

The Ohio State University

Helmet Maxx University Exposed

Trial ID: 21HELMMAXX
 Protocol ID: 2021-H-US21
 Project ID: Helmet Maxx University Expsoure

Location: Western Branch F-9 East Trial Year: 2021
 Investigator (Creator): Dr. Mark M. Loux
 Study Director: Brock S Waggoner
 Sponsor Contact: Brock S. Waggoner

General Trial Information

Study Director: Brock S Waggoner **Title:** Sales Agronomist

Trial Status: E established

ARM Trial Created On: May-19-2021

Trial Location

City: South Charleston **Country:** USA United States
State/Prov.: Ohio
Postal Code: 45368

Latitude of LL Corner °: 39.85872 N
Longitude of LL Corner °: -83.67091 W
Altitude of LL Corner: 1088.00 FT

Conducted Under GLP: No

Conducted Under GEP: No

Keywords: Reviton

Burndown

Preemergent

Crop Description

Crop 1: C ZEAM02 Zea mays subsp. indentata GMO Corn, BT/Roundup Ready **BBCH Scale:** BCOR
Entry Date: May-25-2021 **Stage Scale:** BBCH
Variety: Mycogen UNI14D38
Attributes: RR, LL, Enlist
Planting Date: Apr-28-2021 **Planting Rate:** 32097 S/A
Depth: 2 IN
Rows per Plot: 4 **Planting Method:** PLANTD planted
Row Spacing: 30 IN **Planting Equipment:** FPP finger pickup planter
Seed Bed: MEDIUM medium
Soil Temperature: 63 F **Soil Moisture:** NORMAL normal, adequate
Emergence Date: May-14-2021

Pest Description

Pest 1 Type: W **Code:** STEME *Stellaria media* **Entry Date:** May-25-2021
Common Name: Common chickweed **Stage Scale:** BBCH

Pest 2 Type: W **Code:** VERAG *Veronica agrestis* **Entry Date:** May-25-2021
Common Name: Field speedwell **Stage Scale:** BBCH

Pest 3 Type: W **Code:** CAPBP *Capsella bursa-pastoris* **Entry Date:** May-25-2021
Common Name: Shepherd's purse **Stage Scale:** BBCH

Pest 4 Type: W **Code:** ERICA *Erigeron canadensis* **Entry Date:** May-25-2021
Common Name: Canada horseweed **Stage Scale:** BBCH

Pest 5 Type: W **Code:** AMBTR *Ambrosia trifida* **Entry Date:** May-25-2021
Common Name: Giant ragweed **Stage Scale:** BBCH

Pest 6 Type: W **Code:** ERYRE *Erysimum repandum* **Entry Date:** May-25-2021
Common Name: Bushy wallflower **Stage Scale:** BBCH

Pest 7 Type: W **Code:** THLSS *Thlaspi sp.* **Entry Date:** May-25-2021
Common Name: Pennycress **Stage Scale:** BBCH

Pest 8 Type: W **Code:** SETFA *Setaria faberi* **Entry Date:** Jun-7-2021
Common Name: Giant foxtail **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 **Treatments:** 6 **Tillage Type:** NOTILL no-till
Replications: 3 **Study Design:** RACOB L Randomized Complete Block (RCB)

Previous

No. Crop Year
 1. SOYBEAN 2020

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Soil Description

Description Name: F-9 East
% Sand: 36 **% OM:** 3 **Texture:** SICL silty clay loam
% Silt: 49 **pH:** 6.4 **Soil Name:** Kokomo
% Clay: 15 **CEC:** 17.8 **Fert. Level:** G good
Soil Drainage: G good

Application Description

	A		B		C	
Application Date	May-20-2021		Jun-6-2021		Jun-11-2021	
Appl. Start Time	12:30 PM		9:15 AM		1:30 PM	
Appl. Stop Time	12:45 PM		9:30 AM		1:35 PM	
Application Method	SPRAY		SPRAY		SPRAY	
Application Timing	PRE		V3		POST	
Application Placement	BROFOL		BROFOL		BOFOL	
Applied By	Garcia		Dobbels		Dobbels	
Appl. Entry Date	May-25-2021		Jun-7-2021		Jun-14-2021	
Air Temperature Start, Stop	86	86 F	81	81 F	81	81 F
% Relative Humidity Start, Stop	35	35	60	60	70	70
Wind Velocity+Dir. Start	4.3	MPH S	4	MPH SSW	6	MPH N
Wind Velocity+Dir. Stop	4.5	MPH S	4	MPH SSW	6	MPH N
Wind Velocity+Dir. Max	7	MPH SSE	4	MPH SSW	6	MPH N
Wet Leaves (Y/N)	N no		N no		N no	
Soil Temperature	74	F	67	F	78	F
Soil Moisture	DRY		dry		sliwet	
Soil Surface Condition	MEDIUM		MEDIUM		MEDIUM	
% Cloud Cover	3		60		60	
Next Moisture Occurred On	May-26-2021		Jun-7-2021		Jun-16-2021	
Time to Next Moisture	6.0 DAY		23.0 HR		5.0 DAY	
Moisture 6 Hours after Appl.	0	IN	0	IN	0	IN
Moisture 1 Week after Appl.	0.56	IN	0.48	IN	0.59	IN

Crop Stage At Each Application

	A		B		C	
Crop 1 Code, BBCH Scale	ZEAM02 BCOR		ZEAM02 BCOR		ZEAM02 BCOR	
Days after Emergence	6		23		28	
Stage Majority, Percent	10	100	13	100	16	100
Height Average	1	IN	9	IN	17	IN
Height Minimum, Maximum	0.5	1	8	10	15	18

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Pest Stage At Each Application

	A		B		C	
Pest 1 Code, Type, Scale	STEME	W BBCH	STEME	W BBCH	STEME	W BBCH
Stage Majority, Percent	69	100	69	100		
Diameter Average	6	IN	8	IN		
Diameter Minimum, Maximum	6	8	8	10		
Height Average	2	IN	3	IN		
Height Minimum, Maximum	2	3	2	3		
Density Average	4	PLA/m2	5	PLA/m2		
Pest 2 Code, Type, Scale	VERAG	W BBCH	VERAG	W BBCH	VERAG	W BBCH
Stage Majority, Percent	69	100	69	100		
Diameter Average	3	IN	3	IN		
Diameter Minimum, Maximum	3	4	3	4		
Height Average	2	IN	2	IN		
Height Minimum, Maximum	1	2	1	2		
Density Average	5	PLA/m2	5	PLA/m2		
Pest 3 Code, Type, Scale	CAPBP	W BBCH	CAPBP	W BBCH	CAPBP	W BBCH
Stage Majority, Percent	70	100				
Diameter Average	3	IN				
Diameter Minimum, Maximum	2	3				
Height Average	16	IN				
Height Minimum, Maximum	12	19				
Density Average	2	PLA/m2				
Pest 4 Code, Type, Scale	ERICA	W BBCH	ERICA	W BBCH	ERICA	W BBCH
Stage Majority, Percent	19	100	19	100		
Diameter Average	2	IN	3	IN		
Diameter Minimum, Maximum	2	3	3	4		
Height Average	2	IN	6	IN		
Height Minimum, Maximum	2	3	3	8		
Density Average	1	PLA/m2	3	PLA/m2		
Pest 5 Code, Type, Scale	AMBTR	W BBCH	AMBTR	W BBCH	AMBTR	W BBCH
Stage Majority, Percent	12	80			16	80
Stage Minimum, Percent	12	80			12	10
Stage Maximum, Percent	14	20			18	10
Height Average	3	IN			3	IN
Height Minimum, Maximum	1	3			3	6
Density Average	8	PLA/m2			3	PLA/m2
Pest 6 Code, Type, Scale	ERYRE	W BBCH	ERYRE	W BBCH	ERYRE	W BBCH
Stage Majority, Percent	69	100				
Diameter Average	3	IN				
Diameter Minimum, Maximum	2	3				
Height Average	16	IN				
Height Minimum, Maximum	12	18				
Density Average	2	PLA/m2				
Pest 7 Code, Type, Scale	THLSS	W BBCH	THLSS	W BBCH	THLSS	W BBCH
Stage Majority, Percent	69	100				
Diameter Average	3	IN				
Diameter Minimum, Maximum	3	4				
Height Average	18	IN				
Height Minimum, Maximum	18	20				
Density Average	0.33	PLA/m2				
Pest 8 Code, Type, Scale	SETFA	W BBCH	SETFA	W BBCH	SETFA	W BBCH
Stage Majority, Percent			13	80	12	100
Stage Minimum, Percent			12	10		
Stage Maximum, Percent			14	10		
Height Average			6	IN	2	IN
Height Minimum, Maximum			4	8	1	3
Density Average			136	PLA/m2	68	PLA/m2

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Application Equipment

	A	B	C
Appl. Equipment	6' AIXR	10' AIXR	10' AIXR
Equipment Type	BACCAI	BACCAI	BACCAI
Operation Pressure	44 PSI	44 PSI	44 PSI
Nozzle Model	110015	110015	110015
Nozzle Type	AIXR	AI XR	AI XR
Nozzle TradeName		TeeJet	TeeJet
Nozzle Tip Size, Color		015 green	015 green
Nozzle Spacing	18 IN	18 IN	18 IN
Boom Length	6.67 FT	10 FT	10 FT
Boom Height	20 IN	20 IN	20 IN
Ground Speed	3 MPH	3 MPH	3 MPH
Carrier	WATER	WATER	WATER
Water Hardness (ppm CaCO3)	250	250	250
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Coverage		25 mL	25 mL
Mix Size	1 L	2 L	2 L
Spray pH	7.8	7.8	7.8
Propellant	COMCO2	COMCO2	COMCO2
Tank Mix (Y/N)		Y yes	Y yes

Notes

Context	Date	By	Notes
STATUS	May-19-2021	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-25-2021	Dr. Mark M. Loux	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

Pest Type	W Weed	W Weed	W Weed	W Weed
Pest Code	SETFA	AMBTR	CHEAL	AMARE
Pest Name	Giant foxtail	Giant ragweed	common lambsqua>	Redroot pigweed
Crop Type, Code	C ZEAMX			
BBCH Scale	BCOR			
Crop Scientific Name	Zea mays			
Crop Name	Corn			
Rating Date	Jun-21-2021	Jun-21-2021	Jun-21-2021	Jun-21-2021
Rating Type	PHYCHL	CONTRO	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-22-2021	Jun-22-2021	Jun-22-2021	Jun-22-2021
Days After First/Last Applic.	32 10	32 10	32 10	32 10
Days After Emergence	38 DE-1	38 DE-1	38 DE-1	38 DE-1
ARM Action Codes		ET3		AS
Number of Decimals	0	0	0	0

Trt No.	Treatment Name	Other Rate	Other Rate Unit	Appl Code	1*	2*	3*	4*	5* dAS
1	Helmet Maxx Pre				0 -	75 c	95 a	100 -	95 a
	Helmet Maxx	2.01 lb ai/a		A					
	Roundup PowerMax	1.38 lb ai/a		A					
2	Helmet Maxx Post				10 -	53 d	98 a	100 -	100 a
	Helmet Maxx	2.68 lb ai/a		B					
	Non Ionic Surfactant			B					
3	Helmet Maxx	1.34 lb ai/a		A	0 -	100	100 a	100 -	100 a
	Roundup PowerMax	1.38 lb ai/a		A					
	Helmet Maxx	2.01 lb ai/a		C					
	Roundup PowerMax	1.38 lb ai/a		C					
4	Acuron	2.58 lb ai/a		A	0 -	83 b	88 a	100 -	100 a
	Roundup Powermax	1.13 lb ai/a		A					
5	Acuron	1.29 lb ai/a		A	0 -	100 a	100 a	100 -	100 a
	Roundup Powermax	1.13 lb ai/a		A					
	Acuron	1.29 lb ai/a		C					
	Roundup Powermax	1.13 lb ai/a		C					

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Pest Name	Giant foxtail	Giant ragweed	common lambsqua>	Redroot pigweed				
Crop Type, Code	C ZEAMX							
BBCH Scale	BCOR							
Crop Scientific Name	Zea mays							
Crop Name	Corn							
Rating Date	Jun-21-2021	Jun-21-2021	Jun-21-2021	Jun-21-2021				
Rating Type	PHYCHL	CONTRO	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-22-2021	Jun-22-2021	Jun-22-2021	Jun-22-2021				
Days After First/Last Applic.	32 10	32 10	32 10	32 10				
Days After Emergence	38 DE-1	38 DE-1	38 DE-1	38 DE-1				
ARM Action Codes		ET3		AS				
Number of Decimals	0	0	0	0				
Trt Treatment No. Name	Other Rate	Other Rate	Appl Unit Code	1*	2*	3*	4*	5* dAS
6 UTC				0 -	0 e	0 b	0 -	0 b
LSD P=.05				.	6.7	11.2	.	6.6 - 6.6
Standard Deviation				0.0	3.5	6.2	0.0	0.2t
CV				0.0	5.69	7.68	0.0	2.18t
Levene's F^				.	0.252	0.978	.	0.533
Levene's Prob(F)				.	0.902	0.47	.	0.747
Skewness^				.	0.0159	-0.0511	.	-1.3829*
Kurtosis^				.	-0.7787	2.0094	.	4.8663*
Replicate F				0.000	1.166	0.036	0.000	1.000
Replicate Prob(F)				1.0000	0.3593	0.9643	1.0000	0.4019
Treatment F				0.000	357.065	123.453	0.000	1276.450
Treatment Prob(F)				1.0000	0.0001	0.0001	1.0000	0.0001

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Pest Code		SETFA	AMBTR	CHEAL	AMARE
Pest Name		Giant foxtail	Giant ragweed	common lambsqua>	Redroot pigweed
Crop Type, Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Rating Date		Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021
Rating Type		PHYCHL	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max		% 0 %	0 100	% 0	% 0 100 %
		100		100	
Number of Subsamples		1	1	1	1
Data Entry Date		Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021
Days After First/Last Applic.		47 25	47 25	47 25	47 25
Days After Emergence		53 DE-1	53 DE-1	53 DE-1	53 DE-1
ARM Action Codes		AS	AA		AS
Number of Decimals		0	0	0	0

Trt No.	Treatment Name	Other Rate	Other Rate Unit	Appl Code	6* dAS	7* dAA	8*	9*	10* dAS
1	Helmet Maxx Pre				0 b	70 c	92 a	100 -	92 a
	Helmet Maxx	2.01 lb ai/a		A					
	Roundup PowerMax	1.38 lb ai/a		A					
2	Helmet Maxx Post				22 a	57 d	100 a	100 -	100 a
	Helmet Maxx	2.68 lb ai/a		B					
	Non Ionic Surfactant			B					
3	Helmet Maxx	1.34 lb ai/a		A	0 b	100 a	100 a	100 -	100 a
	Roundup PowerMax	1.38 lb ai/a		A					
	Helmet Maxx	2.01 lb ai/a		C					
	Roundup PowerMax	1.38 lb ai/a		C					
4	Acuron	2.58 lb ai/a		A	0 b	83 b	93 a	100 -	100 a
	Roundup Powermax	1.13 lb ai/a		A					
5	Acuron	1.29 lb ai/a		A	0 b	100 a	100 a	100 -	100 a
	Roundup Powermax	1.13 lb ai/a		A					
	Acuron	1.29 lb ai/a		C					
	Roundup Powermax	1.13 lb ai/a		C					

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Pest Code	SETFA	AMBTR	CHEAL	AMARE
Pest Name	Giant foxtail	Giant ragweed	common lambsqua>	Redroot pigweed

Crop Type, Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Rating Date	Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021
Rating Type	PHYCHL	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	% 0 %	0 100	% 0	% 0 100	% 0 100
	100		100		
Number of Subsamples	1	1	1	1	1
Data Entry Date	Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021	Jul-6-2021
Days After First/Last Applic.	47 25	47 25	47 25	47 25	47 25
Days After Emergence	53 DE-1	53 DE-1	53 DE-1	53 DE-1	53 DE-1
ARM Action Codes	AS	AA			AS
Number of Decimals	0	0	0	0	0

Trt No.	Treatment Name	Other Rate	Other Rate	Appl Unit Code	6* dAS	7* dAA	8*	9*	10* dAS
6	UTC				0 b	0 e	0 b	0 -	0 b
	LSD P=.05				8.4 - 10.3	1.3 - 11.2	11.1	.	5.7 - 5.8
	Standard Deviation				0.5t	3.7t	6.1	0.0	0.2t
	CV				38.9t	6.25t	7.58	0.0	1.92t
	Levene's F^				0.533	0.478	0.95	.	1.644
	Levene's Prob(F)				0.747	0.786	0.484	.	0.223
	Skewness^				-1.3829*	0.2465	-0.6387	.	0.7109
	Kurtosis^				4.8663*	0.3176	2.697*	.	4.8663*
	Replicate F				1.000	0.925	0.111	0.000	1.000
	Replicate Prob(F)				0.4019	0.4281	0.8959	1.0000	0.4019
	Treatment F				28.407	248.470	126.556	0.000	1637.460
	Treatment Prob(F)				0.0001	0.0001	0.0001	1.0000	0.0001

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Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETFA, Setaria faberi, Giant foxtail = US

AMBTR, Ambrosia trifida, Giant ragweed = US

CHEAL, Chenopodium album, common lambsquarters = US

AMARE, Amaranthus retroflexus, Redroot pigweed = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

PHYCHL = phytotoxicity - chlorosis

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

ARM Action Codes

ET3 = Excluded treatment 3

AS = Automatic square root transformation of X+0.5

AA = Automatic arcsine square root % transformation