

Purdue Weed Science

METRIBUZIN RATE TITRATION IN SOYBEANS

Trial ID: 23-FRAN-USB-Metri-dose Cooperator Trial ID:
 Protocol ID: SMTZRATES Location: Trial Year: 2022
 Project ID: Project ID 2: Project ID 3:
 Study Director: Sponsor Contact:
 Investigator: Bryan Young

General Trial Information

Investigator: Bryan Young **Title:** Professor

Discipline: H herbicide
Status: E established

ARM Trial Created On: May-10-2023
Initiation Date: May-1-2023

Trial Location

City: Francesville **Country:** USA United States
State/Prov.: Indiana
Postal Code: 47946

Latitude of LL Corner °: 40.911508 N
Longitude of LL Corner °: -86.894821 W

Directions:

GPS coordinates: 40.9115075, -86.893792

Regulations

Conducted Under GLP: No
Conducted Under GEP: No

Role: INVEST investigator
Investigator: Bryan Young **Title:** Professor
Organization: Purdue University
Address 1: 915 W. State Street **Mobile No.:** 618-713-6471
Country: USA United States **E-mail:** BryanYoung@purdue.edu
City: West Lafayette **State/Prov:** IN **Postal Code:** 47907

Crop Description

Crop 1: C GLXMA Glycine max Soybean **BBCH Scale:** BSOY
Entry Date: May-4-2022 **Stage Scale:** BBCH
Variety: Asgrow 30XF2
Planting Date: May-10-2023 **Planting Rate:** 140000 S/A
Depth: 1.75 IN
Rows per Plot: 4 **Planting Method:** SEEDED seeded
Row Spacing: 30 IN **Planting Equipment:** PP plot planter

Pest Description

Pest 1 Type: W **Code:** AMATU *Amaranthus tuberculatus* **Entry Date:** May-4-2022
Common Name: tall waterhemp **Stage Scale:** BBCH

Site and Design

Treated Plot Width: 6.67 FT **Site Type:** FIELD field
Treated Plot Length: 30 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 200.1 FT2 **Tillage Type:** NOTILL no-till
Replications: 4 **Treatments:** 17 **Plots:** 68 **Study Design:** RAOBL Randomized Complete Block (RCB)
Distance between Blocks: 1 FT
Distance between 'Plot' Experimental Units: 0.5 FT

Field Prep./Maintenance:

5/4/23: Blanket application of Roundup PowerMax 1 qt/A plus 2,4-D LV4 1 pt/A for burndown of winter annual weeds
 5/10/23: Blanket application of Gramoxone 3SL at 2.5 pt/A plus HSOC 0.5%v/v for burndown of emerged weeds

Soil Description

Description Name: FRAN 22
% Sand: 74 **% OM:** 3.2 **Texture:** SL sandy loam
% Silt: 16
% Clay: 10 **Fert. Level:** G good
pH: 6.7 **CEC:** 9.4
Soil Drainage: G good

Weather Conditions

Overall Moisture Conditions: BELNOR below normal
Weather Station Name: FRAN **Distance:** 0.2 MI

No.	Date	Moisture Total	Unit
1.	May-12-2023	0.65	IN
2.	May-14-2023	0.01	IN
3.	May-15-2023	0.01	IN
4.	May-19-2023	0.08	IN
5.	May-28-2023	0.7	IN
6.	May-31-2023	1.24	IN
7.	Jun-8-2023	0.68	IN
8.	Jun-11-2023	0.02	IN
9.	Jun-13-2023	0.37	IN
10.	Jun-14-2023	0.01	IN
11.	Jun-20-2023	0.73	IN
12.	Jun-23-2023	1	IN
13.	Jun-25-2023	1	IN
14.	Jun-26-2023	0.34	IN
15.	Jun-27-2023	0.01	IN
16.	Jul-1-2023	0.58	IN
17.	Jul-2-2023	0.37	IN
18.	Jul-5-2023	0.09	IN
19.	Jul-6-2023	0.01	IN
20.	Jul-8-2023	0.71	IN
21.	Jul-12-2023	0.11	IN
22.	Jul-15-2023	1.09	IN

Application Description

	A
Date	May-11-2023
Start Time	10:30 AM
Stop Time	11:30 AM
Method	SPRAY
Timing	PRE
Placement	BROADC
Applied By	HM
Entry Date	May-13-2023
Air Temperature Start, Stop	80, 80 F
% Relative Humidity Start, Stop	41, 41
Wind Velocity+Dir. Start	5 MPH, SE
Wind Velocity+Dir. Stop	7 MPH, SE
Wind Velocity+Dir. Max	7 MPH, SE
Wet Leaves (Y/N)	N, no
Soil Temperature	70 F
Soil Moisture	NORMAL
% Cloud Cover	25
Moisture 6 Hours After Appl.	0 IN

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale	GLXMA, BSOY
Stage Majority, Percent	00, -

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale	AMATU, W, BBCH
Stage Majority, Percent	00, -

Application Equipment

	A
Equipment Name	XR8002-30FT
Equipment Type	SPRBAC
Operation Pressure	25 PSI
Nozzle Model	XR
Nozzle Type	FLAFXR
Nozzle TradeName	TEEJET
Nozzle Tip Size, Color	8002, -
Nozzle Spacing	20 IN
Boom Length	6.67 FT
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	0.2956 GAL
Propellant	COMCO2

Notes

No.	Context	Date	By	Notes
1.	STATUS	Mar-24-2022	Dr. Bryan Young	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
2.	STATUS	May-14-2022	Dr. Bryan Young	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.
3.	APPLIC	Jun-9-2022	Dr. Bryan Young	SelectMax applied as a blanket to trial area for grass control. Interline applied at 32 fl oz/A + AMS to weed-free plots in treatment 2.

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Rating Date	May-25-2023	Jun-8-2023	Jun-8-2023	Jun-22-2023						
Rating Type	PHYGEN	PHYGEN	HEIGHT	PHYGEN	DAYS to EM					
Rating Unit	%	%	cm	%						
Rating Min/Max/Interval	0, 100, -	0, 100, -		0, 100, -						
Sample Size			6 plants		1 PLOT					
Crop Scientific Name	Glycine max	Glycine max	Glycine max		Days to 1st Eme>					
Crop Name	Soybean	Soybean	Soybean		Amaranthus tube>					
Pest Scientific Name					waterhemp, tall					
Pest Name										
Trt-Eval Interval	14 DA-A	28 DA-A	28 DA-A	42 DA-A						
Trt Treatment	2*	4*	5*	12*	1*					
No. Name	Rate	Rate Unit	Other Rate	Other Rate	Appl Unit Code					
1 UNTREATED	0.0	a	0.0	d	9.6 a	0.0 b	6.5 g			
2 HANDWEEDED CHECK	0.0	a	0.0	d	9.1 a	0.0 b				
3 METRICOR DF	0.1875	lb ai/a	4	oz/a	A	0.0 a	1.3 bcd	10.7 a	0.0 b	12.8 ef
4 METRICOR DF	0.2343	lb ai/a	5	oz/a	A	0.0 a	1.8 bcd	9.4 a	0.0 b	12.8 ef
5 METRICOR DF	0.2812	lb ai/a	6	oz/a	A	0.0 a	1.8 bcd	9.2 a	0.0 b	15.8 def
6 METRICOR DF	0.3282	lb ai/a	7	oz/a	A	0.0 a	2.0 bcd	10.0 a	0.0 b	17.0 cde
7 METRICOR DF	0.375	lb ai/a	8	oz/a	A	0.0 a	3.5 b	10.0 a	0.0 b	19.0 bcd
8 METRICOR DF	0.4218	lb ai/a	9	oz/a	A	0.0 a	2.5 bc	10.2 a	0.8 b	19.0 bcd
9 METRICOR DF	0.4687	lb ai/a	10	oz/a	A	0.0 a	2.3 bcd	10.4 a	0.8 b	18.0 cd
10 METRICOR DF	0.5156	lb ai/a	11	oz/a	A	0.0 a	2.3 bcd	10.3 a	0.0 b	20.8 abc
11 METRICOR DF	0.5625	lb ai/a	12	oz/a	A	0.0 a	2.5 bc	9.9 a	0.8 b	20.3 a-d
12 METRICOR DF	0.6093	lb ai/a	13	oz/a	A	0.0 a	3.3 b	9.8 a	0.8 b	22.8 ab
13 METRICOR DF	0.6562	lb ai/a	14	oz/a	A	0.0 a	2.8 bc	9.9 a	0.0 b	18.8 bcd
14 METRICOR DF	0.7031	lb ai/a	15	oz/a	A	0.0 a	3.8 b	10.3 a	0.0 b	24.8 a
15 METRICOR DF	0.75	lb ai/a	16	oz/a	A	0.0 a	3.5 b	9.3 a	1.3 b	24.8 a
16 SPARTAN 4F	0.375	lb ai/a	12	fl oz/a	A	0.0 a	16.3 a	9.8 a	7.5 a	16.8 cde
17 DUAL MAGNUM (7.62EC)	1.59485	lb ai/a	1.67	pt/a	A	0.0 a	0.8 cd	9.6 a	0.0 b	11.3 f
LSD P=.05	.		2.41			1.15		2.12		4.61
Standard Deviation	0.00		1.69			0.81		1.49		3.24
CV	0.0		57.35			8.22		216.07		18.46
Levene's Prob(F)	.		0.01*			0.398		0.777		0.053
P(Shapiro-Wilk)^	.		0.0082*			0.3283		0.0*		0.0207*
P(Skewness)^	.		0.0389*			0.7384		0.0*		0.1346
P(Kurtosis)^	.		0.0*			0.1626		0.0*		0.0001*
Replicate F	0.000		8.213			6.957		2.046		8.877
Replicate Prob(F)	1.0000		0.0002			0.0006		0.1199		0.0001
Treatment F	0.000		18.154			1.232		5.822		9.310
Treatment Prob(F)	1.0000		0.0001			0.2796		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.

Due to missing data, larger LSD values (col. 4: >=2.41 and <=2.62) are used for mean comparisons of treatment pairs with missing data.

* Adjusted means

Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.

^Calculated from residual.

Rating Date						May-25-2023	Jun-8-2023	Jun-22-2023	
Rating Type						CONTRO	CONTRO	CONTRO	
Rating Unit						%	%	%	
Rating Min/Max/Interval						0, 100, -	0, 100, -	0, 100, -	
Sample Size									
Crop Scientific Name						Amaranthus tube>	Amaranthus tube>	Amaranthus tube>	
Crop Name									
Pest Scientific Name									
Pest Name						waterhemp, tall	waterhemp, tall	waterhemp, tall	
Trt-Eval Interval						14 DA-A	28 DA-A	42 DA-A	
Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Unit Code	3*	6*	13*
1	UNTREATED						0.0 c	0.0 h	0.0 j
2	HANDWEEDED CHECK						100.0 a	100.0 a	100.0 a
3	METRICOR DF	0.1875	lb ai/a	4	oz/a	A	97.5 b	74.3 f	50.0 h
4	METRICOR DF	0.2343	lb ai/a	5	oz/a	A	97.8 b	80.0 e	51.3 h
5	METRICOR DF	0.2812	lb ai/a	6	oz/a	A	99.5 a	85.0 e	60.5 g
6	METRICOR DF	0.3282	lb ai/a	7	oz/a	A	100.0 a	91.8 d	78.8 ef
7	METRICOR DF	0.375	lb ai/a	8	oz/a	A	100.0 a	93.0 bcd	74.0 f
8	METRICOR DF	0.4218	lb ai/a	9	oz/a	A	100.0 a	95.5 a-d	83.8 de
9	METRICOR DF	0.4687	lb ai/a	10	oz/a	A	100.0 a	96.0 a-d	89.0 bcd
10	METRICOR DF	0.5156	lb ai/a	11	oz/a	A	100.0 a	96.0 a-d	90.8 bcd
11	METRICOR DF	0.5625	lb ai/a	12	oz/a	A	100.0 a	97.0 a-d	92.5 bc
12	METRICOR DF	0.6093	lb ai/a	13	oz/a	A	100.0 a	96.0 a-d	90.5 bcd
13	METRICOR DF	0.6562	lb ai/a	14	oz/a	A	100.0 a	96.8 a-d	92.5 bc
14	METRICOR DF	0.7031	lb ai/a	15	oz/a	A	100.0 a	97.3 abc	95.0 ab
15	METRICOR DF	0.75	lb ai/a	16	oz/a	A	100.0 a	98.3 ab	96.0 ab
16	SPARTAN 4F	0.375	lb ai/a	12	fl oz/a	A	100.0 a	92.8 cd	87.0 cd
17	DUAL MAGNUM (7.62EC)	1.59485	lb ai/a	1.67	pt/a	A	97.3 b	61.3 g	27.5 i
LSD P=.05						0.96	5.44	7.49	
Standard Deviation						0.68	3.83	5.27	
CV						0.72	4.49	7.11	
Levene's Prob(F)						0.109	0.511	0.014*	
P(Shapiro-Wilk)^						0.0*	0.004*	0.0932	
P(Skewness)^						0.0002*	0.0183*	0.9695	
P(Kurtosis)^						0.0*	0.0*	0.0004*	
Replicate F						1.114	2.880	5.379	
Replicate Prob(F)						0.3528	0.0455	0.0028	
Treatment F						5097.547	160.370	110.476	
Treatment Prob(F)						0.0001	0.0001	0.0001	

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Rating Date						Jun-8-2023
Rating Type						COUNT
Rating Unit						
Rating Min/Max/Interval						
Sample Size						0.5 m2
Crop Scientific Name						
Crop Name						
Pest Scientific Name						Amaranthus tube>
Pest Name						waterhemp, tall
Trt-Eval Interval						28 DA-A
Trt No.	Treatment Name	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code
						7*
1	UNTREATED					245.4 a
2	HANDWEEDED CHECK					0.0 b
3	METRICOR DF	0.1875	lb ai/a	4	oz/a	A
4	METRICOR DF	0.2343	lb ai/a	5	oz/a	A
5	METRICOR DF	0.2812	lb ai/a	6	oz/a	A
6	METRICOR DF	0.3282	lb ai/a	7	oz/a	A
7	METRICOR DF	0.375	lb ai/a	8	oz/a	A
8	METRICOR DF	0.4218	lb ai/a	9	oz/a	A
9	METRICOR DF	0.4687	lb ai/a	10	oz/a	A
10	METRICOR DF	0.5156	lb ai/a	11	oz/a	A
11	METRICOR DF	0.5625	lb ai/a	12	oz/a	A
12	METRICOR DF	0.6093	lb ai/a	13	oz/a	A
13	METRICOR DF	0.6562	lb ai/a	14	oz/a	A
14	METRICOR DF	0.7031	lb ai/a	15	oz/a	A
15	METRICOR DF	0.75	lb ai/a	16	oz/a	A
16	SPARTAN 4F	0.375	lb ai/a	12	fl oz/a	A
17	DUAL MAGNUM (7.62EC)	1.59485	lb ai/a	1.67	pt/a	A
	LSD P=.05					60.40
	Standard Deviation					42.48
	CV					172.0
	Levene's Prob(F)					0.00*
	P(Shapiro-Wilk)^					0.0*
	P(Skewness)^					0.3451
	P(Kurtosis)^					0.0*
	Replicate F					1.525
	Replicate Prob(F)					0.2201
	Treatment F					7.541
	Treatment Prob(F)					0.0001

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Study Director: Sponsor Contact:
Investigator: Bryan Young

Rating Type

PHYGEN = phytotoxicity - general / injury
HEIGHT = height
CONTRO = control / burndown or knockdown
COUNT = count

Rating Unit

%, 0, 100, = percent
cm, , , = centimeter

PLOT = total plot
m2 = square meter