.g. % control or injury)