

Authority Brand Programs in Soybeans  
Trial ID: 19 PRPOST 2 Location: Western Branch G-6 Trial Year: 2019  
Protocol ID: 19 PRPOST 2 Investigator: Dr. Mark M. Loux  
Project ID: USA-19-769A Study Director: Bryan Reeb  
Sponsor Contact: Drake Copeland, FMC

**General Trial Information**

**Study Director:** Bryan Reeb  
**Investigator:** Dr. Mark M. Loux

**Trial Status:** E established  
**ARM Trial Created On:** Apr-25-2019

**Trial Location**

**City:** South Charleston **Country:** USA United States  
**State/Prov.:** Ohio  
**Postal Code:** 45368 **Climate Zone:** USWARM US Warm Continental  
**Latitude of LL Corner °:** 39.85955 N  
**Longitude of LL Corner °:** 83.6735 W  
**Altitude of LL Corner:** 1109.00 FT

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

**Contacts**

**Study Director:** Bryan Reeb

**Investigator:** Dr. Mark M. Loux

**Crop Description**

**Crop 1:** C GLXMA Glycine max Soybean **BBCH Scale:** BSOY  
**Entry Date:** May-21-2019  
**Variety:** AG38X8  
**Attributes:** Roundup Ready/xtend  
**Planting Date:** May-16-2019 **Planting Rate:** 165000 S/A  
**Depth:** 1.5 IN  
**Rows per Plot:** 8 **Planting Method:** SEEDED seeded  
**Row Spacing:** 15 IN **Planting Equipment:** PP plot planter  
**Seed Bed:** CLODDY cloddy  
**Soil Temperature:** 63 F **Soil Moisture:** GOOD good  
**Emergence Date:** May-29-2019  
**Harvested Width:** 6.25 FT  
**Harvested Length:** 30 FT  
**% Standard Moisture:** 13

**Pest Description**

**Pest 1 Type:** W **Code:** SETFA *Setaria faberi*  
**Common Name:** Giant foxtail **Entry Date:** Jun-12-2019  
**Pest 2 Type:** W **Code:** AMBTR *Ambrosia trifida*  
**Common Name:** Giant ragweed **Entry Date:** Jun-12-2019  
**Pest 3 Type:** W **Code:** IPOHF *Ipomoea hederifolia*  
**Common Name:** ivy-leaf morning glory **Entry Date:** Jun-21-2019  
**Pest 4 Type:** W **Code:** CHEAL *Chenopodium album*  
**Common Name:** common lambsquarters **Entry Date:** Jun-21-2019

**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 FT2 **Treatments:** 16 **Tillage Type:** CONTIL conventional-till  
**Replications:** 4 **Study Design:** RACOB� Randomized Complete Block (RCB)

**Soil Description**

**Description Name:** G-6  
**% Sand:** 32 **% OM:** 2.2 **Texture:** SICL silty clay loam  
**% Silt:** 53 **pH:** 5.9 **Soil Name:** Kokomo  
**% Clay:** 15 **CEC:** 14.8 **Fert. Level:** G good  
**Soil Drainage:** G good

**Application Description**

	<b>A</b>	<b>B</b>	<b>C</b>
<b>Application Date</b>	May-16-2019	Jun-12-2019	Jun-21-2019
<b>Appl. Start Time</b>	9:00 PM	9:15 AM	9:00 AM
<b>Appl. Stop Time</b>	10:00 PM	9:30 AM	10:00 AM
<b>Interval to Prev. Appl.</b>		27 DAYS	9 DAYS
<b>Application Method</b>	BROADC	BROADC	Spray
<b>Application Timing</b>	PRE	POSDIR	POEMCR
<b>Application Placement</b>	BROFOL	BROFOL	BROFOL
<b>Applied By</b>	ACKLEY	KILEY	LOUX
<b>Appl. Entry Date</b>	May-17-2019	Jun-12-2019	Jun-21-2019
<b>Air Temperature Start, Stop</b>	74 74 F	65 65 F	65 68 F
<b>% Relative Humidity Start, Stop</b>	43 43	50 50	73 63
<b>Wind Velocity+Dir. Start</b>	11 MPH SW	7 MPH ENE	8 MPH NNW
<b>Wind Velocity+Dir. Stop</b>	11 MPH SW	7 MPH ENE	6 MPH NNW
<b>Wind Velocity+Dir. Max</b>	11 MPH S	7 MPH ENE	8 MPH NNW
<b>Wet Leaves (Y/N)</b>	N no	Y yes	N no
<b>Soil Temperature</b>	63 F	61 F	63 F
<b>Soil Moisture</b>	DRY	DRY	DAMP
<b>Soil Surface Condition</b>	SMOOTH	SMOOTH	SMOOTH
<b>% Cloud Cover</b>	90	15	0
<b>Next Moisture Occurred On</b>	May-17-2019	Jun-12-2019	Jun-21-2019
<b>Time to Next Moisture</b>	3 HR	10 HR	2 HR
<b>Moisture 6 Hours after Appl.</b>	1.32 IN	0 IN	0.01 IN
<b>Moisture 1 Week after Appl.</b>	2.54 IN	3.27 IN	1.21 IN

**Crop Stage At Each Application**

	<b>A</b>		<b>B</b>		<b>C</b>	
<b>Crop 1 Code, BBCH Scale</b>	GLXMA	BSOY	GLXMA	BSOY	GLXMA	BSOY
<b>Days after Emergence</b>	-13		14		23	
<b>Stage Scale Used</b>			BBCH			
<b>Stage Majority, Percent</b>			V2 100		V3 100	
<b>Height Average</b>			4 IN		8 IN	
<b>Height Minimum, Maximum</b>			4 5		6 8	

**Pest Stage At Each Application**

	<b>A</b>		<b>B</b>		<b>C</b>	
<b>Pest 1 Code, Type, Scale</b>	SETFA	W	SETFA	W	SETFA	W
<b>Stage Majority, Percent</b>	12	100	13	100		
<b>Height Average</b>	1	IN	6	in		
<b>Height Minimum, Maximum</b>	1	2	6	8		
<b>Density Average</b>	134	PLA/m2	134	PLA/m2		
<b>Density Min, Max</b>	86	213	86	213		
<b>Pest 2 Code, Type, Scale</b>	AMBTR	W	AMBTR	W	AMBTR	W
<b>Stage Majority, Percent</b>	16	80	19	100		
<b>Stage Minimum, Percent</b>	14	20				
<b>Stage Maximum, Percent</b>	18	80				
<b>Height Average</b>	4	IN	15	IN		
<b>Height Minimum, Maximum</b>	2	8	12	16		
<b>Density Average</b>	4	PLA/m2	4	PLA/m2		
<b>Density Min, Max</b>	1	6	1	6		
<b>Pest 3 Code, Type, Scale</b>	IPOHF	W	IPOHF	W	IPOHF	W
<b>Stage Majority, Percent</b>			13	100		
<b>Height Average</b>			2	IN		
<b>Height Minimum, Maximum</b>			2	3		
<b>Density Average</b>			0.33	PLA/m2		
<b>Density Min, Max</b>			0	1		
<b>Pest 4 Code, Type, Scale</b>	CHEAL	W	CHEAL	W	CHEAL	W
<b>Stage Majority, Percent</b>			16	80		
<b>Stage Minimum, Percent</b>			16	80		
<b>Stage Maximum, Percent</b>			18	20		
<b>Height Average</b>			2	IN		
<b>Height Minimum, Maximum</b>			2	3		
<b>Density Average</b>			3	PLA/m2		
<b>Density Min, Max</b>			1	4		

**Application Equipment**

	<b>A</b>	<b>B</b>	<b>C</b>
<b>Appl. Equipment</b>	10' BACKPACK	10' BACKPACK	10' BACKPACK
<b>Equipment Type</b>	BACCAI	BACCAI	BACCAI
<b>Operation Pressure</b>	44 PSI	44 PSI	44 PSI
<b>Nozzle Type</b>	AIXR	TTI	TTI
<b>Nozzle Size</b>	11015	11015	11015
<b>Nozzle Spacing</b>	18 IN	18 IN	18 IN
<b>Boom Length</b>	10 FT	10 FT	10 FT
<b>Boom Height</b>	20 IN	20 IN	20 IN
<b>Ground Speed</b>	3 MPH	3 MPH	3 MPH
<b>Carrier</b>	WATER	WATER	WATER
<b>Application Amount</b>	15 gal/ac	15 gal/ac	15 gal/ac
<b>Mix Size</b>	2 liters	2 liters	2 liters
<b>Propellant</b>	COMCO2	COMCO2	COMCO2

**Context Date By Notes**  
 STATUS Apr-25-2019 Dr. Mark M. Loux Automatically added by ARM: Trial Status updated to 'S' during trial creation.  
 STATUS Jun-10-2019 Dr. Mark M. Loux Automatically added by ARM: Trial Status updated to 'E' when Emergence Date entered.

**SE Definitions**

**1. Crop Type, Code C**

Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Type, Code	C	C	C C	GLXMA
	GLXMA	GLXMA	GLXMA	GLXMA
Crop Name	Soybean	Soybean	Soybean	Soybean
Rating Date	Oct-4-2019	Oct-4-2019	Oct-4-2019	Oct-4-2019
Rating Type	YIELD	MOICON	YIELD	WEITES
Rating Unit	LBS	%	BU	LBS
Number of Subsamples	1	1	1	1
Data Entry Date	Oct-7-2019	Oct-7-2019	Oct-7-2019	Oct-7-2019
Rating Timing				
Days After First/Last Applic.	141 105	141 105	141 105	141 105
Trt-Eval Interval				
Plant-Eval Interval	141 DP-1	141 DP-1	141 DP-1	141 DP-1
Days After Emergence	128 DE-1	128 DE-1	128 DE-1	128 DE-1
ARM Action Codes			TY1	
Number of Decimals	2	2	1	2

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	25*	26*	27*	28*
1	UTC						10.92 g	14.93 a	41.4 f	49.54 c
2	Authority XL	0.175 lb ai/a		4 oz/a		A	19.62 abc	12.52 bc	76.4 ab	55.42 a
2	Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
2	Xtendimax	0.5 lb ae/a		22 oz/a		C				
2	On Target	0.5 % v/v		9.6 oz/a		C				
2	Class Act Ridion	1 % v/v		19.2 oz/a		C				
3	Authority First	0.28 lb ai/a		6.4 oz/a		A	19.05 a-e	12.19 bc	74.5 a-d	55.82 a
3	Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
3	Xtendimax	0.5 lb ae/a		22 oz/a		C				
3	On Target	0.5 % v/v		9.6 oz/a		C				
3	Class Act Ridion	1 % v/v		19.2 oz/a		C				
4	Authority Supreme HL	0.228 lb ai/a		7 oz/a		A	18.80 cde	12.36 bc	73.3 bcd	55.47 a
4	Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
4	Xtendimax	0.5 lb ae/a		22 oz/a		C				
4	On Target	0.5 % v/v		9.6 oz/a		C				
4	Class Act Ridion	1 % v/v		19.2 oz/a		C				
5	Authority Supreme HL	0.266 lb ai/a		8 oz/a		A	19.71 abc	12.20 bc	77.0 ab	55.21 a
5	Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
5	Xtendimax	0.5 lb ae/a		22 oz/a		C				
5	On Target	0.5 % v/v		9.6 oz/a		C				
5	Class Act Ridion	1 % v/v		19.2 oz/a		C				
6	Authority Supreme HL	0.365 lb ai/a		11 oz/a		A	18.13 def	12.58 bc	70.5 cd	55.34 a
6	Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
6	Xtendimax	0.5 lb ae/a		22 oz/a		C				
6	On Target	0.5 % v/v		9.6 oz/a		C				
6	Class Act Ridion	1 % v/v		19.2 oz/a		C				
7	Authority First	0.28 lb ai/a		6.4 oz/a		A	16.82 f	13.27 b	65.0 e	53.12 b
7	Anthem Maxx	0.101 lb ai/a		3 oz/a		B				
7	Roundup Power Max	1.13 lb ae/a		32 oz/a		B				
7	Xtendimax	0.5 lb ae/a		22 oz/a		B				
7	On Target	0.5 % v/v		9.6 oz/a		B				
7	Class Act Ridion	1 % v/v		19.2 oz/a		B				

Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Type, Code	C	C	C C	GLXMA
Crop Name	GLXMA	GLXMA	GLXMA	GLXMA
Rating Date	Soybean	Soybean	Soybean	Soybean
Rating Type	Oct-4-2019	Oct-4-2019	Oct-4-2019	Oct-4-2019
Rating Unit	YIELD	MOICON	YIELD	WEITES
Number of Subsamples	LBS	%	BU	LBS
Data Entry Date	1	1	1	1
Rating Timing	Oct-7-2019	Oct-7-2019	Oct-7-2019	Oct-7-2019
Days After First/Last Applic.	141	105	141	105
Trt-Eval Interval				
Plant-Eval Interval	141 DP-1	141 DP-1	141 DP-1	141 DP-1
Days After Emergence	128 DE-1	128 DE-1	128 DE-1	128 DE-1
ARM Action Codes			TY1	
Number of Decimals	2	2	1	2

Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	25*	26*	27*	28*
8	Authority Supreme HL	0.266 lb ai/a	8 oz/a			A	20.00 abc	12.30 bc	78.0 ab	55.56 a
8	Classic	0.025 lb ai/a	1.6 oz/a			A				
8	Metribuzin	0.28 lb ai/a	6 oz/a			A				
8	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
8	Xtendimax	0.5 lb ae/a	22 oz/a			C				
8	On Target	0.5 % v/v	9.6 oz/a			C				
8	Class Act Ridion	1 % v/v	19.2 oz/a			C				
9	Anthem Maxx	0.134 lb ai/a	4 oz/a			A	17.85 ef	12.93 bc	69.2 de	55.04 a
9	Metribuzin	0.28 lb ai/a	6 oz/a			A				
9	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
9	Xtendimax	0.5 lb ae/a	22 oz/a			C				
9	On Target	0.5 % v/v	9.6 oz/a			C				
9	Class Act Ridion	1 % v/v	19.2 oz/a			C				
10	Zidua Pro	0.192 lb ai/a	6 oz/a			A	18.90 b-e	12.37 bc	73.7 bcd	55.35 a
10	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
10	Xtendimax	0.5 lb ae/a	22 oz/a			C				
10	On Target	0.5 % v/v	9.6 oz/a			C				
10	Class Act Ridion	1 % v/v	19.2 oz/a			C				
11	Fierce XLT @ 4.0 oz					A	20.22 ab	11.87 c	79.3 a	55.67 a
11	Valor SX	0.063 lb ai/a	1.98 oz/a			A				
11	Classic	0.021 lb ai/a	1.34 oz/a			A				
11	Zidua WG	0.054 lb ai/a	1.02 oz/a			A				
11	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
11	Xtendimax	0.5 lb ae/a	22 oz/a			C				
11	On Target	0.5 % v/v	9.6 oz/a			C				
11	Class Act Ridion	1 % v/v	19.2 oz/a			C				
12	Boundary	1.47 lb ai/a	29 oz/a			A	19.21 a-d	11.99 c	75.3 abc	55.42 a
12	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
12	Xtendimax	0.5 lb ae/a	22 oz/a			C				
12	On Target	0.5 % v/v	9.6 oz/a			C				
12	Class Act Ridion	1 % v/v	19.2 oz/a			C				
13	Valor XLT @ 4.0 oz					A	20.35 a	12.36 bc	79.4 a	56.20 a
13	Valor SX	0.075 lb ai/a	2.35 oz/a			A				
13	Classic	0.0258 lb ai/a	1.65 oz/a			A				
13	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
13	Xtendimax	0.5 lb ae/a	22 oz/a			C				
13	On Target	0.5 % v/v	9.6 oz/a			C				
13	Class Act Ridion	1 % v/v	19.2 oz/a			C				
14	Sonic	0.219 lb ai/a	5 oz/a			A	19.49 abc	12.18 bc	76.2 ab	55.75 a
14	Roundup Power Max	1.13 lb ae/a	32 oz/a			C				
14	Xtendimax	0.5 lb ae/a	22 oz/a			C				
14	On Target	0.5 % v/v	9.6 oz/a			C				
14	Class Act Ridion	1 % v/v	19.2 oz/a			C				
15	Roundup Power Max	1.13 lb ae/a	32 oz/a			C	18.76 cde	12.90 bc	72.7 bcd	55.51 a
15	Xtendimax	0.5 lb ae/a	22 oz/a			C				
15	On Target	0.5 % v/v	9.6 oz/a			C				
15	Class Act Ridion	1 % v/v	19.2 oz/a			C				

Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Type, Code	C	C	C C	GLXMA
Crop Name	GLXMA	GLXMA	GLXMA	GLXMA
Rating Date	Soybean	Soybean	Soybean	Soybean
Rating Type	Oct-4-2019	Oct-4-2019	Oct-4-2019	Oct-4-2019
Rating Unit	YIELD	MOICON	YIELD	WEITES
Number of Subsamples	LBS	%	BU	LBS
Data Entry Date	1	1	1	1
Rating Timing	Oct-7-2019	Oct-7-2019	Oct-7-2019	Oct-7-2019
Days After First/Last Applic.	141	105	141	105
Trt-Eval Interval	141	105	141	105
Plant-Eval Interval	141 DP-1	141 DP-1	141 DP-1	141 DP-1
Days After Emergence	128 DE-1	128 DE-1	128 DE-1	128 DE-1
ARM Action Codes			TY1	
Number of Decimals	2	2	1	2

Trt Treatment No. Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	25*	26*	27*	28*
16 Matador	1.76 lb ai/a		3 pt/a		A	19.47 a-d	12.93 bc	75.5 abc	55.00 a
16 Roundup Power Max	1.13 lb ae/a		32 oz/a		C				
16 Xtendimax	0.5 lb ae/a		22 oz/a		C				
16 On Target	0.5 % v/v		9.6 oz/a		C				
16 Class Act Ridion	1 % v/v		19.2 oz/a		C				
LSD P=.05						1.355	1.270	5.40	1.592
Standard Deviation						0.952	0.892	3.79	1.118
CV						5.12	7.07	5.24	2.03
Grand Mean						18.582	12.615	72.33	54.964
Levene's F						0.907	0.745	0.863	4.532
Levene's Prob(F)						0.562	0.727	0.606	0.001*
Skewness						-2.1601*	1.8118*	-2.1967*	-2.8819*
Kurtosis						5.6293*	4.9922*	5.8173*	9.6452*
Replicate F						6.193	1.438	4.813	5.396
Replicate Prob(F)						0.0013	0.2441	0.0054	0.0029
Treatment F						22.123	2.628	22.949	8.073
Treatment Prob(F)						0.0001	0.0063	0.0001	0.0001

Crop Type, Code

C = EPPO species (Bayer) codes  
 GLXMA, BSOY, Glycine max, Soybean = US

Rating Type

YIELD = yield  
 MOICON = moisture content  
 WEITES = weight - test

Rating Unit

% = percent  
 BU = bushel

Plant-Eval Interval

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

ARM Action Codes

TY1 = 3.872\*[25]\*(100-[26])/87