

# The Ohio State University

## Authority MTZ formulation comparisons in LL soybeans

Trial ID: 17 MTZFORM  
 Protocol ID: 17 MTZFORM  
 Project ID: SULF.SOY.17.JPR.07(a)

Location: F-10 West end Trial Year: 2017  
 Investigator: Dr. Mark M. Loux  
 Study Director: Bryan Reeb  
 Sponsor Contact: Joe Reed, FMC

### General Trial Information

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

### 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 °:** 39.85872 N  
**Longitude of LL Corner °:** 83.67229 W  
**Altitude of LL Corner, Unit:** 1059.00 FT

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

### Contacts

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

### Crop Description

**Crop 1:** GLXMA Glycine max  
**Variety:** Seed Consultants SC 3357LL  
**Description:** Liberty Link

Soybean

**Planting Rate, Unit:** 175000 S/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 15 IN  
**Soil Moisture:** GOOD good  
**Seed Bed:** MEDTRA medium/trashy

**Planting Date:** May-17-2017  
**Planting Method:** PLANTD planted  
**Planting Equipment:** FE Field Equipment  
**Emergence Date:** May-29-2017

### Pest Description

- Pest 1 Type:** W **Code:** LAMPU *Lamium purpureum*  
**Common Name:** Purple deadnettle
- Pest 2 Type:** W **Code:** ERICA *Erigeron canadensis*  
**Common Name:** Canada horseweed
- Pest 3 Type:** W **Code:** STEME *Stellaria media*  
**Common Name:** Common chickweed
- Pest 4 Type:** W **Code:** ERYRE *Erysimum repandum*  
**Common Name:** Bushy wallflower
- Pest 5 Type:** W **Code:** TARSS *Taraxacum sp.*  
**Common Name:** Dandelion
- Pest 6 Type:** W **Code:** SENGL *Senecio glabellus*  
**Common Name:** Cressleaf groundsel
- Pest 7 Type:** W **Code:** VERAG *Veronica agrestis*  
**Common Name:** Field speedwell
- Pest 8 Type:** W **Code:** SETFA *Setaria faberi*  
**Common Name:** Giant foxtail
- Pest 9 Type:** W **Code:** BROTE *Anisantha tectorum*  
**Common Name:** Downy brome
- Pest10 Type:** W **Code:** AMBTR *Ambrosia trifida*  
**Common Name:** Giant ragweed
- Pest11 Type:** W **Code:** AMARE *Amaranthus retroflexus*  
**Common Name:** Redroot pigweed

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<b>Treated Plot Width:</b> 10 FT	<b>Site and Design</b>
<b>Treated Plot Length:</b> 30 FT	<b>Site Type:</b> FIELD field
<b>Treated Plot Area:</b> 300 FT <sup>2</sup>	<b>Experimental Unit:</b> 1 PLOT plot
<b>Replications:</b> 3	<b>Tillage Type:</b> NOTILL no-till
<b>Treatments:</b> 6	<b>Study Design:</b> RACOB� Randomized Complete Block (RCB)

## Soil Description

**Description Name:** F-10 West

<b>% OM:</b> 1.5	<b>Texture:</b> SIL silt loam
<b>pH:</b> 5.8	<b>Soil Name:</b> Crosby Silt Loam
<b>CEC:</b> 13	<b>Fert. Level:</b> G good
	<b>Soil Drainage:</b> G good

## Application Description

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Application Date:</b>	Apr-25-2017	May-3-2017	Jun-1-2017	Jul-5-2017
<b>Appl. Start Time:</b>	9:30 AM	10:15 AM	10:20 AM	10:30 AM
<b>Appl. Stop Time:</b>	10:00 AM	11:00 AM	10:40 AM	10:40 AM
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	7 EPP	ATP[L	MPO	LPO
<b>Application Placement:</b>	BROSOI	BROSOI	BROFOL	BROFOL
<b>Applied By:</b>	DOBBELS	LOUX	ACKLEY	REEB
<b>Air Temperature, Unit:</b>	59.2 F	46 F	67 F	75 F
<b>% Relative Humidity:</b>	64	62	46	57
<b>Wind Velocity, Unit:</b>	7.5 MPH	7 MPH	5 MPH	3 MPH
<b>Wind Direction:</b>	ESE	N	NE	W
<b>Dew Presence (Y/N):</b>	N no	N no	N no	N no
<b>Soil Temperature, Unit:</b>	54 F	50 F	58 F	73 F
<b>Soil Moisture:</b>	DRY	SLIWET	SLIDRY	DRY
<b>% Cloud Cover:</b>	60	90	0	75
<b>Next Moisture Occurred On:</b>	Apr-27-2017	May-4-2017	Jun-4-2017	Jul-6-2017
<b>Time to Next Moisture, Unit:</b>	2 DAY	1 DAY	3 DAY	1 DAY

## Crop Stage At Each Application

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>Crop 1 Code, BBCH Scale:</b>	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
<b>Stage Scale Used:</b>			BBCH	BBCH
<b>Stage Majority, Percent:</b>			12 100	15 100
<b>Height, Unit:</b>			3 IN	11 IN
<b>Height Minimum, Maximum:</b>				10 12



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## Application Equipment

	A	B	C	D
<b>Appl. Equipment:</b>	6' BACKPACK	6' BACKPACK	10' BACKPACK	10' BACKPACK
<b>Equipment Type:</b>	BACCAI	BACCAI	BACCAI	BACCAI
<b>Operation Pressure, Unit:</b>	48 PSI	44 PSI	50 PSI	44 PSI
<b>Nozzle Type:</b>	AIXR	AIXR	AIXR	AIXR
<b>Nozzle Size:</b>	11015	11015	11015	11015
<b>Nozzle Spacing, Unit:</b>	18 IN	18 IN	18 IN	18 IN
<b>Nozzles/Row:</b>	4	4	6	6
<b>Boom Length, Unit:</b>	6.67 FT	6.67 FT	10 FT	10 FT
<b>Boom Height, Unit:</b>	20 IN	20 IN	20 IN	20 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH	3 MPH	3 MPH
<b>Carrier:</b>	WATER	WATER	WATER	WATER
<b>Spray Volume, Unit:</b>	15 gal/ac	15 gal/ac	15 gal/ac	15 gal/ac
<b>Mix Size, Unit:</b>	1 liters	1 liters	2 liters	2 liters
<b>Propellant:</b>	COMCO2	COMCO2	COMCO2	COMCO2

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Trial ID: 17 MTZFORM  
 Protocol ID: 17 MTZFORM  
 Project ID: SULF.SOY.17.JPR.07(a)

Location: F-10 West end Trial Year: 2017  
 Investigator: Dr. Mark M. Loux  
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Pest Type	W Weed	W Weed	W Weed	W Weed
Pest Code	LAMPU	STEME	ERYRE	SENGL
Pest Name	Purple deadnet> Common chickwe> Bushy wallflow> Cressleaf grou>			
Crop Code				
Crop Name				
Rating Date	May-16-2017	May-16-2017	May-16-2017	May-16-2017
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%
Number of Subsamples	1	1	1	1
Days After First/Last Applic.	21 13	21 13	21 13	21 13
Days After Emergence	-13 DE-1	-13 DE-1	-13 DE-1	-13 DE-1

Trt No.	Treatment Name	Other Rate	Other Rate	Appl Unit Code	1	2	3	4
1	Roundup Power Max	32 oz/a		A	100.0 a	100.0 a	100.0 a	100.0 a
1	2,4-D Ester	16 oz/a		A				
1	Authority MTZ	14 oz/a		A				
1	Crop Oil Concentrat	0.6 qt/a		A				
1	N-pak ams	2.25 qt/a		A				
1	Liberty	29 oz/a		C				
1	N-pak ams	2.25 qt/a		C				
1	Liberty	29 oz/a		D				
1	N-pak ams	2.25 qt/a		D				
2	Roundup Power Max	32 oz/a		A	100.0 a	100.0 a	100.0 a	100.0 a
2	2,4-D Ester	16 oz/a		A				
2	Authority MTZ (F-4242)	13.5 oz/a		A				
2	Crop Oil Concentrat	0.6 qt/a		A				
2	N-pak ams	2.25 qt/a		A				
2	Liberty	29 oz/a		C				
2	N-pak ams	2.25 qt/a		C				
2	Liberty	29 oz/a		D				
2	N-pak ams	2.25 qt/a		D				
3	Gramoxone SL	44 oz/a		B	100.0 a	100.0 a	100.0 a	100.0 a
3	Authority MTZ	14 oz/a		B				
3	Crop Oil Concentrat	0.6 qt/a		B				
3	N-pak ams	2.25 qt/a		B				
3	Liberty	29 oz/a		C				
3	N-pak ams	2.25 qt/a		C				
3	Liberty	29 oz/a		D				
3	N-pak ams	2.25 qt/a		D				
4	Gramoxone SL	44 oz/a		B	100.0 a	100.0 a	100.0 a	100.0 a
4	Authority MTZ (F-4242)	13.5 oz/a		B				
4	Crop Oil Concentrat	0.6 qt/a		B				
4	N-pak ams	2.25 qt/a		B				
4	Liberty	29 oz/a		C				
4	N-pak ams	2.25 qt/a		C				
4	Liberty	29 oz/a		D				
4	N-pak ams	2.25 qt/a		D				
5	UTC				0.0 b	0.0 b	0.0 b	0.0 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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

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Pest Type	W Weed	W Weed	W Weed	W Weed			
Pest Code	LAMPU	STEME	ERYRE	SENGL			
Pest Name	Purple deadnet> Common chickwe> Bushy wallflow> Cressleaf grou>						
Crop Code							
Crop Name							
Rating Date	May-16-2017	May-16-2017	May-16-2017	May-16-2017			
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO			
Rating Unit	%	%	%	%			
Number of Subsamples	1	1	1	1			
Days After First/Last Applic.	21 13	21 13	21 13	21 13			
Days After Emergence	-13 DE-1	-13 DE-1	-13 DE-1	-13 DE-1			
Trt Treatment	Other Rate	Other Rate	Appl Unit Code	1	2	3	4
6 Gramoxone SL	44 oz/a		A	100.0 a	100.0 a	100.0 a	100.0 a
6 2,4-D Ester	16 oz/a		A				
6 Authority MTZ	14 oz/a		A				
6 Crop Oil Concentrat	0.6 qt/a		A				
6 N-pak ams	2.25 qt/a		A				
6 Liberty	29 oz/a		C				
6 N-pak ams	2.25 qt/a		C				
6 Liberty	29 oz/a		D				
6 N-pak ams	2.25 qt/a		D				
LSD P=.05				.	.	.	.
Standard Deviation				0.00	0.00	0.00	0.00
CV				0.0	0.0	0.0	0.0
Bartlett's X2				0.0	0.0	0.0	0.0
P(Bartlett's X2)				.	.	.	.
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

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Pest Type	W Weed	W Weed	W Weed	O Other	W Weed					
Pest Code	VERAR	TARSS	ERICA		SETFA					
Pest Name	Corn speedwell	Dandelion	Canada horsewe>		Giant foxtail					
Crop Code				GLXMA						
Crop Name				Soybean						
Rating Date	May-16-2017	May-16-2017	May-16-2017	Jun-1-2017	Jun-1-2017					
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO					
Rating Unit	%	%	%	%	%					
Number of Subsamples	1	1	1	1	1					
Days After First/Last Applic.	21 13	21 13	21 13	37 29	37 29					
Days After Emergence	-13 DE-1	-13 DE-1	-13 DE-1	3 DE-1	3 DE-1					
Trt No.	Treatment Name	Other Rate	Other Rate	Appl Unit	Code	5	6	7	8	9
1	Roundup Power Max	32 oz/a		A		100.0 a	78.5 a	66.0 b	0.0 a	26.7 a
1	2,4-D Ester	16 oz/a		A						
1	Authority MTZ	14 oz/a		A						
1	Crop Oil Concentrat	0.6 qt/a		A						
1	N-pak ams	2.25 qt/a		A						
1	Liberty	29 oz/a		C						
1	N-pak ams	2.25 qt/a		C						
1	Liberty	29 oz/a		D						
1	N-pak ams	2.25 qt/a		D						
2	Roundup Power Max	32 oz/a		A		100.0 a	76.7 a	75.0 ab	0.0 a	6.7 a
2	2,4-D Ester	16 oz/a		A						
2	Authority MTZ (F-4242)	13.5 oz/a		A						
2	Crop Oil Concentrat	0.6 qt/a		A						
2	N-pak ams	2.25 qt/a		A						
2	Liberty	29 oz/a		C						
2	N-pak ams	2.25 qt/a		C						
2	Liberty	29 oz/a		D						
2	N-pak ams	2.25 qt/a		D						
3	Gramoxone SL	44 oz/a		B		100.0 a	56.7 ab	100.0 a	0.0 a	16.7 a
3	Authority MTZ	14 oz/a		B						
3	Crop Oil Concentrat	0.6 qt/a		B						
3	N-pak ams	2.25 qt/a		B						
3	Liberty	29 oz/a		C						
3	N-pak ams	2.25 qt/a		C						
3	Liberty	29 oz/a		D						
3	N-pak ams	2.25 qt/a		D						
4	Gramoxone SL	44 oz/a		B		100.0 a	40.0 b	100.0 a	0.0 a	10.0 a
4	Authority MTZ (F-4242)	13.5 oz/a		B						
4	Crop Oil Concentrat	0.6 qt/a		B						
4	N-pak ams	2.25 qt/a		B						
4	Liberty	29 oz/a		C						
4	N-pak ams	2.25 qt/a		C						
4	Liberty	29 oz/a		D						
4	N-pak ams	2.25 qt/a		D						
5	UTC					0.0 b	0.0 c	0.0 c	0.0 a	0.0 a

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Pest Type	W Weed	W Weed	W Weed	O Other	W Weed			
Pest Code	VERAR	TARSS	ERICA		SETFA			
Pest Name	Corn speedwell	Dandelion	Canada horsewe>		Giant foxtail			
Crop Code				GLXMA				
Crop Name				Soybean				
Rating Date	May-16-2017	May-16-2017	May-16-2017	Jun-1-2017	Jun-1-2017			
Rating Type	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO			
Rating Unit	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1			
Days After First/Last Applic.	21 13	21 13	21 13	37 29	37 29			
Days After Emergence	-13 DE-1	-13 DE-1	-13 DE-1	3 DE-1	3 DE-1			
Trt Treatment	Other	Other	Appl					
No. Name	Rate	Rate	Unit Code	5	6	7	8	9
6 Gramoxone SL	44 oz/a		A	90.0 a	56.7 ab	90.0 ab	0.0 a	6.7 a
6 2,4-D Ester	16 oz/a		A					
6 Authority MTZ	14 oz/a		A					
6 Crop Oil Concentrat	0.6 qt/a		A					
6 N-pak ams	2.25 qt/a		A					
6 Liberty	29 oz/a		C					
6 N-pak ams	2.25 qt/a		C					
6 Liberty	29 oz/a		D					
6 N-pak ams	2.25 qt/a		D					
LSD P=.05				12.86	22.46	32.21	.	29.46
Standard Deviation				7.07	12.16	17.11	0.00	16.19
CV				8.66	23.65	23.82	0.0	145.74
Bartlett's X2				0.0	5.23	4.223	0.0	1.935
P(Bartlett's X2)				.	0.156	0.121	.	0.748
Replicate F				1.000	1.465	0.076	0.000	0.085
Replicate Prob(F)				0.4019	0.2814	0.9277	1.0000	0.9194
Treatment F				97.000	17.048	14.596	0.000	1.000
Treatment Prob(F)				0.0001	0.0002	0.0008	1.0000	0.4651

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Pest Type	W Weed	W Weed	W Weed	W Weed	O Other		
Pest Code	AMBTR	ERICA	TARSS	VERAR			
Pest Name	Giant ragweed	Canada horsewe>	Dandelion	Corn speedwell			
Crop Code					GLXMA		
Crop Name					Soybean		
Rating Date	Jun-1-2017	Jun-1-2017	Jun-1-2017	Jun-1-2017	Jun-15-2017		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN		
Rating Unit	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1		
Days After First/Last Applic.	37 29	37 29	37 29	37 29	51 14		
Days After Emergence	3 DE-1	3 DE-1	3 DE-1	3 DE-1	17 DE-1		
Trt Treatment	Other Other	Appl	10	11	12	13	14
No. Name	Rate Rate	Unit Code					
1 Roundup Power Max	32 oz/a	A	56.7 a	53.3 b	10.0 a	96.7 a	0.0 a
1 2,4-D Ester	16 oz/a	A					
1 Authority MTZ	14 oz/a	A					
1 Crop Oil Concentrat	0.6 qt/a	A					
1 N-pak ams	2.25 qt/a	A					
1 Liberty	29 oz/a	C					
1 N-pak ams	2.25 qt/a	C					
1 Liberty	29 oz/a	D					
1 N-pak ams	2.25 qt/a	D					
2 Roundup Power Max	32 oz/a	A	61.7 a	60.0 b	16.7 a	100.0 a	0.0 a
2 2,4-D Ester	16 oz/a	A					
2 Authority MTZ (F-4242)	13.5 oz/a	A					
2 Crop Oil Concentrat	0.6 qt/a	A					
2 N-pak ams	2.25 qt/a	A					
2 Liberty	29 oz/a	C					
2 N-pak ams	2.25 qt/a	C					
2 Liberty	29 oz/a	D					
2 N-pak ams	2.25 qt/a	D					
3 Gramoxone SL	44 oz/a	B	83.3 a	83.3 ab	30.0 a	100.0 a	0.0 a
3 Authority MTZ	14 oz/a	B					
3 Crop Oil Concentrat	0.6 qt/a	B					
3 N-pak ams	2.25 qt/a	B					
3 Liberty	29 oz/a	C					
3 N-pak ams	2.25 qt/a	C					
3 Liberty	29 oz/a	D					
3 N-pak ams	2.25 qt/a	D					
4 Gramoxone SL	44 oz/a	B	66.7 a	100.0 a	6.7 a	100.0 a	0.0 a
4 Authority MTZ (F-4242)	13.5 oz/a	B					
4 Crop Oil Concentrat	0.6 qt/a	B					
4 N-pak ams	2.25 qt/a	B					
4 Liberty	29 oz/a	C					
4 N-pak ams	2.25 qt/a	C					
4 Liberty	29 oz/a	D					
4 N-pak ams	2.25 qt/a	D					
5 UTC			0.0 b	0.0 c	0.0 a	0.0 b	0.0 a

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Pest Type	W Weed	W Weed	W Weed	W Weed	O Other			
Pest Code	AMBTR	ERICA	TARSS	VERAR				
Pest Name	Giant ragweed	Canada horsewe>	Dandelion	Corn speedwell				
Crop Code					GLXMA			
Crop Name					Soybean			
Rating Date	Jun-1-2017	Jun-1-2017	Jun-1-2017	Jun-1-2017	Jun-15-2017			
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN			
Rating Unit	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1			
Days After First/Last Applic.	37 29	37 29	37 29	37 29	51 14			
Days After Emergence	3 DE-1	3 DE-1	3 DE-1	3 DE-1	17 DE-1			
Trt Treatment	Other Rate	Other Rate	Appl Unit Code	10	11	12	13	14
6 Gramoxone SL	44 oz/a		A	63.3 a	83.3 ab	0.0 a	93.3 a	0.0 a
6 2,4-D Ester	16 oz/a		A					
6 Authority MTZ	14 oz/a		A					
6 Crop Oil Concentrat	0.6 qt/a		A					
6 N-pak ams	2.25 qt/a		A					
6 Liberty	29 oz/a		C					
6 N-pak ams	2.25 qt/a		C					
6 Liberty	29 oz/a		D					
6 N-pak ams	2.25 qt/a		D					
LSD P=.05				32.36	35.66	35.26	9.96	.
Standard Deviation				17.79	19.60	19.38	5.48	0.00
CV				32.18	30.95	183.59	6.71	0.0
Bartlett's X2				4.39	3.091	1.909	0.857	0.0
P(Bartlett's X2)				0.356	0.213	0.591	0.355	.
Replicate F				0.979	0.011	0.769	0.556	0.000
Replicate Prob(F)				0.4090	0.9892	0.4889	0.5905	1.0000
Treatment F				7.737	9.787	1.044	160.778	0.000
Treatment Prob(F)				0.0032	0.0013	0.4436	0.0001	1.0000

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Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed			
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE			
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed			
Crop Code								
Crop Name								
Rating Date	Jun-15-2017	Jun-15-2017	Jun-15-2017	Jun-15-2017	Jun-15-2017			
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO			
Rating Unit	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1			
Days After First/Last Applic.	51 14	51 14	51 14	51 14	51 14			
Days After Emergence	17 DE-1	17 DE-1	17 DE-1	17 DE-1	17 DE-1			
Trt Treatment	Other	Other	Appl					
No. Name	Rate	Rate	Unit Code	15	16			
				17	18			
				19				
1 Roundup Power Max	32 oz/a		A	23.3 a	100.0 a	88.3 a	66.7 a	86.7 a
1 2,4-D Ester	16 oz/a		A					
1 Authority MTZ	14 oz/a		A					
1 Crop Oil Concentrat	0.6 qt/a		A					
1 N-pak ams	2.25 qt/a		A					
1 Liberty	29 oz/a		C					
1 N-pak ams	2.25 qt/a		C					
1 Liberty	29 oz/a		D					
1 N-pak ams	2.25 qt/a		D					
2 Roundup Power Max	32 oz/a		A	26.7 a	100.0 a	88.3 a	83.3 a	91.7 a
2 2,4-D Ester	16 oz/a		A					
2 Authority MTZ (F-4242)	13.5 oz/a		A					
2 Crop Oil Concentrat	0.6 qt/a		A					
2 N-pak ams	2.25 qt/a		A					
2 Liberty	29 oz/a		C					
2 N-pak ams	2.25 qt/a		C					
2 Liberty	29 oz/a		D					
2 N-pak ams	2.25 qt/a		D					
3 Gramoxone SL	44 oz/a		B	30.0 a	100.0 a	96.7 a	65.0 a	100.0 a
3 Authority MTZ	14 oz/a		B					
3 Crop Oil Concentrat	0.6 qt/a		B					
3 N-pak ams	2.25 qt/a		B					
3 Liberty	29 oz/a		C					
3 N-pak ams	2.25 qt/a		C					
3 Liberty	29 oz/a		D					
3 N-pak ams	2.25 qt/a		D					
4 Gramoxone SL	44 oz/a		B	23.3 a	96.7 a	100.0 a	63.3 a	96.7 a
4 Authority MTZ (F-4242)	13.5 oz/a		B					
4 Crop Oil Concentrat	0.6 qt/a		B					
4 N-pak ams	2.25 qt/a		B					
4 Liberty	29 oz/a		C					
4 N-pak ams	2.25 qt/a		C					
4 Liberty	29 oz/a		D					
4 N-pak ams	2.25 qt/a		D					
5 UTC				23.3 a	100.0 a	93.3 a	46.7 a	96.7 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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

# The Ohio State University

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed			
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE			
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed			
Crop Code								
Crop Name								
Rating Date	Jun-15-2017	Jun-15-2017	Jun-15-2017	Jun-15-2017	Jun-15-2017			
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO			
Rating Unit	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1			
Days After First/Last Applic.	51 14	51 14	51 14	51 14	51 14			
Days After Emergence	17 DE-1	17 DE-1	17 DE-1	17 DE-1	17 DE-1			
Trt Treatment	Other Rate	Other Rate	Appl Unit Code	15	16	17	18	19
6 Gramoxone SL	44 oz/a		A	20.0 a	100.0 a	96.7 a	75.0 a	85.0 a
6 2,4-D Ester	16 oz/a		A					
6 Authority MTZ	14 oz/a		A					
6 Crop Oil Concentrat	0.6 qt/a		A					
6 N-pak ams	2.25 qt/a		A					
6 Liberty	29 oz/a		C					
6 N-pak ams	2.25 qt/a		C					
6 Liberty	29 oz/a		D					
6 N-pak ams	2.25 qt/a		D					
LSD P=.05				25.22	4.29	13.96	25.46	18.17
Standard Deviation				13.86	2.36	7.67	13.99	9.99
CV				56.72	2.37	8.17	20.99	10.76
Bartlett's X2				1.582	0.0	2.127	8.86	4.305
P(Bartlett's X2)				0.903	.	0.712	0.115	0.366
Replicate F				8.179	1.000	1.226	0.660	4.861
Replicate Prob(F)				0.0079	0.4019	0.3339	0.5382	0.0335
Treatment F				0.185	1.000	1.170	2.332	1.092
Treatment Prob(F)				0.9618	0.4651	0.3879	0.1192	0.4216

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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

# The Ohio State University

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed				
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE				
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed				
Crop Code									
Crop Name									
Rating Date	Jun-30-2017	Jun-30-2017	Jun-30-2017	Jun-30-2017	Jun-30-2017				
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO				
Rating Unit	%	%	%	%	%				
Number of Subsamples	1	1	1	1	1				
Days After First/Last Applic.	66 29	66 29	66 29	66 29	66 29				
Days After Emergence	32 DE-1	32 DE-1	32 DE-1	32 DE-1	32 DE-1				
Trt No.	Treatment Name	Other Rate	Other Rate	Appl Unit Code	20	21	22	23	24
1	Roundup Power Max	32 oz/a		A	13.3 a	85.0 a	81.7 a	40.0 b	66.7 a
1	2,4-D Ester	16 oz/a		A					
1	Authority MTZ	14 oz/a		A					
1	Crop Oil Concentrat	0.6 qt/a		A					
1	N-pak ams	2.25 qt/a		A					
1	Liberty	29 oz/a		C					
1	N-pak ams	2.25 qt/a		C					
1	Liberty	29 oz/a		D					
1	N-pak ams	2.25 qt/a		D					
2	Roundup Power Max	32 oz/a		A	6.7 a	93.3 a	90.0 a	83.3 a	75.0 a
2	2,4-D Ester	16 oz/a		A					
2	Authority MTZ (F-4242)	13.5 oz/a		A					
2	Crop Oil Concentrat	0.6 qt/a		A					
2	N-pak ams	2.25 qt/a		A					
2	Liberty	29 oz/a		C					
2	N-pak ams	2.25 qt/a		C					
2	Liberty	29 oz/a		D					
2	N-pak ams	2.25 qt/a		D					
3	Gramoxone SL	44 oz/a		B	6.7 a	92.7 a	96.7 a	30.0 bc	93.3 a
3	Authority MTZ	14 oz/a		B					
3	Crop Oil Concentrat	0.6 qt/a		B					
3	N-pak ams	2.25 qt/a		B					
3	Liberty	29 oz/a		C					
3	N-pak ams	2.25 qt/a		C					
3	Liberty	29 oz/a		D					
3	N-pak ams	2.25 qt/a		D					
4	Gramoxone SL	44 oz/a		B	10.0 a	75.0 a	100.0 a	33.3 b	88.3 a
4	Authority MTZ (F-4242)	13.5 oz/a		B					
4	Crop Oil Concentrat	0.6 qt/a		B					
4	N-pak ams	2.25 qt/a		B					
4	Liberty	29 oz/a		C					
4	N-pak ams	2.25 qt/a		C					
4	Liberty	29 oz/a		D					
4	N-pak ams	2.25 qt/a		D					
5	UTC				10.0 a	83.3 a	93.3 a	0.0 c	85.8 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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

# The Ohio State University

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed			
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE			
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed			
Crop Code								
Crop Name								
Rating Date	Jun-30-2017	Jun-30-2017	Jun-30-2017	Jun-30-2017	Jun-30-2017			
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO			
Rating Unit	%	%	%	%	%			
Number of Subsamples	1	1	1	1	1			
Days After First/Last Applic.	66 29	66 29	66 29	66 29	66 29			
Days After Emergence	32 DE-1	32 DE-1	32 DE-1	32 DE-1	32 DE-1			
Trt Treatment	Other Rate	Other Rate	Appl Unit Code	20	21	22	23	24
6 Gramoxone SL	44 oz/a		A	0.0 a	90.0 a	93.3 a	73.3 a	53.3 a
6 2,4-D Ester	16 oz/a		A					
6 Authority MTZ	14 oz/a		A					
6 Crop Oil Concentrat	0.6 qt/a		A					
6 N-pak ams	2.25 qt/a		A					
6 Liberty	29 oz/a		C					
6 N-pak ams	2.25 qt/a		C					
6 Liberty	29 oz/a		D					
6 N-pak ams	2.25 qt/a		D					
LSD P=.05				26.50	24.09	16.36	31.99	36.91
Standard Deviation				14.57	13.24	8.99	17.32	19.98
CV				187.3	15.3	9.72	39.97	25.92
Bartlett's X2				1.238	5.861	2.855	3.182	17.021
P(Bartlett's X2)				0.872	0.32	0.582	0.528	0.004*
Replicate F				1.597	2.059	0.979	1.500	2.914
Replicate Prob(F)				0.2501	0.1783	0.4089	0.2740	0.1057
Treatment F				0.293	0.826	1.474	9.333	1.719
Treatment Prob(F)				0.9060	0.5588	0.2808	0.0023	0.2261

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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

# The Ohio State University

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed						
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE						
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed						
Crop Code											
Crop Name											
Rating Date	Aug-7-2017	Aug-7-2017	Aug-7-2017	Aug-7-2017	Aug-7-2017						
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO						
Rating Unit	%	%	%	%	%						
Number of Subsamples	1	1	1	1	1						
Days After First/Last Applic.	104 33	104 33	104 33	104 33	104 33						
Days After Emergence	70 DE-1	70 DE-1	70 DE-1	70 DE-1	70 DE-1						
Trt No.	Treatment Name	Other Rate	Other Rate	Appl Unit	Code	25	26	27	28	29	30
1	Roundup Power Max	32 oz/a		A		100.0 a	100.0 a	100.0 a	100.0 a	100.0 a	
	1 2,4-D Ester	16 oz/a		A							
	1 Authority MTZ	14 oz/a		A							
	1 Crop Oil Concentrat	0.6 qt/a		A							
	1 N-pak ams	2.25 qt/a		A							
	1 Liberty	29 oz/a		C							
	1 N-pak ams	2.25 qt/a		C							
	1 Liberty	29 oz/a		D							
	1 N-pak ams	2.25 qt/a		D							
2	Roundup Power Max	32 oz/a		A		100.0 a	100.0 a	100.0 a	100.0 a	100.0 a	
	2 2,4-D Ester	16 oz/a		A							
	2 Authority MTZ (F-4242)	13.5 oz/a		A							
	2 Crop Oil Concentrat	0.6 qt/a		A							
	2 N-pak ams	2.25 qt/a		A							
	2 Liberty	29 oz/a		C							
	2 N-pak ams	2.25 qt/a		C							
	2 Liberty	29 oz/a		D							
	2 N-pak ams	2.25 qt/a		D							
3	Gramoxone SL	44 oz/a		B		100.0 a	100.0 a	100.0 a	100.0 a	100.0 a	
	3 Authority MTZ	14 oz/a		B							
	3 Crop Oil Concentrat	0.6 qt/a		B							
	3 N-pak ams	2.25 qt/a		B							
	3 Liberty	29 oz/a		C							
	3 N-pak ams	2.25 qt/a		C							
	3 Liberty	29 oz/a		D							
	3 N-pak ams	2.25 qt/a		D							
4	Gramoxone SL	44 oz/a		B		100.0 a	100.0 a	100.0 a	100.0 a	100.0 a	
	4 Authority MTZ (F-4242)	13.5 oz/a		B							
	4 Crop Oil Concentrat	0.6 qt/a		B							
	4 N-pak ams	2.25 qt/a		B							
	4 Liberty	29 oz/a		C							
	4 N-pak ams	2.25 qt/a		C							
	4 Liberty	29 oz/a		D							
	4 N-pak ams	2.25 qt/a		D							
5	UTC					100.0 a	100.0 a	100.0 a	100.0 a	100.0 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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.

# The Ohio State University

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed
Pest Code	SETFA	AMBTR	ERICA	TARSS	AMARE
Pest Name	Giant foxtail	Giant ragweed	Canada horsewe>	Dandelion	Redroot pigweed
Crop Code					
Crop Name					
Rating Date	Aug-7-2017	Aug-7-2017	Aug-7-2017	Aug-7-2017	Aug-7-2017
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%	%	%
Number of Subsamples	1	1	1	1	1
Days After First/Last Applic.	104 33	104 33	104 33	104 33	104 33
Days After Emergence	70 DE-1	70 DE-1	70 DE-1	70 DE-1	70 DE-1
Trt Treatment	Other	Other	Appl		
No. Name	Rate	Rate	Unit Code	25	26
				27	28
				29	30
6 Gramoxone SL	44 oz/a		A	100.0 a	100.0 a
6 2,4-D Ester	16 oz/a		A		
6 Authority MTZ	14 oz/a		A		
6 Crop Oil Concentrat	0.6 qt/a		A		
6 N-pak ams	2.25 qt/a		A		
6 Liberty	29 oz/a		C		
6 N-pak ams	2.25 qt/a		C		
6 Liberty	29 oz/a		D		
6 N-pak ams	2.25 qt/a		D		
LSD P=.05				.	.
Standard Deviation				0.00	0.00
CV				0.0	0.0
Bartlett's X2				0.0	0.0
P(Bartlett's X2)				.	.
Replicate F				0.000	0.000
Replicate Prob(F)				1.0000	1.0000
Treatment F				0.000	0.000
Treatment Prob(F)				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.  
 Missing data estimates are included in columns: Yates=6,7,23,24  
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,8,14,25,26,27,28,29,30 because error mean square = 0.



# The Ohio State University

## Authority MTZ formulation comparisons in LL soybeans

Trial ID: 17 MTZFORM  
Protocol ID: 17 MTZFORM  
Project ID: SULF.SOY.17.JPR.07(a)

Location: F-10 West end Trial Year: 2017  
Investigator: Dr. Mark M. Loux  
Study Director: Bryan Reeb  
Sponsor Contact: Joe Reed, FMC

### Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop  
O, Other, G-BYRO7, G-OthStg = Other animal or nematode

### Pest Code

LAMPU, Lamium purpureum, Purple deadnettle = US  
STEME, Stellaria media, Common chickweed = US  
ERYRE, Erysimum repandum, Bushy wallflower = US  
SENGL, Senecio glabellus, Cressleaf groundsel = US  
VERAR, Veronica arvensis, Corn speedwell = US  
TARSS, Taraxacum sp., Dandelion = US  
ERICA, Erigeron canadensis, Canada horseweed = US  
SETFA, Setaria faberi, Giant foxtail = US  
AMBTR, Ambrosia trifida, Giant ragweed = US  
AMARE, Amaranthus retroflexus, Redroot pigweed = US

### Crop Code

GLXMA, BSOY, Glycine max, Soybean = US

### Rating Type

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

### Rating Unit

% = percent