

The Ohio State University

FMC Products Residual Weed Control in Soybean

Trial ID: 22FMCSOY
 Protocol ID: 22FMCSOY Location: Western Branch Entomology W-1
 Project ID: Project ID 2: Project ID 3:
 Study Director: Sponsor Contact:
 Investigator (Creator): Dr. Mark M. Loux

Cooperator Trial ID:
 Trial Year: 2022

Crop Description

Crop 1: CGLXMA Glycine max Soybean
 Entry Date: May-25-2022 Stage Scale: BBCH
 Variety: Pioneer P35T15E
 Attributes: 2,4-D Choline, Glyphosate, Glufosinate Tol
 Planting Date: May-24-2022 Planting Rate: 150000 S/A
 Depth: 1.5 IN
 Rows per Plot: 4 Planting Method: PLANTD planted
 Row Spacing: 30 IN Planting Equipment: FE field equipment
 Seed Bed: SMOOTH smooth
 Soil Temperature: 73 F Soil Moisture: DRY dry
 Emergence Date: Jun-6-2022

Pest Description

Pest 1 Type: W Code: AMBTR Ambrosia trifida Entry Date: Jun-30-2022
 Common Name: Giant ragweed Stage Scale: BBCH
 Pest 2 Type: W Code: SETLU Setaria pumila Entry Date: Jun-30-2022
 Common Name: foxtail, yellow Stage Scale: BBCH

Site and Design

Treated Plot Width: 6.67 FT
 Treated Plot Length: 30 FT
 Treated Plot Area: 200.1 FT²
 Replications: 4 Treatments: 12 Plots: 48 Study Design: RACOB L Randomized Complete Block (RCB)

Soil Description

Description Name: Entomology W-1
 % Sand: 35 % OM: 2.3 Texture: L loam
 % Silt: 40 Soil Name: Crosby
 % Clay: 25 Fert. Level: G good
 pH: 6.6 CEC: 12.7
 Soil Drainage: G good

Application Description

	A	B
Application Date	May-24-2022	Jun-28-2022
Appl. Start Time	7:45 PM	8:20 AM
Appl. Stop Time	8:15 PM	8:35 AM
Application Method	SPRAY	SPRAY
Application Timing	VA	EAPOWE
Application Placement	BROSOI	BROFOL
Applied By	Loux/Dobbels	Dobbels
Appl. Entry Date	May-25-2022	Jun-30-2022
Air Temperature Start, Stop	71, 71 F	51, 51 F
% Relative Humidity Start, Stop	56, 56	62, 62
Wind Velocity+Dir. Start	6 MPH, ESE	3 MPH, S
Wind Velocity+Dir. Stop	6 MPH, ESE	3 MPH, -
Wind Velocity+Dir. Max	6 MPH, ESE	3 MPH, -
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	71 F	62 F
Soil Moisture	DRY	DRY
Soil Surface Condition	SMOOTH	MEDIUM
% Cloud Cover	25	20
Next Moisture Occurred On	May-25-2022	Jul-1-2022
Time to Next Moisture	1.0 DAY	3.0 DAY
Moisture 6 Hours after Appl.	0 IN	0 IN
Moisture 1 Week after Appl.	1.23 IN	1.52 IN

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale	GLXMA, BSOY	GLXMA, BSOY
Days after Emergence	-13	22
Stage Majority, Percent		14, 100
Height Average		8 IN
Height Minimum, Maximum		4, 8

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale	AMBTR, W, BBCH	AMBTR, W, BBCH
Height Average		5 IN
Height Minimum, Maximum		3, 8
Pest 2 Code, Type, Scale	SETLU, W, BBCH	SETLU, W, BBCH
Height Average		4 IN
Height Minimum, Maximum		3, 8

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Pest Type		W, Weed	W, Weed	W, Weed	W, Weed			
Pest Code		ECHCG	AMATA	ECHCG	AMATA			
Pest Name		common barnyard>	common water he>	common barnyard>	common water he>			
Crop Type, Code	C, GLXMA			C, GLXMA				
Crop Name	Soybean			Soybean				
Rating Date	Jun-13-2022	Jun-13-2022	Jun-13-2022	Jun-20-2022	Jun-20-2022			
Rating Type	PHYGEN	CONTRO	CONTRO	PHYLMA	CONTRO			
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100			
Number of Subsamples	1	1	1	1	1			
Data Entry Date	Jun-13-2022	Jun-13-2022	Jun-13-2022	Jun-21-2022	Jun-21-2022			
Days After First/Last Applic.	20, 20	20, 20	20, 20	27, 27	27, 27			
Trt-Eval Interval	20 DA-A	20 DA-A	20 DA-A	27 DA-A	27 DA-A			
Days After Emergence	7 DE-1	7 DE-1	7 DE-1	14 DE-1	14 DE-1			
Number of Decimals	0	0	0	0	0			
Trt Treatment	Rate	Appl	1*	2*	3*	4*	5*	6*
No. Name	Unit	Code						
1 UTCC			0-	0-	0-	0-	0c	0c
2 Authority Supreme	0.26 lb ai/a	A	0-	100-	100-	0-	100a	100a
3 Authority Supreme	0.228 lb ai/a	A	0-	100-	100-	0-	100a	100a
3 Metribuzin	0.234 lb ai/a	A						
4 Authority Supreme	0.211 lb ai/a	A	0-	100-	100-	0-	100a	100a
4 Anthem Maxx	0.084 lb ai/a	B						
4 Roundup Powermax	1.13 lb ae/a	B						
4 N Pak AMS	2.5% v/v	B						
5 Tendovo	1.83 lb ai/a	A	0-	100-	100-	1-	100a	100a
6 Authority First	0.175 lb ai/a	A	0-	100-	100-	0-	100a	100a
6 Anthem Maxx	0.101 lb ai/a	A						
7 Zidua Pro	0.192 lb ai/a	A	0-	100-	100-	0-	100a	100a
8 Kyber	0.33 lb ai/a	A	0-	100-	100-	1-	100a	100a
9 Anthem Maxx	0.134 lb ai/a	A	0-	100-	100-	0-	100a	100a
10 Warrant	1.13 lb ai/a	A	0-	60-	100-	0-	61b	60b
11 Outlook	0.656 lb ai/a	A	0-	100-	100-	0-	74ab	95a
12 Dual II Magnum	1.24 lb ai/a	A	0-	100-	100-	0-	96a	88a
LSD P=.05			.	.	.	0.9	22.3	7.6
Standard Deviation			0.0	0.0	0.0	0.6	15.5	5.3
CV			0.0	0.0	0.0	294.43	18.06	6.06
Grand Mean			0.0	88.3	91.7	0.2	85.9	86.9
Levene's F^			.	.	.	14.242	0.793	2.172
Levene's Prob(F)			.	.	.	0.00*	0.646	0.039*
Rank X2			.	.	.	.	.	.
P(Rank X2)			.	.	.	.	.	.
Skewness^			.	.	.	0.5109	-2.4575*	1.471*
Kurtosis^			.	.	.	4.4026*	15.1373*	7.2161*
Replicate F			0.000	0.000	0.000	0.960	1.190	0.727
Replicate Prob(F)			1.0000	1.0000	1.0000	0.4233	0.3285	0.5434
Treatment F			0.000	0.000	0.000	2.517	14.847	127.456
Treatment Prob(F)			1.0000	1.0000	1.0000	0.0199	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Due to missing data, the effective replicates used for mean comparisons are: col. 7=3.8; 11=3.1; 16=3.9; 19=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,3,20,21 because error mean square = 0.

^Calculated from residual.

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 Investigator (Creator): Dr. Mark M. Loux

Cooperator Trial ID:
 Trial Year: 2022

Pest Type	W, Weed	W, Weed	W, Weed	
Pest Code	CHEAL	ECHCG	AMATA	
Pest Name	common lambsqua>	common barnyard>	common water he>	
Crop Type, Code	C, GLXMA			
Crop Name	Soybean			
Rating Date	Jun-20-2022	Jul-5-2022	Jul-5-2022	Jul-5-2022
Rating Type	CONTRO	PHYNEC	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Data Entry Date	Jun-21-2022	Jul-6-2022	Jul-5-2022	Jul-5-2022
Days After First/Last Applic.	27, 27	42, 7	42, 7	42, 7
Trt-Eval Interval				
Days After Emergence	14 DE-1	29 DE-1	29 DE-1	29 DE-1
Number of Decimals	0	0	0	0
Trt Treatment	7*	8*	9*	10*
No. Name	Rate	Unit	Appl	Code
1 UTCC				0c
2 Authority Supreme	0.26 lb ai/a	A		100a
3 Authority Supreme	0.228 lb ai/a	A		100a
3 Metribuzin	0.234 lb ai/a	A		100a
4 Authority Supreme	0.211 lb ai/a	A		100a
4 Anthem Maxx	0.084 lb ai/a	B		13a
4 Roundup Powermax	1.13 lb ae/a	B		100a
4 N Pak AMS	2.5% v/v	B		100a
5 Tendovo	1.83 lb ai/a	A		100a
6 Authority First	0.175 lb ai/a	A		100a
6 Anthem Maxx	0.101 lb ai/a	A		100a
7 Zidua Pro	0.192 lb ai/a	A		100a
8 Kyber	0.33 lb ai/a	A		100a
9 Anthem Maxx	0.134 lb ai/a	A		100a
10 Warrant	1.13 lb ai/a	A		76b
11 Outlook	0.656 lb ai/a	A		98a
12 Dual II Magnum	1.24 lb ai/a	A		90a
LSD P=.05				10.4
Standard Deviation				7.2
CV				8.15
Grand Mean				88.8
Levene's F^				6.092 2263057565428750000000000000.00
Levene's Prob(F)				0.00*
Rank X2				.
P(Rank X2)				.
Skewness^				-0.4044
Kurtosis^				10.3626*
Replicate F				0.378
Replicate Prob(F)				0.7693
Treatment F				62.955
Treatment Prob(F)				0.0001
				1.2
				0.8
				80.0
				1.0
				0.696
				0.00*
				0.733
				.
				.
				0.0
				8.0253*
				12.4
				8.6
				11.7
				73.8
				1.617
				0.136
				.
				.
				0.7061*
				0.6645
				2.303
				0.0951
				36.575
				94.622
				0.0001

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Pest Type		W, Weed	W, Weed	W, Weed	W, Weed	W, Weed	W, Weed	
Pest Code		HIBTR	ECHCG	AMATA	AMBTR	HIBTR	CHEAL	
Pest Name		Venice mallow common barnyard> common water he> Giant ragweed Venice mallow common lambsqua>						
Crop Type, Code								
Crop Name								
Rating Date		Jul-6-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	
Rating Type		CONTRO	COUPLA	COUPLA	COUPLA	COUPLA	COUPLA	
Rating Unit/Min/Max		%, 0, 100	/m2, -, -	/m2, -, -	/m2, -, -	/m2, -, -	/m2, -, -	
Number of Subsamples		1	1	1	1	1	1	
Data Entry Date		Jul-5-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	Jul-6-2022	
Days After First/Last Applic.		43, 8	43, 8	43, 8	43, 8	43, 8	43, 8	
Trt-Eval Interval								
Days After Emergence		30 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1	
Number of Decimals								
Trt Treatment	Rate	Appl	11*	12*	13*	14*	15*	16*
No. Name	Unit	Code						
1	UTCC		0.0d	101.5a	105.3a	0.5-	1.3-	0.3-
2	Authority Supreme	0.26 lb ai/a A	100.0a	3.8b	0.0b	0.8-	0.0-	0.0-
3	Authority Supreme	0.228 lb ai/a A	100.0a	2.0b	0.3b	1.3-	0.0-	0.0-
3	Metribuzin	0.234 lb ai/a A						
4	Authority Supreme	0.211 lb ai/a A	100.0a	0.0b	0.0b	0.5-	0.0-	0.0-
4	Anthem Maxx	0.084 lb ai/a B						
4	Roundup Powermax	1.13 lb ae/a B						
4	N Pak AMS	2.5% v/v B						
5	Tendovo	1.83 lb ai/a A	100.0a	1.0b	0.0b	0.3-	0.0-	0.0-
6	Authority First	0.175 lb ai/a A	100.8a	2.5b	0.0b	0.5-	0.0-	0.0-
6	Anthem Maxx	0.101 lb ai/a A						
7	Zidua Pro	0.192 lb ai/a A	100.8a	1.8b	0.0b	0.0-	0.0-	0.0-
8	Kyber	0.33 lb ai/a A	94.1a	3.5b	0.0b	0.5-	0.0-	0.0-
9	Anthem Maxx	0.134 lb ai/a A	87.4a	3.8b	0.0b	0.8-	0.5-	0.0-
10	Warrant	1.13 lb ai/a A	38.2c	31.5b	10.5b	0.8-	2.3-	1.0-
11	Outlook	0.656 lb ai/a A	68.2b	3.5b	4.3b	0.5-	2.0-	0.3-
12	Dual II Magnum	1.24 lb ai/a A	55.1b	5.0b	4.8b	0.3-	1.5-	0.5-
LSD P=.05			12.44	23.44	17.04	1.06	1.50	0.70
Standard Deviation			8.53	16.30	11.85	0.74	1.04	0.49
CV			10.62	122.41	113.73	136.66	166.53	287.38
Grand Mean			80.26	13.31	10.42	0.54	0.63	0.17
Levene's F^			0.84	4.799	1.612	0.716	3.009	1.852
Levene's Prob(F)			0.604	0.00*	0.137	0.716	0.006*	0.082
Rank X2			.	.	.	.	.	.
P(Rank X2)			.	.	.	.	.	.
Skewness^			-0.6468	0.7598*	2.9622*	0.6861	0.3026	2.0007*
Kurtosis^			2.2618*	7.2883*	19.339*	0.3672	1.0693	10.4547*
Replicate F			1.171	1.445	0.667	0.862	1.769	1.059
Replicate Prob(F)			0.3415	0.2473	0.5783	0.4706	0.1722	0.3802
Treatment F			50.145	12.679	25.721	0.733	2.832	1.604
Treatment Prob(F)			0.0001	0.0001	0.0001	0.7000	0.0102	0.1450

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Pest Type		W, Weed	W, Weed	W, Weed		
Pest Code		ECHCG	AMATA	HIBTR		
Pest Name		common barnyard	common water he	Venice mallow		
Crop Type, Code						
Crop Name						
Rating Date		Jul-18-2022	Jul-18-2022	Jul-18-2022		
Rating Type		CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples		1	1	1 1 1		
Data Entry Date		Jul-18-2022	Jul-18-2022	Jul-18-2022		
Days After First/Last Applic.		55, 20	55, 20	55, 20		
Trt-Eval Interval						
Days After Emergence		42 DE-1	42 DE-1	42 DE-1		
Number of Decimals		0	0	0		
Trt Treatment	Rate	Appl	17*	18*	19*	2021
No. Name	Unit	Code				
1	UTCC		0e	0e	0c	
2	Authority Supreme	0.26 lb ai/a	A	79b	95ab	100a
3	Authority Supreme	0.228 lb ai/a	A	86ab	83bc	100a
3	Metribuzin	0.234 lb ai/a	A			
4	Authority Supreme	0.211 lb ai/a	A	100a	100a	100a
4	Anthem Maxx	0.084 lb ai/a	B			
4	Roundup Powermax	1.13 lb ae/a	B			
4	N Pak AMS	2.5% v/v	B			
5	Tendovo	1.83 lb ai/a	A	86ab	86abc	100a
6	Authority First	0.175 lb ai/a	A	81b	85abc	100a
6	Anthem Maxx	0.101 lb ai/a	A			
7	Zidua Pro	0.192 lb ai/a	A	85ab	75c	100a
8	Kyber	0.33 lb ai/a	A	75b	76c	100a
9	Anthem Maxx	0.134 lb ai/a	A	84ab	76c	93a
10	Warrant	1.13 lb ai/a	A	50d	53d	17c
11	Outlook	0.656 lb ai/a	A	63c	58d	64b
12	Dual II Magnum	1.24 lb ai/a	A	80b	55d	60b
LSD	P=.05			11.9	11.8	18.1 . .
Standard Deviation				8.3	8.2	12.6 . .
CV				11.45	11.67	15.57 . .
Grand Mean				72.4	70.1	80.7 . .
Levene's F^				1.814	1.215	1.598 . .
Levene's Prob(F)				0.088	0.313	0.145 . .
Rank X2				.	.	. . .
P(Rank X2)				.	.	. . .
Skewness^				0.0991	0.3421	1.3487* . .
Kurtosis^				1.9825*	0.6519	5.4902* . .
Replicate F				0.477	1.187	0.542
Replicate Prob(F)				0.7008	0.3297	0.6574
Treatment F				39.468	42.731	27.812
Treatment Prob(F)				0.0001	0.0001	0.0001

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Pest Type

W, Weed = Weed or volunteer crop

Pest Code

ECHCG, Echinochloa crus-galli, common barnyardgrass = US
AMATA, Amaranthus x tamariscinus, common water hemp = US
CHEAL, Chenopodium album, common lambsquarters = US
HIBTR, Hibiscus trionum, Venice mallow = US
AMBTR, Ambrosia trifida, Giant ragweed = US

Crop Type Code

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

Rating Type

PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
PHYLMA = phytotoxicity - leaf malformation
PHYNEC = phytotoxicity - necrosis /burn
COUPLA = count - plant / emergence - objective

Rating Unit/Min/Max

%, 0, 100 = percent
/m2, , = per square meter