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Quizalofop-ethyl + Glufosinate Premix in LibertyLink Soybean. Dr. Howatt and Mettler. 'CZ0301LL/CZ0729GTLL' soybean was planted near Fargo, ND on May 20, 2020. Treatments were applied to V2 soybeans, 6 leaf barley, 6 leaf oats, 3 inch common ragweed, 3 inch common lambsquarters, 3 inch redroot pigweed, and 4 inch waterhemp, on June 22 with 71°F, 62% relative humidity, 75% cloud-cover, 6 mph hour wind velocity at 360°, and dry soil surface at 69°F. Treatments were applied with a backpack sprayer delivering 17 gpa at 40 psi through 11002 TT nozzles to a 7 foot wide area the length of 10 by 30 foot plots. The experiment was a randomized complete block design with four replicates.

Treatment	Rate OZ AI/A, % V/V	7/7	7/7	7/7	7/7	7/7	7/7	7/7
		Soy	Bar	Oat	Corn	Wahe	Corw	Colq
Quiz (Assure II) + COC	0.88 + 1%	0	95	97	98	0	0	0
Gluf + AMS	9.4 + 48	0	70	90	5	94	91	94
Quiz + Gluf + COC + AMS	0.605 + 6.44 + 1% + 48	0	96	95	99	91	88	94
Quiz + Gluf + COC + AMS	0.8 + 8.5 + 1% + 48	0	97	95	99	91	89	94
Quiz + Gluf + COC + AMS	0.88 + 9.4 + 1% + 48	0	96	96	97	93	91	96
Quiz + Gluf + COC + AMS	0.66 + 9.4 + 1% + 48	0	94	95	99	91	88	86
Quiz + Gluf + COC + AMS	0.44 + 9.4 + 1% + 48	0	92	93	99	94	92	95
Quiz + Gluf + COC + AMS	0.22 + 9.4 + 1% + 48	0	90	91	93	91	89	94
Quiz + Gluf + COC + AMS	1.19 + 12.6 + 1% + 48	0	96	97	98	93	94	94
Quiz + Gluf + COC + AMS	1.76 + 18.7 + 1% + 48	0	98	99	99	95	95	95
CV		0	2	2	4	3	5	2
LSD P=0.05		-	3	3	5	4	6	3

Winter rye cover crop seeding date and rate impact on soil, weeds and soybean, Carrington, 2020.

(Greg Endres and Mike Ostlie)

The field study is being conducted at the NDSU Carrington Research Extension Center with support from ND Soybean Council to examine impact on soil, weeds, and soybean with winter rye seeded at two fall dates and three rates grown as a preplant cover crop. Study objective is to identify the best combination of rye seeding dates and rates for reaching goals with the cover crop including soil management and weed control while maintaining high potential for soybean seed yield. Experimental design was a randomized complete block (split-plot arrangement for rye: main plot=seeding date; subplot=seeding rate) and four replications. The dryland trial was established with flax as the previous crop on a Heimdal-Emrick loam soil with 3.1% organic matter, 7.7 pH, 7 ppm P (Olsen; low), 229 ppm K, and 1.61 mmho/cm soluble salts (0- to 6-inch depth). 'ND Dylan' rye was direct seeded in 7-inch rows on September 26 and November 1, 2019 at seeding rates of 25, 50, and 75 lb/A. Early seeded rye reached the 2-leaf plant stage while late-seeded rye did not emerge at close of growing season. 'AG03X7' soybean was direct-planted into living rye in 22-inch rows on May 29, 2020. Rye ranging from tillering to boot stage (5- to 20-inch height) was terminated after soybean planting on May 29 with glyphosate (Roundup PowerMax at 28.4 fl oz/A) plus AMS+NIS (Blue Diamond at 0.5% v/v). Glyphosate plus AMS+NIS was applied on June 23 (V1-2 soybean growth stage) and July 16 (R2 soybean growth stage) across the trial for general weed control. NDAWN monthly rain (inches): May=1.18; June=1.23; July=5.0; August=1.06; September=0.13; and 5-month total=8.59. Soybean seed was harvested with a plot combine on September 17.

Averaged across rye seeding rates, early seeded averaged 761,720 plants/A with ground cover at 57% compared to late seeded at 385,130 plants/A and 19% ground cover when evaluated in May, 2020. Averaged across fall seeding dates, rye plant density and ground cover among the three seeding rates: 25 lb/A = 250,430 plants/A and 30%; 50 lb/A = 599,040 plants/A and 39%; and 75 lb/A = 870,810 plants/A and 45%.

Table 1 indicates rye plant density and ground cover, and weed control with the interaction of rye seeding dates and rates. Plant stand ranged from 162,210 plants/A (4 plants/ft²) to 1,149,700 plants/A (26 plants/ft²) with highest density obtained with early seeding at the high rate. Stand generally was reduced with late seeding date when comparing each seeding rate. Ground cover was similar among treatments though tended to be greater with early rye seeding due to generally greater plant density and more advanced plant growth. Soil moisture levels were not taken due to high topsoil moisture present throughout the soybean plant establishment period.

Table 1. Rye plant density and ground cover, and weed control with winter rye cover crop seeding dates and rates, Carrington, 2020.

Rye seeding treatment		Rye		Weed control			
Date	Rate lb/A	Plant density (8-May) ¹	Ground cover Visual (28-May)	Foxtail ²		Kochia	
		plt/A	%	28-May	22-Jun	28-May	26-Jun
26-Sep	25	338,650	49	52	66	55	56
	50	796,822	58	56	62	79	66
	75	1,149,701	63	71	70	83	70
1-Nov	25	162,210	10	10	64	0	40
	50	401,257	19	10	65	0	57
	75	591,925	27	16	64	0	28
CV (%)		19.5	12.2	40.3	14.9	42.3	28.2
LSD (0.10)		140,784	NS	NS	NS	NS	19

¹Early seeded rye = tillering growth stage; late-seeded rye = 1- to 3-leaf stage.
²Green (majority of population) and yellow.

Primary weeds in the trial were green and yellow foxtail, and kochia (partial glyphosate-resistant population). The late-May evaluation of weed control was completed just prior to soybean planting followed by rye termination with glyphosate. Foxtail and kochia control occurred with the early seeded rye. The late-June evaluation of weed control, that was conducted during the period of POST glyphosate application for trial weed control, generally indicated minimal differences among rye treatments.

Table 2 indicates soybean performance with the interaction of rye seeding dates and rates. Soybean plant stand and development, and canopy closure were similar among rye treatments. Soybean yield, test weight, seed count, protein and oil percentage were similar among treatments. Soybean seed yield was excellent under this production system averaging 49.0 bu/A.

Table 2. Soybean response with winter rye cover crop seeding dates and rates, Carrington, 2020.

Rye seeding treatment		Plant						Seed				
Date	Rate lb/A	Stand plt/A	Emergence	Flower	Canopy closure (10-Aug; R5 stage)		Physiological maturity	Yield bu/A	TW lb/bu	Count no./lb	Protein %	Oil
			Day of year		Visual	Canopeo	Day of year					
26-Sep	25	186,026	159	189	77	79	253	50.3	56.9	2,950	33.3	20.1
	50	211,825	159	189	78	82	253	46.6	57.2	2,931	33.6	19.9
	75	203,678	159	189	80	84	253	50.1	57.2	2,924	33.5	19.9
1-Nov	25	200,963	159	189	81	84	253	49.6	57.0	2,978	33.6	19.9
	50	203,226	159	189	80	84	253	50.6	56.9	2,937	33.5	20.1
	75	204,131	159	189	79	77	253	47.0	57.1	2,964	33.4	20.0
CV (%)		11.2	0.1	0	5.6	6.3	0.1	10.0	0.5	3.6	0.7	0.8
LSD (0.10)		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

In summary, the second year of research in this multi-year study indicates influence among rye seeding dates and rates on rye plant density the following spring. Early rye seeding provided foxtail and kochia suppression prior to soybean planting and rye termination. Also, performance of soybean was not affected by rye seeding date or rate.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2020

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Determine if Liberty plus Enlist One weed control programs provide control of glyphosate resistant kochia in Enlist E3 soybean

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Ken Deibert, BASF

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 16
Replications: 4 **Study Design:** RAOBL Randomized Complete Block (RCB)

Soil Description

Description Name: NW22
 % Sand: 3 % OM: 5 **Texture:** SIC silty clay
 % Silt: 48 pH: 7.4 **Soil Name:** Fargo Silty Clay
 % Clay: 49 CEC: 51

North Dakota State University

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 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Application Description

	A	B	C
Application Date	May-20-2020	Jun-5-2020	Jun-30-2020
Appl. Start Time	5:50 AM	8:50 AM	6:15 AM
Appl. Stop Time	6:20 AM	9:15 AM	6:50 AM
Interval to Prev. Appl.		16 DAYS	25 DAYS
Application Method	SPRAY	SPRAY	SPRAY
Application Timing	PREEM	EPOST	POST
Application Placement	BROSOI	BROFOL	BROFOL
Applied By	Haugrud, N	Stith, J	Haugrud, N
Appl. Entry Date	Jul-28-2020	Jul-28-2020	Jul-28-2020
Air Temperature Start, Stop	58, 58 F	86, 86 F	72, 73 F
% Relative Humidity Start, Stop	80, 80	46, 46	87, 84
Wind Velocity+Dir. Start	7 MPH, SSE	8.5 MPH, S	2 MPH, NE
Wind Velocity+Dir. Stop	7 MPH, SSE	6.5 MPH, S	3 MPH, NE
Wind Velocity+Dir. Max	8.5 MPH, SSE	10 MPH, S	3.5 MPH, NE
Wet Leaves (Y/N)	N, no	N, no	N, no
Soil Temperature	60 F	77 F	70 F
Soil Moisture	NORMAL	NORMAL	NORMAL
Soil Surface Condition	CLOTRA	CLOTRA	CLOTRA
% Cloud Cover	100	60	100

Application Equipment

	A	B	C
Appl. Equipment	Narsil	Walter	Narsil
Equipment Type	BACCAI	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI	28 PSI
Nozzle Model	11002	11002	11002
Nozzle Type	TEEJAI	AIXR	AIXR
Nozzle Spacing	20 IN	20 IN	20 IN
Boom Height	18 IN	18 IN	18 IN
Ground Speed	3 MPH	3 MPH	3 MPH
Carrier	WATER	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL	1119 mL
Propellant	COMCO2	COMCO2	COMCO2

Equipment Comment: AIXR nozzles used on POST treatments that contained Enlist One. Turbo Teejet (TT) nozzles used for treatments containing only Liberty and/or Roundup PowerMax.

Notes

Context	Date	By	Notes
STATUS	Apr-14-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jul-28-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed		
Pest Code		AMATU		AMATU		
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus		
Pest Name		Tall waterhemp		Tall waterhemp		
Crop Type, Code			C, GLXMA		C, GLXMA	
BBCH Scale			BSOY		BSOY	
Crop Scientific Name			Glycine max		Glycine max	
Crop Name			Soybean		Soybean	
Rating Date		Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020	
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO	
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Number of Subsamples		1	1	1	1	
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	
Days After First/Last Applic.		26, 10	26, 10	33, 17	33, 17	
Plant-Eval Interval		27 DP-1	27 DP-1	34 DP-1	34 DP-1	
Days After Emergence		18 DE-1	18 DE-1	25 DE-1	25 DE-1	
Trt Treatment	Rate	Appl				
No. Name	Rate Unit	Code	1*	2*	3*	
4*						
1 Untreated Check			0.0 c	0.0 -	0.0 d	0.0 c
2 ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a B 3 lb ai/a B		0.0 c	0.0 -	51.3 bc	0.0 c
ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a C 3 lb ai/a C					
3 LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a A 32 fl oz/a A 3 lb ai/a A		66.3 b	0.0 -	43.8 c	0.0 c
LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a C 32 fl oz/a C 3 lb ai/a C					
4 LIBERTY 280 SL ENLIST ONE ZIDUA SC N-PAK AMS	32 fl oz/a A 32 fl oz/a A 2.1 fl oz/a A 3 lb ai/a A		86.3 a	0.0 -	63.8 abc	0.0 c
LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a C 32 fl oz/a C 3 lb ai/a C					
5 LIBERTY 280 SL ENLIST ONE AUTHORITY MTZ N-PAK AMS	32 fl oz/a A 32 fl oz/a A 12 oz/a A 3 lb ai/a A		86.3 a	0.0 -	57.5 abc	0.0 c
LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a C 32 fl oz/a C 3 lb ai/a C					
6 LIBERTY 280 SL ENLIST ONE AUTHORITY EDGE N-PAK AMS	32 fl oz/a A 32 fl oz/a A 7 fl oz/a A 3 lb ai/a A		90.8 a	0.0 -	86.3 ab	0.0 c
LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a C 32 fl oz/a C 3 lb ai/a C					
7 LIBERTY 280 SL ENLIST ONE TRICOR N-PAK AMS	32 fl oz/a A 32 fl oz/a A 4 oz/a A 3 lb ai/a A		87.5 a	0.0 -	40.0 c	0.0 c
LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a C 32 fl oz/a C 3 lb ai/a C					
8 ZIDUA PRO LIBERTY 280 SL ENLIST ONE N-PAK AMS	4.5 fl oz/a A 32 fl oz/a C 32 fl oz/a C 3 lb ai/a C		80.0 ab	0.0 -	57.5 abc	0.0 c

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed		
Pest Code		AMATU		AMATU		
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus		
Pest Name		Tall waterhemp		Tall waterhemp		
Crop Type, Code			C, GLXMA		C, GLXMA	
BBCH Scale			BSOY		BSOY	
Crop Scientific Name			Glycine max		Glycine max	
Crop Name			Soybean		Soybean	
Rating Date		Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020	
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO	
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Number of Subsamples		1	1	1	1	
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	
Days After First/Last Applic.		26, 10	26, 10	33, 17	33, 17	
Plant-Eval Interval		27 DP-1	27 DP-1	34 DP-1	34 DP-1	
Days After Emergence		18 DE-1	18 DE-1	25 DE-1	25 DE-1	
Trt Treatment	Rate	Appl	1*	2*	3*	4*
No. Name	Rate	Unit Code				
9 ZIDUA PRO	4.5 fl oz/a	A	83.8 a	0.0 -	45.0 c	0.0 c
LIBERTY 280 SL	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
10 SHARPEN	1 fl oz/a	A	81.3 ab	0.0 -	40.0 c	0.0 c
TRICOR	4 oz/a	A				
LIBERTY 280 SL	32 fl oz/a	C				
ENLIST ONE	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
11 LIBERTY 280 SL	32 fl oz/a	B	0.0 c	0.0 -	96.5 a	2.5 c
N-PAK AMS	3 lb ai/a	B				
LIBERTY 280 SL	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
12 LIBERTY 280 SL	32 fl oz/a	B	0.0 c	0.0 -	93.0 a	7.5 ab
ENLIST ONE	32 fl oz/a	B				
N-PAK AMS	3 lb ai/a	B				
LIBERTY 280 SL	32 fl oz/a	C				
ENLIST ONE	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
13 LIBERTY 280 SL	32 fl oz/a	B	0.0 c	0.0 -	95.0 a	5.0 bc
DUAL II MAGNUM	16 fl oz/a	B				
N-PAK AMS	3 lb ai/a	B				
LIBERTY 280 SL	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
14 LIBERTY 280 SL	32 fl oz/a	B	0.0 c	0.0 -	93.0 a	10.0 a
ENLIST ONE	32 fl oz/a	B				
DUAL II MAGNUM	16 fl oz/a	B				
N-PAK AMS	3 lb ai/a	B				
LIBERTY 280 SL	32 fl oz/a	C				
ENLIST ONE	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				
15 LIBERTY 280 SL	32 fl oz/a	B	0.0 c	0.0 -	93.0 a	2.5 c
ROUNDUP POWERMAX	32 fl oz/a	B				
N-PAK AMS	3 lb ai/a	B				
LIBERTY 280 SL	32 fl oz/a	C				
ROUNDUP POWERMAX	32 fl oz/a	C				
N-PAK AMS	3 lb ai/a	C				

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 Sponsor Contact: Ken Deibert, BASF

Pest Type	W, Weed		W, Weed			
Pest Code	AMATU		AMATU			
Pest Scientific Name	Amaranthus tuberculatus		Amaranthus tuberculatus			
Pest Name	Tall waterhemp		Tall waterhemp			
Crop Type, Code	C, GLXMA		C, GLXMA			
BBCH Scale	BSOY		BSOY			
Crop Scientific Name	Glycine max		Glycine max			
Crop Name	Soybean		Soybean			
Rating Date	Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-22-2020		
Rating Type	CONTRO	PHYTO	CONTRO	PHYTO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1		
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S		
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020		
Days After First/Last Applic.	26, 10	26, 10	33, 17	33, 17		
Plant-Eval Interval	27 DP-1	27 DP-1	34 DP-1	34 DP-1		
Days After Emergence	18 DE-1	18 DE-1	25 DE-1	25 DE-1		
Trt Treatment	Rate	Appl	1*	2*	3*	4*
No. Name	Rate Unit	Code				
16 LIBERTY 280 SL	32 fl oz/a B		0.0 c	0.0 -	97.0 a	10.0 a
ENLIST ONE	32 fl oz/a B					
ROUNDUP POWERMAX	32 fl oz/a B					
N-PAK AMS	3 lb ai/a B					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
ROUNDUP POWERMAX	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
LSD P=.05			12.92	.	25.54	3.72
Standard Deviation			9.07	0.00	17.93	2.62
CV			21.93	0.0	27.26	111.59
Levene's F^			1.309	.	3.366	1.652
Levene's Prob(F)			0.234	.	0.001*	0.095
Skewness^			-2.3719*	.	-0.0676	0.3334
Kurtosis^			15.3002*	.	1.8529*	4.5284*
Replicate F			1.219	0.000	0.745	0.838
Replicate Prob(F)			0.3136	1.0000	0.5311	0.4804
Treatment F			90.005	0.000	10.231	8.025
Treatment Prob(F)			0.0001	1.0000	0.0001	0.0001

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* Adjusted means

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^Calculated from residual.

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 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed		
Pest Code		AMATU		AMATU		
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus		
Pest Name		Tall waterhemp		Tall waterhemp		
Crop Type, Code			C, GLXMA		C, GLXMA	
BBCH Scale			BSOY		BSOY	
Crop Scientific Name			Glycine max		Glycine max	
Crop Name			Soybean		Soybean	
Rating Date		Jun-29-2020	Jun-29-2020	Jul-7-2020	Jul-7-2020	
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO	
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Number of Subsamples		1	1	1	1	
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	
Days After First/Last Applic.		40, 24	40, 24	48, 7	48, 7	
Plant-Eval Interval		41 DP-1	41 DP-1	49 DP-1	49 DP-1	
Days After Emergence		32 DE-1	32 DE-1	40 DE-1	40 DE-1	
Trt Treatment	Rate	Appl				
No. Name	Rate Unit	Code	5*	6*	7*	
8*						
1 Untreated Check			0.0 e	0.0 b	0.0 d	0.0 b
2 ROUNDUP POWERMAX	32 fl oz/a B		46.8 bc	0.0 b	7.5 c	0.0 b
N-PAK AMS	3 lb ai/a B					
ROUNDUP POWERMAX	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
3 LIBERTY 280 SL	32 fl oz/a A		25.0 b-e	0.0 b	89.3 b	0.0 b
ENLIST ONE	32 fl oz/a A					
N-PAK AMS	3 lb ai/a A					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
4 LIBERTY 280 SL	32 fl oz/a A		37.5 bcd	0.0 b	88.8 b	0.0 b
ENLIST ONE	32 fl oz/a A					
ZIDUA SC	2.1 fl oz/a A					
N-PAK AMS	3 lb ai/a A					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
5 LIBERTY 280 SL	32 fl oz/a A		30.0 b-e	0.0 b	88.5 b	0.0 b
ENLIST ONE	32 fl oz/a A					
AUTHORITY MTZ	12 oz/a A					
N-PAK AMS	3 lb ai/a A					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
6 LIBERTY 280 SL	32 fl oz/a A		55.0 b	0.0 b	89.3 b	0.0 b
ENLIST ONE	32 fl oz/a A					
AUTHORITY EDGE	7 fl oz/a A					
N-PAK AMS	3 lb ai/a A					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
7 LIBERTY 280 SL	32 fl oz/a A		17.5 cde	0.0 b	88.3 b	0.0 b
ENLIST ONE	32 fl oz/a A					
TRICOR	4 oz/a A					
N-PAK AMS	3 lb ai/a A					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
8 ZIDUA PRO	4.5 fl oz/a A		30.0 b-e	0.0 b	87.8 b	0.0 b
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed	
Pest Code		AMATU		AMATU	
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus	
Pest Name		Tall waterhemp		Tall waterhemp	
Crop Type, Code			C, GLXMA		C, GLXMA
BBCH Scale			BSOY		BSOY
Crop Scientific Name			Glycine max		Glycine max
Crop Name			Soybean		Soybean
Rating Date		Jun-29-2020	Jun-29-2020	Jul-7-2020	Jul-7-2020
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples		1	1	1	1
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.		40, 24	40, 24	48, 7	48, 7
Plant-Eval Interval		41 DP-1	41 DP-1	49 DP-1	49 DP-1
Days After Emergence		32 DE-1	32 DE-1	40 DE-1	40 DE-1
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code	5*	6*	7*
9 ZIDUA PRO	4.5 fl oz/a A		20.0 cde	0.0 b	86.5 b
LIBERTY 280 SL	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				0.0 b
10 SHARPEN	1 fl oz/a A		10.0 de	0.0 b	87.0 b
TRICOR	4 oz/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				0.0 b
11 LIBERTY 280 SL	32 fl oz/a B		95.5 a	2.5 b	98.0 a
N-PAK AMS	3 lb ai/a B				
LIBERTY 280 SL	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				0.0 b
12 LIBERTY 280 SL	32 fl oz/a B		93.0 a	6.3 ab	98.5 a
ENLIST ONE	32 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				2.5 ab
13 LIBERTY 280 SL	32 fl oz/a B		94.8 a	2.5 b	98.0 a
DUAL II MAGNUM	16 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
LIBERTY 280 SL	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				3.8 ab
14 LIBERTY 280 SL	32 fl oz/a B		96.0 a	10.0 a	98.8 a
ENLIST ONE	32 fl oz/a B				
DUAL II MAGNUM	16 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				5.0 a
15 LIBERTY 280 SL	32 fl oz/a B		93.0 a	2.5 b	99.0 a
ROUNDUP POWERMAX	32 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
LIBERTY 280 SL	32 fl oz/a C				
ROUNDUP POWERMAX	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				1.3 ab

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North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type	W, Weed		W, Weed			
Pest Code	AMATU		AMATU			
Pest Scientific Name	Amaranthus tuberculatus		Amaranthus tuberculatus			
Pest Name	Tall waterhemp		Tall waterhemp			
Crop Type, Code	C, GLXMA		C, GLXMA			
BBCH Scale	BSOY		BSOY			
Crop Scientific Name	Glycine max		Glycine max			
Crop Name	Soybean		Soybean			
Rating Date	Jun-29-2020	Jun-29-2020	Jul-7-2020	Jul-7-2020		
Rating Type	CONTRO	PHYTO	CONTRO	PHYTO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1		
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S		
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020		
Days After First/Last Applic.	40, 24	40, 24	48, 7	48, 7		
Plant-Eval Interval	41 DP-1	41 DP-1	49 DP-1	49 DP-1		
Days After Emergence	32 DE-1	32 DE-1	40 DE-1	40 DE-1		
Trt Treatment	Rate	Appl	5*	6*	7*	8*
No. Name	Rate Unit	Code				
16 LIBERTY 280 SL	32 fl oz/a B		97.0 a	8.8 a	99.0 a	3.8 ab
ENLIST ONE	32 fl oz/a B					
ROUNDUP POWERMAX	32 fl oz/a B					
N-PAK AMS	3 lb ai/a B					
LIBERTY 280 SL	32 fl oz/a C					
ENLIST ONE	32 fl oz/a C					
ROUNDUP POWERMAX	32 fl oz/a C					
N-PAK AMS	3 lb ai/a C					
LSD P=.05			22.26	3.67	5.46	2.67
Standard Deviation			15.63	2.58	3.83	1.88
CV			29.74	126.78	4.7	184.62
Levene's F^			4.271	1.317	0.881	1.413
Levene's Prob(F)			0.00*	0.229	0.588	0.18
Skewness^			0.237	1.2664*	3.7086*	1.4672*
Kurtosis^			1.0802	4.557*	26.3595*	6.1748*
Replicate F			3.142	0.707	2.345	2.185
Replicate Prob(F)			0.0343	0.5530	0.0855	0.1029
Treatment F			21.457	6.770	258.167	3.370
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0008

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 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed	
Pest Code		AMATU		AMATU	
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus	
Pest Name		Tall waterhemp		Tall waterhemp	
Crop Type, Code			C, GLXMA		C, GLXMA
BBCH Scale			BSOY		BSOY
Crop Scientific Name			Glycine max		Glycine max
Crop Name			Soybean		Soybean
Rating Date		Jul-14-2020	Jul-14-2020	Jul-28-2020	Jul-28-2020
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples		1	1	1	1
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.		55, 14	55, 14	69, 28	69, 28
Plant-Eval Interval		56 DP-1	56 DP-1	70 DP-1	70 DP-1
Days After Emergence		47 DE-1	47 DE-1	61 DE-1	61 DE-1
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code	9*	10*	11*
1 Untreated Check			0.0 d	0.0 -	0.0 c
2 ROUNDUP POWERMAX	32 fl oz/a B		5.0 d	0.0 -	5.0 c
N-PAK AMS	3 lb ai/a B				
ROUNDUP POWERMAX	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
3 LIBERTY 280 SL	32 fl oz/a A		86.8 bc	0.0 -	86.8 b
ENLIST ONE	32 fl oz/a A				
N-PAK AMS	3 lb ai/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
4 LIBERTY 280 SL	32 fl oz/a A		87.8 bc	0.0 -	87.3 b
ENLIST ONE	32 fl oz/a A				
ZIDUA SC	2.1 fl oz/a A				
N-PAK AMS	3 lb ai/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
5 LIBERTY 280 SL	32 fl oz/a A		86.5 bc	0.0 -	86.0 b
ENLIST ONE	32 fl oz/a A				
AUTHORITY MTZ	12 oz/a A				
N-PAK AMS	3 lb ai/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
6 LIBERTY 280 SL	32 fl oz/a A		89.8 b	0.0 -	89.3 b
ENLIST ONE	32 fl oz/a A				
AUTHORITY EDGE	7 fl oz/a A				
N-PAK AMS	3 lb ai/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
7 LIBERTY 280 SL	32 fl oz/a A		87.3 bc	0.0 -	87.3 b
ENLIST ONE	32 fl oz/a A				
TRICOR	4 oz/a A				
N-PAK AMS	3 lb ai/a A				
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				
8 ZIDUA PRO	4.5 fl oz/a A		87.3 bc	0.0 -	87.3 b
LIBERTY 280 SL	32 fl oz/a C				
ENLIST ONE	32 fl oz/a C				
N-PAK AMS	3 lb ai/a C				

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed		W, Weed	
Pest Code		AMATU		AMATU	
Pest Scientific Name		Amaranthus tuberculatus		Amaranthus tuberculatus	
Pest Name		Tall waterhemp		Tall waterhemp	
Crop Type, Code			C, GLXMA		C, GLXMA
BBCH Scale			BSOY		BSOY
Crop Scientific Name			Glycine max		Glycine max
Crop Name			Soybean		Soybean
Rating Date		Jul-14-2020	Jul-14-2020	Jul-28-2020	Jul-28-2020
Rating Type		CONTRO	PHYTO	CONTRO	PHYTO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples		1	1	1	1
Assessed By		DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date		Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.		55, 14	55, 14	69, 28	69, 28
Plant-Eval Interval		56 DP-1	56 DP-1	70 DP-1	70 DP-1
Days After Emergence		47 DE-1	47 DE-1	61 DE-1	61 DE-1
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code	9*	10*	11*
9 ZIDUA PRO	4.5 fl oz/a	A	81.8 c	0.0 -	81.8 b
LIBERTY 280 SL	32 fl oz/a	C			0.0 -
N-PAK AMS	3 lb ai/a	C			
10 SHARPEN	1 fl oz/a	A	86.5 bc	0.0 -	86.0 b
TRICOR	4 oz/a	A			0.0 -
LIBERTY 280 SL	32 fl oz/a	C			
ENLIST ONE	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			
11 LIBERTY 280 SL	32 fl oz/a	B	98.5 a	0.0 -	98.0 a
N-PAK AMS	3 lb ai/a	B			0.0 -
LIBERTY 280 SL	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			
12 LIBERTY 280 SL	32 fl oz/a	B	99.0 a	1.3 -	98.5 a
ENLIST ONE	32 fl oz/a	B			1.3 -
N-PAK AMS	3 lb ai/a	B			
LIBERTY 280 SL	32 fl oz/a	C			
ENLIST ONE	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			
13 LIBERTY 280 SL	32 fl oz/a	B	98.0 a	2.5 -	97.5 a
DUAL II MAGNUM	16 fl oz/a	B			2.5 -
N-PAK AMS	3 lb ai/a	B			
LIBERTY 280 SL	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			
14 LIBERTY 280 SL	32 fl oz/a	B	98.5 a	1.3 -	98.5 a
ENLIST ONE	32 fl oz/a	B			1.3 -
DUAL II MAGNUM	16 fl oz/a	B			
N-PAK AMS	3 lb ai/a	B			
LIBERTY 280 SL	32 fl oz/a	C			
ENLIST ONE	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			
15 LIBERTY 280 SL	32 fl oz/a	B	99.0 a	0.0 -	98.5 a
ROUNDUP POWERMAX	32 fl oz/a	B			0.0 -
N-PAK AMS	3 lb ai/a	B			
LIBERTY 280 SL	32 fl oz/a	C			
ROUNDUP POWERMAX	32 fl oz/a	C			
N-PAK AMS	3 lb ai/a	C			

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type	W, Weed		W, Weed	
Pest Code	AMATU		AMATU	
Pest Scientific Name	Amaranthus tuberculatus		Amaranthus tuberculatus	
Pest Name	Tall waterhemp		Tall waterhemp	
Crop Type, Code	C, GLXMA		C, GLXMA	
BBCH Scale	BSOY		BSOY	
Crop Scientific Name	Glycine max		Glycine max	
Crop Name	Soybean		Soybean	
Rating Date	Jul-14-2020	Jul-14-2020	Jul-28-2020	Jul-28-2020
Rating Type	CONTRO	PHYTO	CONTRO	PHYTO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1		1	
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	55, 14	55, 14	69, 28	69, 28
Plant-Eval Interval	56 DP-1	56 DP-1	70 DP-1	70 DP-1
Days After Emergence	47 DE-1	47 DE-1	61 DE-1	61 DE-1
Trt Treatment	Rate	Appl	9*	10*
No. Name	Rate Unit	Code	11*	12*
16 LIBERTY 280 SL	32 fl oz/a B		99.0 a	1.3 -
ENLIST ONE	32 fl oz/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	3 lb ai/a B			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
ROUNDUP POWERMAX	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
LSD P=.05	5.06	1.70	5.20	1.70
Standard Deviation	3.55	1.20	3.65	1.20
CV	4.41	306.38	4.54	306.38
Levene's F^	0.782	1.098	0.744	1.098
Levene's Prob(F)	0.69	0.383	0.729	0.383
Skewness^	0.7291*	0.9568*	0.5983	0.9568*
Kurtosis^	7.8571*	2.1314*	6.7011*	2.1314*
Replicate F	1.736	3.909	2.071	3.909
Replicate Prob(F)	0.1732	0.0145	0.1174	0.0145
Treatment F	306.031	1.582	287.509	1.582
Treatment Prob(F)	0.0001	0.1177	0.0001	0.1177

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.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type			W, Weed	
Pest Code			AMATU	
Pest Scientific Name			Amaranthus tuberculatus	
Pest Name			Tall waterhemp	
Crop Type, Code				C, GLXMA
BBCH Scale				BSOY
Crop Scientific Name				Glycine max
Crop Name				Soybean
Rating Date			Aug-11-2020	Aug-11-2020
Rating Type			CONTRO	PHYTO
Rating Unit/Min/Max			%, 0, 100	%, 0, 100
Number of Subsamples			1	1
Assessed By			DeSimini, S	DeSimini, S
Data Entry Date			Aug-26-2020	Aug-26-2020
Days After First/Last Applic.			83, 42	83, 42
Plant-Eval Interval			84 DP-1	84 DP-1
Days After Emergence			75 DE-1	75 DE-1
Trt Treatment	Rate	Appl	13*	14*
No. Name	Rate Unit	Code		
1 Untreated Check			0.0 c	0.0 -
2 ROUNDUP POWERMAX	32 fl oz/a B		5.0 c	0.0 -
N-PAK AMS	3 lb ai/a B			
ROUNDUP POWERMAX	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
3 LIBERTY 280 SL	32 fl oz/a A		86.0 b	0.0 -
ENLIST ONE	32 fl oz/a A			
N-PAK AMS	3 lb ai/a A			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
4 LIBERTY 280 SL	32 fl oz/a A		86.0 b	0.0 -
ENLIST ONE	32 fl oz/a A			
ZIDUA SC	2.1 fl oz/a A			
N-PAK AMS	3 lb ai/a A			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
5 LIBERTY 280 SL	32 fl oz/a A		86.0 b	0.0 -
ENLIST ONE	32 fl oz/a A			
AUTHORITY MTZ	12 oz/a A			
N-PAK AMS	3 lb ai/a A			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
6 LIBERTY 280 SL	32 fl oz/a A		89.3 b	0.0 -
ENLIST ONE	32 fl oz/a A			
AUTHORITY EDGE	7 fl oz/a A			
N-PAK AMS	3 lb ai/a A			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
7 LIBERTY 280 SL	32 fl oz/a A		87.3 b	0.0 -
ENLIST ONE	32 fl oz/a A			
TRICOR	4 oz/a A			
N-PAK AMS	3 lb ai/a A			
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			
8 ZIDUA PRO	4.5 fl oz/a A		86.8 b	0.0 -
LIBERTY 280 SL	32 fl oz/a C			
ENLIST ONE	32 fl oz/a C			
N-PAK AMS	3 lb ai/a C			

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Appl Unit	Code	13*	14*
9	ZIDUA PRO LIBERTY 280 SL N-PAK AMS	4.5 fl oz/a 32 fl oz/a 3 lb ai/a	A C C		81.8 b	0.0 -
10	SHARPEN TRICOR LIBERTY 280 SL ENLIST ONE N-PAK AMS	1 fl oz/a 4 oz/a 32 fl oz/a 32 fl oz/a 3 lb ai/a	A A C C C		85.5 b	0.0 -
11	LIBERTY 280 SL N-PAK AMS LIBERTY 280 SL N-PAK AMS	32 fl oz/a 3 lb ai/a 32 fl oz/a 3 lb ai/a	B B C C		97.5 a	0.0 -
12	LIBERTY 280 SL ENLIST ONE N-PAK AMS LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a 32 fl oz/a 3 lb ai/a 32 fl oz/a 32 fl oz/a 3 lb ai/a	B B B C C C		97.5 a	1.3 -
13	LIBERTY 280 SL DUAL II MAGNUM N-PAK AMS LIBERTY 280 SL N-PAK AMS	32 fl oz/a 16 fl oz/a 3 lb ai/a 32 fl oz/a 3 lb ai/a	B B B C C		97.0 a	2.5 -
14	LIBERTY 280 SL ENLIST ONE DUAL II MAGNUM N-PAK AMS LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a 32 fl oz/a 16 fl oz/a 3 lb ai/a 32 fl oz/a 32 fl oz/a 3 lb ai/a	B B B B C C C		98.5 a	1.3 -
15	LIBERTY 280 SL ROUNDUP POWERMAX N-PAK AMS LIBERTY 280 SL ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a 32 fl oz/a 3 lb ai/a 32 fl oz/a 32 fl oz/a 3 lb ai/a	B B B C C C		98.5 a	0.0 -

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type		W, Weed	
Pest Code		AMATU	
Pest Scientific Name		Amaranthus tuberculatus	
Pest Name		Tall waterhemp	
Crop Type, Code			C, GLXMA
BBCH Scale			BSOY
Crop Scientific Name			Glycine max
Crop Name			Soybean
Rating Date		Aug-11-2020	Aug-11-2020
Rating Type		CONTRO	PHYTO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100
Number of Subsamples		1	1
Assessed By		DeSimini, S	DeSimini, S
Data Entry Date		Aug-26-2020	Aug-26-2020
Days After First/Last Applic.		83, 42	83, 42
Plant-Eval Interval		84 DP-1	84 DP-1
Days After Emergence		75 DE-1	75 DE-1
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
16 LIBERTY 280 SL	32 fl oz/a B		13*
ENLIST ONE	32 fl oz/a B		14*
ROUNDUP POWERMAX	32 fl oz/a B		
N-PAK AMS	3 lb ai/a B		
LIBERTY 280 SL	32 fl oz/a C		
ENLIST ONE	32 fl oz/a C		
ROUNDUP POWERMAX	32 fl oz/a C		
N-PAK AMS	3 lb ai/a C		
LSD P=.05		5.33	1.70
Standard Deviation		3.74	1.20
CV		4.67	306.38
Levene's F^		0.791	1.098
Levene's Prob(F)		0.681	0.383
Skewness^		0.4315	0.9568*
Kurtosis^		5.7462*	2.1314*
Replicate F		2.675	3.909
Replicate Prob(F)		0.0584	0.0145
Treatment F		271.754	1.582
Treatment Prob(F)		0.0001	0.1177

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.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Liberty + Enlist One to Programs to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D42 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMATU, Amaranthus tuberculatus, Tall waterhemp = US

Crop Type, Code

C = EPPO species (Bayer) codes

GLXMA, BSOY, Glycine max, Soybean = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

DeSimini, S = Research Specialist

Plant-Eval Interval

27 DP-1 = 1 GLXMA May-19-2020

34 DP-1 = 1 GLXMA May-19-2020

41 DP-1 = 1 GLXMA May-19-2020

49 DP-1 = 1 GLXMA May-19-2020

56 DP-1 = 1 GLXMA May-19-2020

70 DP-1 = 1 GLXMA May-19-2020

84 DP-1 = 1 GLXMA May-19-2020

North Dakota State University

PRE fb Liberty + Enlist One to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D47 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2020

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Ken Deibert, BASF

Site and Design

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

Soil Description

Description Name: NW22
 % Sand: 3 % OM: 5 **Texture:** SIC silty clay
 % Silt: 48 pH: 7.4 **Soil Name:** Fargo Silty Clay
 % Clay: 49 CEC: 51

Application Description

	A	B
Application Date	May-20-2020	Jun-19-2020
Appl. Start Time	5:30 AM	8:50 AM
Appl. Stop Time	5:50 AM	8:57 AM
Interval to Prev. Appl.		30 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Haugrud, N	Stith, J
Appl. Entry Date	Jul-28-2020	Jul-28-2020
Air Temperature Start, Stop	58, 58 F	60, 60 F
% Relative Humidity Start, Stop	80, 80	63, 63
Wind Velocity+Dir. Start	7 MPH, SSE	3.5 MPH, WNW
Wind Velocity+Dir. Stop	7 MPH, SSE	3.5 MPH, WNW
Wind Velocity+Dir. Max	8.5 MPH, SSE	4.5 MPH, WNW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	60 F	64 F
Soil Moisture	NORMAL	SLIWET
Soil Surface Condition	CLOTRA	CLOTRA
% Cloud Cover	100	0

North Dakota State University

PRE fb Liberty + Enlist One to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D47 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Application Equipment

	A	B
Appl. Equipment	Narsil	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	AIXR
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Equipment Comment:AIXR nozzles were used on treatments containing Enlist One or Enlist Duo. Turbo Teejet (TT) nozzles were used on treatments containing only Liberty and/or Roundup PowerMax.

Notes

Context	Date	By	Notes
STATUS	Apr-14-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jul-28-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

PRE fb Liberty + Enlist One to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-05	Location: NW22, Reed Township, Fargo, ND	Trial Year: 2020
Protocol ID: 20S-NW22-SOY-05	Investigator (Creator): Dr. Joe Ikley	
Project ID: MKD-H-2020-US-D47	Study Director: Dr. Joe Ikley	
Sponsor Contact: Ken Deibert, BASF		

		W, Weed AMATU Amaranthus tuberculatus Tall waterhemp		W, Weed AMATU Amaranthus tuberculatus Tall waterhemp	
Pest Type					
Pest Code					
Pest Scientific Name					
Pest Name					
Crop Type, Code	C, GLXMA		C, GLXMA		C, GLXMA
BBCH Scale	BSOY		BSOY		BSOY
Crop Scientific Name	Glycine max		Glycine max		Glycine max
Crop Name	Soybean		Soybean		Soybean
Rating Date	Jun-19-2020	Jun-19-2020	Jun-26-2020	Jun-26-2020	Jul-2-2020
Rating Type	PHYTO	CONTRO	PHYTO	CONTRO	PHYTO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	30, 30	30, 30	37, 7	37, 7	43, 13
Plant-Eval Interval	31 DP-1	31 DP-1	38 DP-1	38 DP-1	44 DP-1
Days After Emergence	22 DE-1	22 DE-1	29 DE-1	29 DE-1	35 DE-1
Trt Treatment No. Name	Rate Appl Rate Unit Code	1*	2*	3*	4* 5*
1 ZIDUA PRO	4.5 fl oz/a A	0.0 -	47.5 -	0.0 b	15.0 c 0.0 -
2 ZIDUA PRO	4.5 fl oz/a A	0.0 -	40.0 -	0.0 b	73.8 b 0.0 -
ENLIST DUO	3.5 pt/a B				
ZIDUA SC	2.1 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
3 ZIDUA PRO	4.5 fl oz/a A	0.0 -	47.5 -	0.0 b	91.3 a 0.0 -
LIBERTY 280 SL	32 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
OUTLOOK	12 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
4 ZIDUA PRO	4.5 fl oz/a A	0.0 -	38.8 -	3.0 a	91.8 a 0.0 -
LIBERTY 280 SL	32 fl oz/a B				
ENLIST ONE	1.5 pt/a B				
ZIDUA SC	2.1 fl oz/a B				
N-PAK AMS	3 lb ai/a B				
LSD P=.05	.	23.71	1.13	9.14	.
Standard Deviation	0.00	14.82	0.71	5.71	0.00
CV	0.0	34.12	94.28	8.41	0.0
Levene's F^	.	0.347	1.333	0.694	.
Levene's Prob(F)	.	0.792	0.31	0.573	.
Skewness^	.	-0.1697	1.0433	-0.1773	.
Kurtosis^	.	-0.4805	2.8297*	-1.5874	.
Replicate F	0.000	0.975	1.000	1.519	0.000
Replicate Prob(F)	1.0000	0.4465	0.4363	0.2751	1.0000
Treatment F	0.000	0.406	18.000	161.329	0.000
Treatment Prob(F)	1.0000	0.7528	0.0004	0.0001	1.0000

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.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,5 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

PRE fb Liberty + Enlist One to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D47 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type	W, Weed	W, Weed	W, Weed
Pest Code	AMATU	AMATU	AMATU
Pest Scientific Name	Amaranthus tuberculatus	Amaranthus tuberculatus	Amaranthus tuberculatus
Pest Name	Tall waterhemp	Tall waterhemp	Tall waterhemp
Crop Type, Code			
BBCH Scale			
Crop Scientific Name			
Crop Name			
Rating Date	Jul-2-2020	Jul-16-2020	Jul-29-2020
Rating Type	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	43, 13	57, 27	70, 40
Plant-Eval Interval	44 DP-1	58 DP-1	71 DP-1
Days After Emergence	35 DE-1	49 DE-1	62 DE-1
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
		6*	7*
		8*	
1 ZIDUA PRO	4.5 fl oz/a A	1.3 c	0.0 c
2 ZIDUA PRO	4.5 fl oz/a A	87.5 ab	91.3 a
ENLIST DUO	3.5 pt/a B		
ZIDUA SC	2.1 fl oz/a B		
N-PAK AMS	3 lb ai/a B		
3 ZIDUA PRO	4.5 fl oz/a A	81.3 b	52.5 b
LIBERTY 280 SL	32 fl oz/a B		
ROUNDUP POWERMAX	32 fl oz/a B		
OUTLOOK	12 fl oz/a B		
N-PAK AMS	3 lb ai/a B		
4 ZIDUA PRO	4.5 fl oz/a A	94.3 a	91.3 a
LIBERTY 280 SL	32 fl oz/a B		
ENLIST ONE	1.5 pt/a B		
ZIDUA SC	2.1 fl oz/a B		
N-PAK AMS	3 lb ai/a B		
LSD P=.05	8.64	11.92	10.12
Standard Deviation	5.40	7.45	6.33
CV	8.18	12.69	10.57
Levene's F^	0.757	4.307	1.45
Levene's Prob(F)	0.54	0.028*	0.277
Skewness^	-0.5004	-0.5567	-0.9354
Kurtosis^	1.2584	0.843	1.7815
Replicate F	2.362	0.675	0.868
Replicate Prob(F)	0.1393	0.5888	0.4925
Treatment F	259.843	134.475	199.584
Treatment Prob(F)	0.0001	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.

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,5 because error mean square = 0.

^Calculated from residual.

North Dakota State University

PRE fb Liberty + Enlist One to Control Glyphosate Resistant Waterhemp in E3 Soybean

Trial ID: 20S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
 Project ID: MKD-H-2020-US-D47 Study Director: Dr. Joe Ikley
 Sponsor Contact: Ken Deibert, BASF

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMATU, Amaranthus tuberculatus, Tall waterhemp = US

Crop Type, Code

C = EPPO species (Bayer) codes

GLXMA, BSOY, Glycine max, Soybean = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Ikley, J = Extension Agent

Plant-Eval Interval

31 DP-1 = 1 GLXMA May-19-2020

38 DP-1 = 1 GLXMA May-19-2020

44 DP-1 = 1 GLXMA May-19-2020

58 DP-1 = 1 GLXMA May-19-2020

71 DP-1 = 1 GLXMA May-19-2020

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2020

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Kevin Thorsness, Bayer

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 11
Replications: 4 **Study Design:** RACOB L Randomized Complete Block (RCB)

Soil Description

Description Name: NW22
 % Sand: 3 % OM: 5 **Texture:** SIC silty clay
 % Silt: 48 pH: 7.4 **Soil Name:** Fargo Silty Clay
 % Clay: 49 CEC: 51

Application Description

	A	B
Application Date	May-20-2020	Jun-15-2020
Appl. Start Time	9:00 AM	6:15 PM
Appl. Stop Time	9:30 AM	6:40 PM
Interval to Prev. Appl.		26 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Ikley, J	Haugrud, N
Appl. Entry Date	Jul-29-2020	Jul-29-2020
Air Temperature Start, Stop	64, 64 F	83, 83 F
% Relative Humidity Start, Stop	75, 75	48, 48
Wind Velocity+Dir. Start	7 MPH, SSE	6 MPH, SSW
Wind Velocity+Dir. Stop	7 MPH, SSE	6 MPH, SSW
Wind Velocity+Dir. Max	8.5 MPH, SSE	7.5 MPH, SSW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	60 F	71 F
Soil Moisture	NORMAL	NORMAL
Soil Surface Condition	CLOTRA	CLOTRA
% Cloud Cover	100	30

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment

	A	B
Appl. Equipment	Mjolnir	Narsil
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	TEEJAI
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Equipment Comment: TTI nozzles were used for treatment applications containing Xtendimax. Turbo Teejet nozzles were used for treatments non-dicamba containing treatments.

Notes

Context	Date	By	Notes
STATUS	Apr-14-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jul-29-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Pest Type			W, Weed AMATU		W, Weed AMATU
Pest Code			Amaranthus tuberculatus		Amaranthus tuberculatus
Pest Scientific Name			Tall waterhemp		Tall waterhemp
Pest Name					
Crop Type, Code	C, GLXMA			C, GLXMA	C, GLXMA
BBCH Scale	BSOY			BSOY	BSOY
Crop Scientific Name	Glycine max			Glycine max	Glycine max
Crop Name	Soybean			Soybean	Soybean
Rating Date	Jun-15-2020		Jun-15-2020	Jun-22-2020	Jun-29-2020
Rating Type	PHYTO		CONTRO	PHYTO	PHYTO
Rating Unit/Min/Max	%, 0, 100		%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1		1	1	1
Assessed By	Haugrud, N		Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-20-2020		Aug-20-2020	Aug-20-2020	Aug-20-2020
Days After First/Last Applic.	26, 26		26, 26	33, 7	40, 14
Plant-Eval Interval	27 DP-1		27 DP-1	34 DP-1	41 DP-1
Days After Emergence	17 DE-1		17 DE-1	24 DE-1	31 DE-1
Trt Treatment	Rate	Appl	1*	2*	3*
No. Name	Rate Unit	Code			4*
			5*		
1 Untreated Check			0.0 -	0.0 e	0.0 b
2 WARRANT	48 fl oz/a A		0.0 -	91.0 a	0.0 b
MAULER	8 fl oz/a A				0.0 b
XTENDIMAX	22 fl oz/a B				
WARRANT	48 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
INTACT	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				88.8 abc
3 FIERCE	3 oz/a A		0.0 -	76.3 ab	0.0 b
XTENDIMAX	22 fl oz/a B				0.0 b
WARRANT	48 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
INTACT	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				85.0 bc
4 VALOR EZ	2.5 fl oz/a A		0.0 -	71.3 bc	0.0 b
XTENDIMAX	22 fl oz/a B				0.0 b
WARRANT	48 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
INTACT	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				82.5 bcd
5 XTENDIMAX	22 fl oz/a A		0.0 -	95.8 a	10.0 a
WARRANT	48 fl oz/a A				5.0 a
MAULER	8 fl oz/a A				
WARRANT	48 fl oz/a B				
COBRA	10 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				99.0 a
6 XTENDIMAX	22 fl oz/a A		0.0 -	96.0 a	6.3 a
WARRANT	48 fl oz/a A				3.3 a
MAULER	8 fl oz/a A				
ANTHEM MAXX	4 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				97.0 a
7 XTENDIMAX	22 fl oz/a A		0.0 -	96.0 a	8.8 a
WARRANT	48 fl oz/a A				4.3 a
MAULER	8 fl oz/a A				
FLEXSTAR	12 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				99.0 a

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. 1=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Pest Type		W, Weed			W, Weed
Pest Code		AMATU			AMATU
Pest Scientific Name		Amaranthus tuberculatus			Amaranthus tuberculatus
Pest Name		Tall waterhemp			Tall waterhemp
Crop Type, Code	C, GLXMA		C, GLXMA	C, GLXMA	
BBCH Scale	BSOY		BSOY	BSOY	
Crop Scientific Name	Glycine max		Glycine max	Glycine max	
Crop Name	Soybean		Soybean	Soybean	
Rating Date	Jun-15-2020	Jun-15-2020	Jun-22-2020	Jun-29-2020	Jun-29-2020
Rating Type	PHYTO	CONTRO	PHYTO	PHYTO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-20-2020	Aug-20-2020	Aug-20-2020	Aug-20-2020	Aug-20-2020
Days After First/Last Applic.	26, 26	26, 26	33, 7	40, 14	40, 14
Plant-Eval Interval	27 DP-1	27 DP-1	34 DP-1	41 DP-1	41 DP-1
Days After Emergence	17 DE-1	17 DE-1	24 DE-1	31 DE-1	31 DE-1
Trt Treatment	Rate	Appl	1*	2*	3*
No. Name	Rate Unit	Code			
8 XTENDIMAX	22 fl oz/a A		0.0 -	60.0 bcd	10.0 a
AUTHORITY FIRST	4 oz/a A				6.3 a
INTACT	0.5 % v/v A				
WARRANT	48 fl oz/a B				
COBRA	10 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				93.5 ab
9 XTENDIMAX	22 fl oz/a A		0.0 -	65.0 bcd	6.3 a
AUTHORITY FIRST	4 oz/a A				3.8 a
INTACT	0.5 % v/v A				
ANTHEM MAXX	4 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
CLASS ACT RIDION	1 % v/v B				78.8 cd
10 XTENDIMAX	22 fl oz/a A		0.0 -	52.5 cd	6.3 a
AUTHORITY FIRST	4 oz/a A				3.3 a
INTACT	0.5 % v/v A				
FLEXSTAR	12 fl oz/a B				
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				85.0 bc
11 AUTHORITY FIRST	4 oz/a A		0.0 -	45.0 d	8.8 a
ANTHEM MAXX	4 fl oz/a B				5.0 a
ROUNDUP POWERMAX	32 fl oz/a B				
DESTINY HC HSMOC	0.5 % v/v B				
CLASS ACT RIDION	1 % v/v B				72.5 d
LSD P=.05	.		15.97	3.65	1.99
Standard Deviation	0.00		11.06	2.53	1.38
CV	0.0		16.25	49.48	49.37
Levene's F^	.		2.123	3.024	1.35
Levene's Prob(F)	.		0.051	0.008*	0.246
Skewness^	.		0.1008	-0.834*	-0.2476
Kurtosis^	.		-0.8378	2.4903*	1.4032
Replicate F	0.000		2.108	0.089	1.508
Replicate Prob(F)	1.0000		0.1201	0.9657	0.2327
Treatment F	0.000		27.508	11.414	11.835
Treatment Prob(F)	1.0000		0.0001	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. 1=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Appl Unit	Code	6*	7*
1	Untreated Check				0.0 d	0.0 h
2	WARRANT	48 fl oz/a	A		81.3 b	71.3 d
	MAULER	8 fl oz/a	A			
	XTENDIMAX	22 fl oz/a	B			
	WARRANT	48 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	INTACT	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			
3	FIERCE	3 oz/a	A		77.5 b	62.5 de
	XTENDIMAX	22 fl oz/a	B			
	WARRANT	48 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	INTACT	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			
4	VALOR EZ	2.5 fl oz/a	A		72.5 bc	61.3 de
	XTENDIMAX	22 fl oz/a	B			
	WARRANT	48 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	INTACT	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			
5	XTENDIMAX	22 fl oz/a	A		100.0 a	100.0 a
	WARRANT	48 fl oz/a	A			
	MAULER	8 fl oz/a	A			
	WARRANT	48 fl oz/a	B			
	COBRA	10 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	DESTINY HC HSMOC	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			
6	XTENDIMAX	22 fl oz/a	A		93.8 a	85.0 bc
	WARRANT	48 fl oz/a	A			
	MAULER	8 fl oz/a	A			
	ANTHEM MAXX	4 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	DESTINY HC HSMOC	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			
7	XTENDIMAX	22 fl oz/a	A		96.3 a	90.0 ab
	WARRANT	48 fl oz/a	A			
	MAULER	8 fl oz/a	A			
	FLEXSTAR	12 fl oz/a	B			
	ROUNDUP POWERMAX	32 fl oz/a	B			
	DESTINY HC HSMOC	0.5 % v/v	B			
	CLASS ACT RIDION	1 % v/v	B			

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. 1=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-09 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USANR8 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Pest Type		W, Weed	W, Weed
Pest Code		AMATU	AMATU
Pest Scientific Name		Amaranthus tuberculatus	Amaranthus tuberculatus
Pest Name		Tall waterhemp	Tall waterhemp
Crop Type, Code			
BBCH Scale			
Crop Scientific Name			
Crop Name			
Rating Date		Jul-8-2020	Jul-20-2020
Rating Type		CONTRO	CONTRO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100
Number of Subsamples		1	1
Assessed By		Haugrud, N	Haugrud, N
Data Entry Date		Aug-20-2020	Aug-20-2020
Days After First/Last Applic.		49, 23	61, 35
Plant-Eval Interval		50 DP-1	62 DP-1
Days After Emergence		40 DE-1	52 DE-1
Trt Treatment	Rate Appl	6*	7*
No. Name	Rate Unit Code		
8 XTENDIMAX	22 fl oz/a A	83.8 b	76.3 cd
AUTHORITY FIRST	4 oz/a A		
INTACT	0.5 % v/v A		
WARRANT	48 fl oz/a B		
COBRA	10 fl oz/a B		
ROUNDUP POWERMAX	32 fl oz/a B		
DESTINY HC HSMOC	0.5 % v/v B		
CLASS ACT RIDION	1 % v/v B		
9 XTENDIMAX	22 fl oz/a A	65.0 c	42.5 f
AUTHORITY FIRST	4 oz/a A		
INTACT	0.5 % v/v A		
ANTHEM MAXX	4 fl oz/a B		
ROUNDUP POWERMAX	32 fl oz/a B		
CLASS ACT RIDION	1 % v/v B		
10 XTENDIMAX	22 fl oz/a A	75.0 bc	55.0 e
AUTHORITY FIRST	4 oz/a A		
INTACT	0.5 % v/v A		
FLEXSTAR	12 fl oz/a B		
ROUNDUP POWERMAX	32 fl oz/a B		
DESTINY HC HSMOC	0.5 % v/v B		
CLASS ACT RIDION	1 % v/v B		
11 AUTHORITY FIRST	4 oz/a A	65.0 c	30.0 g
ANTHEM MAXX	4 fl oz/a B		
ROUNDUP POWERMAX	32 fl oz/a B		
DESTINY HC HSMOC	0.5 % v/v B		
CLASS ACT RIDION	1 % v/v B		
LSD P=.05		8.37	11.28
Standard Deviation		5.79	7.81
CV		7.87	12.76
Levene's F^		0.615	0.724
Levene's Prob(F)		0.79	0.696
Skewness^		0.7404*	-0.2519
Kurtosis^		0.2547	0.3291
Replicate F		1.174	2.590
Replicate Prob(F)		0.3361	0.0712
Treatment F		87.731	54.618
Treatment Prob(F)		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. 1=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Xtendimax Programs in RR2 Xtend Soybean

Trial ID: 20S-NW22-SOY-09	Location: NW22, Reed Township, Fargo, ND	Trial Year: 2020
Protocol ID: 20S-NW22-SOY-09	Investigator (Creator): Dr. Joe Ikley	
Project ID: HP20USANR8	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Kevin Thorsness, Bayer	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMATU, Amaranthus tuberculatus, Tall waterhemp = US

Crop Type, Code

C = EPPO species (Bayer) codes

GLXMA, BSOY, Glycine max, Soybean = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Haugrud, N = Research Specailist

Plant-Eval Interval

27 DP-1 = 1 GLXMA May-19-2020

34 DP-1 = 1 GLXMA May-19-2020

41 DP-1 = 1 GLXMA May-19-2020

50 DP-1 = 1 GLXMA May-19-2020

62 DP-1 = 1 GLXMA May-19-2020

North Dakota State University

Glyphosate and Glufosiate Combinations in E3 Soybean

Trial ID: 20S-NW22-SOY-13 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-13 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20619 Study Director: Dr. Joe Ikley
 Sponsor Contact: NDSU - Mike Ostlie

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2020

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: NDSU - Mike Ostlie

Site and Design

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

Soil Description

Description Name: NW22
 % Sand: 3 % OM: 5 **Texture:** SIC silty clay
 % Silt: 48 pH: 7.4 **Soil Name:** Fargo Silty Clay
 % Clay: 49 CEC: 51

Application Description

	A
Application Date	Jun-19-2020
Appl. Start Time	8:10 AM
Appl. Stop Time	8:45 AM
Application Method	SPRAY
Application Timing	POST
Application Placement	BROFOL
Applied By	Stith, J
Appl. Entry Date	Aug-21-2020
Air Temperature Start, Stop	58, 58 F
% Relative Humidity Start, Stop	63, 63
Wind Velocity+Dir. Start	5 MPH, NNW
Wind Velocity+Dir. Stop	5.5 MPH, NNW
Wind Velocity+Dir. Max	6.5 MPH, NNW
Wet Leaves (Y/N)	N, no
Soil Temperature	64 F
Soil Moisture	SLIWET
Soil Surface Condition	CLOTRA
% Cloud Cover	0

North Dakota State University

Trial ID: 20S-NW22-SOY-13	Glyphosate and Glufosiate Combinations in E3 Soybean
Protocol ID: 20S-NW22-SOY-13	Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
Project ID: 20619	Investigator (Creator): Dr. Joe Ikley
	Study Director: Dr. Joe Ikley
	Sponsor Contact: NDSU - Mike Ostlie

Application Equipment	
	A
Appl. Equipment	Walter
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	11002
Nozzle Type	AIXR
Nozzle Spacing	20 IN
Boom Height	18 IN
Ground Speed	3 MPH
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	1119 mL
Propellant	COMCO2

Equipment Comment: Treatments containing Enlist One or Enlist Duo were sprayed with an AIXR nozzle. Treatments containing only Liberty and/or Roundup PowerMax were sprayed with a Turbo Teejet (TT) nozzle.

Notes			
Context	Date	By	Notes
STATUS	Apr-14-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jul-31-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Glyphosate and Glufosiate Combinations in E3 Soybean

Trial ID: 20S-NW22-SOY-13 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-SOY-13 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20619 Study Director: Dr. Joe Ikley
 Sponsor Contact: NDSU - Mike Ostlie

Pest Type	W, Weed	W, Weed	W, Weed
Pest Code	AMATU	AMATU	AMATU
Pest Scientific Name	Amaranthus tuberculatus	Amaranthus tuberculatus	Amaranthus tuberculatus
Pest Name	Tall waterhemp	Tall waterhemp	Tall waterhemp
Rating Date	Jun-26-2020	Jul-2-2020	Jul-16-2020
Rating Type	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-21-2020	Aug-21-2020	Aug-21-2020
Days After First/Last Applic.	7, 7	13, 13	27, 27
Trt-Eval Interval	7 DA-A	13 DA-A	27 DA-A
Plant-Eval Interval	38 DP-1	44 DP-1	58 DP-1
Days After Emergence	29 DE-1	35 DE-1	49 DE-1
Trt Treatment	1*	2*	3*
No. Name	Rate	Appl	
	Rate Unit	Code	
1 Untreated Check			0.0 e
2 LIBERTY 280 SL N-PAK AMS	32 fl oz/a A 3 lb ai/a A		86.3 a
3 ROUNDUP POWERMAX N-PAK AMS	28 fl oz/a A 3 lb ai/a A		20.0 d
4 LIBERTY 280 SL ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a A 28 fl oz/a A 3 lb ai/a A		91.3 a
5 LIBERTY 280 SL ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a A 21 fl oz/a A 3 lb ai/a A		87.5 a
6 LIBERTY 280 SL ROUNDUP POWERMAX N-PAK AMS	43 fl oz/a A 21 fl oz/a A 3 lb ai/a A		92.5 a
7 LIBERTY 280 SL ENLIST DUO N-PAK AMS	32 fl oz/a A 4.75 pt/a A 3 lb ai/a A		90.0 a
8 LIBERTY 280 SL ENLIST ONE N-PAK AMS	32 fl oz/a A 2 pt/a A 3 lb ai/a A		92.5 a
9 ENLIST DUO N-PAK AMS	4.75 pt/a A 3 lb ai/a A		76.3 b
10 ENLIST ONE N-PAK AMS	2 pt/a A 3 lb ai/a A		58.8 c
11 LIBERTY 280 SL N-PAK AMS	43 fl oz/a A 3 lb ai/a A		91.5 a
12 ROUNDUP POWERMAX N-PAK AMS	21 fl oz/a A 3 lb ai/a A		12.5 d
LSD P=.05	8.42	13.40	14.16
Standard Deviation	5.86	9.32	9.84
CV	8.79	15.08	22.31
Levene's F^	2.022	1.355	2.528
Levene's Prob(F)	0.055	0.236	0.018*
Skewness^	0.2991	-0.5361	-0.0441
Kurtosis^	1.7707*	1.8815*	-0.4006
Replicate F	0.646	0.894	2.385
Replicate Prob(F)	0.5907	0.4546	0.0869
Treatment F	144.535	51.407	31.098
Treatment Prob(F)	0.0001	0.0001	0.0001

Pest Type
 W, Weed = Weed or volunteer crop
Pest Code
 AMATU, Amaranthus tuberculatus, Tall waterhemp = US
Rating Type
 CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
 %, 0, 100 = percent

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.
 * Adjusted means
 ^Calculated from residual.

North Dakota State University

Glyphosate and Glufosiate Combinations in E3 Soybean

Trial ID: 20S-NW22-SOY-13	Location: NW22, Reed Township, Fargo, ND	Trial Year: 2020
Protocol ID: 20S-NW22-SOY-13	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20619	Study Director: Dr. Joe Ikley	
	Sponsor Contact: NDSU - Mike Ostlie	

Assessed By

Ikley, J = Extension Agent

Plant-Eval Interval

38 DP-1 = 1 GLXMA May-19-2020

44 DP-1 = 1 GLXMA May-19-2020

58 DP-1 = 1 GLXMA May-19-2020

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.
 * Adjusted means
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System		
Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

General Trial Information
Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley
Trial Status: E established
ARM Trial Created On: Apr-9-2020
Conducted Under GLP: No
Conducted Under GEP: No

Objectives:
To compare Valent PREE and POST actives in a program approach in a Liberty cropping system. Fierce EZ (6 fl oz/A) and Fierce MTZ (1 pt/A) will be compared to Authority MTZ (11 oz/A) and Zidua Pro (4.5 fl oz/A). Perpetuo (6 fl oz/A) will be compared to Anthem Maxx @ 2.5 fl oz/A. Measures of success are weed control at 21, 42 & 56 DAP with acceptable crop response.

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Trevor Israel, Valent

Site and Design
Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT2 Treatments: 9
Replications: 4 Study Design: RACOB L Randomized Complete Block (RCB)

Soil Description
Description Name: Prosper
% Sand: 23 % OM: 4.3 Texture: SIL silt loam
% Silt: 53 pH: 7 Soil Name: Kindred-Bearden Silty Clay Loam
% Clay: 24 CEC: 24

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-SOY-15 Investigator (Creator): Dr. Joe Ikley
 Project ID: VUSA2020FIERCCEMD6401 Study Director: Dr. Joe Ikley
 Sponsor Contact: Trevor Israel, Valent

Application Description

	A	B	C	D
Application Date	May-29-2020	Jun-19-2020	Jul-2-2020	Jul-2-2020
Appl. Start Time	10:05 AM	9:05 AM	6:55 AM	6:55 AM
Appl. Stop Time	10:25 AM	9:15 AM	7:25 AM	7:25 AM
Interval to Prev. Appl.		21 DAYS	13 DAYS	13 DAYS
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	PREEM	POST	POST	POST
Application Placement	BROSOI	BROFOL	BROFOL	BROFOL
Applied By	Stith, J	Haugrud, N	Stith, J	Stith, J
Appl. Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020
Air Temperature Start, Stop	59, 61 F	62, 62 F	70, 70 F	70, 70 F
% Relative Humidity Start, Stop	57, 54	65, 65	98, 92	98, 92
Wind Velocity+Dir. Start	8 MPH, NNW	5 MPH, WNW	2 MPH, SSE	2 MPH, SSE
Wind Velocity+Dir. Stop	7 MPH, NNW	4 MPH, WNW	4 MPH, SSE	4 MPH, SSE
Wind Velocity+Dir. Max	9 MPH, NNW	6 MPH, WNW	5 MPH, SSE	5 MPH, SSE
Wet Leaves (Y/N)	N, no	N, no	Y, yes	Y, yes
Soil Temperature	60 F	68 F	69 F	69 F
Soil Moisture	NORMAL	SLIWET	SLIWET	SLIWET
Soil Surface Condition	COATRA	COATRA	COATRA	COATRA
% Cloud Cover	0	0	0	0

Application Equipment

	A	B	C	D
Appl. Equipment	Walter	Narsil	Walter	Walter
Equipment Type	BACCAI	BACCAI	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI	28 PSI	28 PSI
Nozzle Model	11002	11002	11002	11002
Nozzle Type	TEEJAI	TEEJTU	TEEJTU	TEEJTU
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN
Boom Length	6.67 FT		6.67 FT	6.67 FT
Boom Height	18 IN	18 IN	18 IN	18 IN
Ground Speed	3 MPH	3 MPH	3 MPH	3 MPH
Carrier	WATER	WATER	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL	1119 mL	1119 mL
Propellant	COMCO2	COMCO2	COMCO2	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-24-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

		W, Weed SETPU Setaria helvola yellow foxtail	W, Weed AMAPO Amaranthus powellii Powell amaranth	W, Weed CHEAL Chenopodium album common lambsquarters		
Pest Type						
Pest Code						
Pest Scientific Name						
Pest Name						
Crop Type, Code	C, GLXMA				C, GLXMA	
BBCH Scale	BSOY				BSOY	
Crop Scientific Name	Glycine max				Glycine max	
Crop Name	Soybean				Soybean	
Rating Date	Jun-17-2020	Jun-17-2020	Jun-17-2020	Jun-17-2020	Jul-1-2020	
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	PHYTO	
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Sample Size						
Number of Subsamples	1	1	1	1	1	
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	
Days After First/Last Applic.	19, 19	19, 19	19, 19	19, 19	33, 12	
Plant-Eval Interval	21 DP-1	21 DP-1	21 DP-1	21 DP-1	35 DP-1	
Days After Emergence	13 DE-1	13 DE-1	13 DE-1	13 DE-1	27 DE-1	
ARM Action Codes						
Number of Decimals						
Trt Treatment	Rate	1*	2*	3*	4*	5*
No. Name	Rate Unit Appl Code					
1 Untreated Check		0.0 -	0.0 c	0.0 -	0.0 b	0.0 -
2 SCOUT	32 fl oz/a B	0.0 -	0.0 c	0.0 -	0.0 b	0.0 -
DRY AMMONIUM SULFATE	3 lb ai/a B					
SCOUT	32 fl oz/a C					
SELECT MAX	9 fl oz/a C					
ACTIVATOR 90 - NIS	0.25 % v/v C					
DRY AMMONIUM SULFATE	3 lb ai/a C					
3 SCOUT	32 fl oz/a B	0.0 -	0.0 c	0.0 -	0.0 b	0.0 -
PERPETUO	6 fl oz/a B					
DRY AMMONIUM SULFATE	3 lb ai/a B					
SCOUT	32 fl oz/a C					
SELECT MAX	9 fl oz/a C					
ACTIVATOR 90 - NIS	0.25 % v/v C					
DRY AMMONIUM SULFATE	3 lb ai/a C					
4 FIERCE EZ	6 fl oz/a A	1.3 -	95.0 a	100.0 -	100.0 a	0.0 -
SCOUT	32 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
5 FIERCE MTZ	16 fl oz/a A	2.5 -	98.3 a	100.0 -	100.0 a	0.0 -
SCOUT	32 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
6 FIERCE EZ	6 fl oz/a A	1.3 -	96.0 a	100.0 -	100.0 a	0.0 -
SCOUT	32 fl oz/a D					
PERPETUO	6 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
7 FIERCE MTZ	16 fl oz/a A	2.5 -	93.8 a	100.0 -	98.8 a	0.0 -
SCOUT	32 fl oz/a D					
PERPETUO	6 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					

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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
Sponsor Contact: Trevor Israel, Valent		

		W, Weed SETPU Setaria helvola yellow foxtail	W, Weed AMAPO Amaranthus powellii Powell amaranth	W, Weed CHEAL Chenopodium album common lambsquarters		
Pest Type						
Pest Code						
Pest Scientific Name						
Pest Name						
Crop Type, Code	C, GLXMA				C, GLXMA	
BBCH Scale	BSOY				BSOY	
Crop Scientific Name	Glycine max				Glycine max	
Crop Name	Soybean				Soybean	
Rating Date	Jun-17-2020	Jun-17-2020	Jun-17-2020	Jun-17-2020	Jul-1-2020	
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	PHYTO	
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Sample Size						
Number of Subsamples	1	1	1	1	1	
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	
Days After First/Last Applic.	19, 19	19, 19	19, 19	19, 19	33, 12	
Plant-Eval Interval	21 DP-1	21 DP-1	21 DP-1	21 DP-1	35 DP-1	
Days After Emergence	13 DE-1	13 DE-1	13 DE-1	13 DE-1	27 DE-1	
ARM Action Codes						
Number of Decimals						
Trt Treatment	Rate	1*	2*	3*	4*	5*
No. Name	Rate Unit Code					
8 AUTHORITY MTZ	11 oz/a A	0.0 -	91.3 a	100.0 -	100.0 a	0.0 -
SCOUT	32 fl oz/a D					
ANTHEM MAXX	2.5 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
9 ZIDUA PRO	4.5 fl oz/a A	0.0 -	85.0 b	100.0 -	100.0 a	0.0 -
SCOUT	32 fl oz/a D					
PERPETUO	6 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
LSD P=.05		2.74	5.79	.	1.22	.
Standard Deviation		1.88	3.96	0.00	0.83	0.00
CV		225.46	6.38	0.0	1.25	0.0
Levene's F^		2.215	1.433	.	0.681	.
Levene's Prob(F)		0.059	0.228	.	0.704	.
Skewness^		0.9204*	-0.9255*	.	-2.9835*	.
Kurtosis^		1.0382	2.0129*	.	15.913*	.
Replicate F		0.262	0.784	0.000	1.000	0.000
Replicate Prob(F)		0.8518	0.5146	1.0000	0.4098	1.0000
Treatment F		1.328	556.095	0.000	14341.001	0.000
Treatment Prob(F)		0.2774	0.0001	1.0000	0.0001	1.0000

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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type	W, Weed SETPU	W, Weed AMAPO	W, Weed HELAN	W, Weed C, GLXMA BSOY	W, Weed SETPU		
Pest Code	Setaria helvola	Amaranthus powellii	Helianthus annuus		Setaria helvola		
Pest Scientific Name	yellow foxtail	Powell amaranth	Common sunflower		yellow foxtail		
Pest Name							
Crop Type, Code				Glycine max			
BBCH Scale				Soybean			
Crop Scientific Name							
Crop Name							
Rating Date	Jul-1-2020	Jul-1-2020	Jul-1-2020	Jul-9-2020	Jul-9-2020		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size							
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	33, 12	33, 12	33, 12	41, 7	41, 7		
Plant-Eval Interval	35 DP-1	35 DP-1	35 DP-1	43 DP-1	43 DP-1		
Days After Emergence	27 DE-1	27 DE-1	27 DE-1	35 DE-1	35 DE-1		
ARM Action Codes							
Number of Decimals							
Trt Treatment No. Name	Rate Rate Unit	Appl Code	6*	7*	8*	9*	10*
1 Untreated Check			0.0 c	0.0 c	0.0 c	0.0 -	0.0 d
2 SCOUT	32 fl oz/a B		42.5 ab	86.3 a	85.0 a	0.0 -	91.3 abc
DRY AMMONIUM SULFATE	3 lb ai/a B						
SCOUT	32 fl oz/a C						
SELECT MAX	9 fl oz/a C						
ACTIVATOR 90 - NIS	0.25 % v/v C						
DRY AMMONIUM SULFATE	3 lb ai/a C						
3 SCOUT	32 fl oz/a B		50.0 a	87.5 a	90.0 a	0.0 -	88.8 abc
PERPETUO	6 fl oz/a B						
DRY AMMONIUM SULFATE	3 lb ai/a B						
SCOUT	32 fl oz/a C						
SELECT MAX	9 fl oz/a C						
ACTIVATOR 90 - NIS	0.25 % v/v C						
DRY AMMONIUM SULFATE	3 lb ai/a C						
4 FIERCE EZ	6 fl oz/a A		40.0 ab	20.0 bc	15.0 b	0.0 -	89.8 abc
SCOUT	32 fl oz/a D						
SELECT MAX	9 fl oz/a D						
ACTIVATOR 90 - NIS	0.25 % v/v D						
DRY AMMONIUM SULFATE	3 lb ai/a D						
5 FIERCE MTZ	16 fl oz/a A		42.5 ab	27.5 bc	15.0 b	0.0 -	98.0 a
SCOUT	32 fl oz/a D						
SELECT MAX	9 fl oz/a D						
ACTIVATOR 90 - NIS	0.25 % v/v D						
DRY AMMONIUM SULFATE	3 lb ai/a D						
6 FIERCE EZ	6 fl oz/a A		32.5 ab	15.9 bc	10.0 b	5.0 -	93.5 abc
SCOUT	32 fl oz/a D						
PERPETUO	6 fl oz/a D						
SELECT MAX	9 fl oz/a D						
ACTIVATOR 90 - NIS	0.25 % v/v D						
DRY AMMONIUM SULFATE	3 lb ai/a D						
7 FIERCE MTZ	16 fl oz/a A		40.0 ab	42.5 b	15.0 b	5.0 -	94.5 ab
SCOUT	32 fl oz/a D						
PERPETUO	6 fl oz/a D						
SELECT MAX	9 fl oz/a D						
ACTIVATOR 90 - NIS	0.25 % v/v D						
DRY AMMONIUM SULFATE	3 lb ai/a D						

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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System		
Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
Sponsor Contact: Trevor Israel, Valent		

Pest Type	W, Weed SETPU	W, Weed AMAPO	W, Weed HELAN	C, GLXMA BSOY	W, Weed SETPU		
Pest Code	Setaria helvola	Amaranthus powellii	Helianthus annuus	Glycine max	Setaria helvola		
Pest Scientific Name	yellow foxtail	Powell amaranth	Common sunflower	Soybean	yellow foxtail		
Pest Name							
Crop Type, Code							
BBCH Scale							
Crop Scientific Name							
Crop Name							
Rating Date	Jul-1-2020	Jul-1-2020	Jul-1-2020	Jul-9-2020	Jul-9-2020		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size							
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	33, 12	33, 12	33, 12	41, 7	41, 7		
Plant-Eval Interval	35 DP-1	35 DP-1	35 DP-1	43 DP-1	43 DP-1		
Days After Emergence	27 DE-1	27 DE-1	27 DE-1	35 DE-1	35 DE-1		
ARM Action Codes							
Number of Decimals							
Trt Treatment No. Name	Rate Unit	Appl Code	6*	7*	8*	9*	10*
8 AUTHORITY MTZ	11 oz/a	A	15.0 bc	22.5 bc	12.5 b	5.0 -	83.8 c
SCOUT	32 fl oz/a	D					
ANTHEM MAXX	2.5 fl oz/a	D					
SELECT MAX	9 fl oz/a	D					
ACTIVATOR 90 - NIS	0.25 % v/v	D					
DRY AMMONIUM SULFATE	3 lb ai/a	D					
9 ZIDUA PRO	4.5 fl oz/a	A	37.5 ab	17.5 bc	17.5 b	5.0 -	87.5 bc
SCOUT	32 fl oz/a	D					
PERPETUO	6 fl oz/a	D					
SELECT MAX	9 fl oz/a	D					
ACTIVATOR 90 - NIS	0.25 % v/v	D					
DRY AMMONIUM SULFATE	3 lb ai/a	D					
LSD P=.05	17.87		24.17	7.91	.		6.62
Standard Deviation	12.25		16.52	5.42	0.00		4.54
CV	36.74		45.71	18.77	0.0		5.62
Levene's F^	2.319		1.04	1.523	.		1.105
Levene's Prob(F)	0.049*		0.433	0.196	.		0.391
Skewness^	0.3408		0.7312	-0.1114	.		0.0746
Kurtosis^	0.3815		2.126*	-0.7011	.		0.3164
Replicate F	5.778		0.406	0.504	0.000		3.525
Replicate Prob(F)	0.0040		0.7499	0.6832	1.0000		0.0302
Treatment F	6.667		14.011	153.945	0.000		181.608
Treatment Prob(F)	0.0001		0.0001	0.0001	1.0000		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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type	W, Weed	W, Weed	W, Weed	C, GLXMA BSOY
Pest Code	AMAPO	CHEAL	HELAN	
Pest Scientific Name	Amaranthus powellii	Chenopodium album	Helianthus annuus	
Pest Name	Powell amaranth	common lambsquarters	Common sunflower	
Crop Type, Code				Glycine max
BBCH Scale				Soybean
Crop Scientific Name				
Crop Name				
Rating Date	Jul-9-2020	Jul-9-2020	Jul-9-2020	Jul-24-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Sample Size				
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020
Days After First/Last Applic.	41, 7	41, 7	41, 7	56, 22
Plant-Eval Interval	43 DP-1	43 DP-1	43 DP-1	58 DP-1
Days After Emergence	35 DE-1	35 DE-1	35 DE-1	50 DE-1
ARM Action Codes				
Number of Decimals				
Trt Treatment	Rate	Appl		
No. Name	Rate Unit	Code	11*	12*
1 Untreated Check			0.0 c	0.0 b
2 SCOUT	32 fl oz/a B		91.0 b	97.0 a
DRY AMMONIUM SULFATE	3 lb ai/a B			
SCOUT	32 fl oz/a C			
SELECT MAX	9 fl oz/a C			
ACTIVATOR 90 - NIS	0.25 % v/v C			
DRY AMMONIUM SULFATE	3 lb ai/a C			
3 SCOUT	32 fl oz/a B		99.0 a	99.0 a
PERPETUO	6 fl oz/a B			
DRY AMMONIUM SULFATE	3 lb ai/a B			
SCOUT	32 fl oz/a C			
SELECT MAX	9 fl oz/a C			
ACTIVATOR 90 - NIS	0.25 % v/v C			
DRY AMMONIUM SULFATE	3 lb ai/a C			
4 FIERCE EZ	6 fl oz/a A		99.0 a	98.0 a
SCOUT	32 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
5 FIERCE MTZ	16 fl oz/a A		99.0 a	98.0 a
SCOUT	32 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
6 FIERCE EZ	6 fl oz/a A		98.0 a	99.0 a
SCOUT	32 fl oz/a D			
PERPETUO	6 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
7 FIERCE MTZ	16 fl oz/a A		99.0 a	99.0 a
SCOUT	32 fl oz/a D			
PERPETUO	6 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			

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=3.9; 19,20=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

	W, Weed AMAPO	W, Weed CHEAL	W, Weed HELAN	
Pest Type	Amaranthus powellii	Chenopodium album	Helianthus annuus	
Pest Code	Powell amaranth	common lambsquarters	Common sunflower	
Pest Scientific Name				C, GLXMA
Pest Name				BSOY
Crop Type, Code				Glycine max
BBCH Scale				Soybean
Crop Scientific Name				Jul-24-2020
Crop Name				CONTRO
Rating Date	Jul-9-2020	Jul-9-2020	Jul-9-2020	CONTRO
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Sample Size				
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020
Days After First/Last Applic.	41, 7	41, 7	41, 7	56, 22
Plant-Eval Interval	43 DP-1	43 DP-1	43 DP-1	58 DP-1
Days After Emergence	35 DE-1	35 DE-1	35 DE-1	50 DE-1
ARM Action Codes				
Number of Decimals				
Trt Treatment	11*	12*	13*	14*
No. Name	Rate Unit	Rate Unit	Rate Unit	Rate Unit
8 AUTHORITY MTZ	11 oz/a A			
SCOUT	32 fl oz/a D			
ANTHEM MAXX	2.5 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
9 ZIDUA PRO	4.5 fl oz/a A			
SCOUT	32 fl oz/a D			
PERPETUO	6 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
LSD P=.05	4.17	1.80	11.34	.
Standard Deviation	2.85	1.23	7.77	0.00
CV	3.29	1.41	10.58	0.0
Levene's F^	3.889	2.155	2.116	.
Levene's Prob(F)	0.004*	0.065	0.07	.
Skewness^	-1.1545*	-1.0629*	-0.0963	.
Kurtosis^	8.6556*	2.2109*	-0.6661	.
Replicate F	1.245	0.780	0.983	0.000
Replicate Prob(F)	0.3153	0.5164	0.4174	1.0000
Treatment F	524.468	2841.000	53.648	0.000
Treatment Prob(F)	0.0001	0.0001	0.0001	1.0000

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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed		
Pest Code	SETPU	AMAPO	CHEAL	HELAN		
Pest Scientific Name	Setaria helvola	Amaranthus powellii	Chenopodium album	Helianthus annuus		
Pest Name	yellow foxtail	Powell amaranth	common lambsquarters	Common sunflower		
Crop Type, Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Rating Date	Jul-24-2020	Jul-24-2020	Jul-24-2020	Jul-24-2020		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size						
Number of Subsamples	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	56, 22	56, 22	56, 22	56, 22		
Plant-Eval Interval	58 DP-1	58 DP-1	58 DP-1	58 DP-1		
Days After Emergence	50 DE-1	50 DE-1	50 DE-1	50 DE-1		
ARM Action Codes						
Number of Decimals						
Trt Treatment	Rate	Appl	15*	16*	17*	18*
No. Name	Rate Unit	Code				
1 Untreated Check			0.0 b	0.0 c	0.0 b	0.0 c
2 SCOUT	32 fl oz/a B		91.3 a	93.5 b	99.0 a	81.3 a
DRY AMMONIUM SULFATE	3 lb ai/a B					
SCOUT	32 fl oz/a C					
SELECT MAX	9 fl oz/a C					
ACTIVATOR 90 - NIS	0.25 % v/v C					
DRY AMMONIUM SULFATE	3 lb ai/a C					
3 SCOUT	32 fl oz/a B		91.3 a	99.0 a	99.0 a	83.8 a
PERPETUO	6 fl oz/a B					
DRY AMMONIUM SULFATE	3 lb ai/a B					
SCOUT	32 fl oz/a C					
SELECT MAX	9 fl oz/a C					
ACTIVATOR 90 - NIS	0.25 % v/v C					
DRY AMMONIUM SULFATE	3 lb ai/a C					
4 FIERCE EZ	6 fl oz/a A		89.8 a	99.0 a	99.0 a	55.0 b
SCOUT	32 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
5 FIERCE MTZ	16 fl oz/a A		96.0 a	98.0 a	98.0 a	60.0 b
SCOUT	32 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
6 FIERCE EZ	6 fl oz/a A		93.5 a	98.0 a	99.0 a	78.8 a
SCOUT	32 fl oz/a D					
PERPETUO	6 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					
7 FIERCE MTZ	16 fl oz/a A		95.8 a	99.0 a	99.0 a	90.0 a
SCOUT	32 fl oz/a D					
PERPETUO	6 fl oz/a D					
SELECT MAX	9 fl oz/a D					
ACTIVATOR 90 - NIS	0.25 % v/v D					
DRY AMMONIUM SULFATE	3 lb ai/a D					

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=3.9; 19,20=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

	W, Weed SETPU	W, Weed AMAPO	W, Weed CHEAL	W, Weed HELAN
Pest Type	Setaria helvola	Amaranthus powellii	Chenopodium album	Helianthus annuus
Pest Code	yellow foxtail	Powell amaranth	common lambsquarters	Common sunflower
Pest Scientific Name				
Pest Name				
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-24-2020	Jul-24-2020	Jul-24-2020	Jul-24-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Sample Size				
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020
Days After First/Last Applic.	56, 22	56, 22	56, 22	56, 22
Plant-Eval Interval	58 DP-1	58 DP-1	58 DP-1	58 DP-1
Days After Emergence	50 DE-1	50 DE-1	50 DE-1	50 DE-1
ARM Action Codes				
Number of Decimals				
Trt Treatment	15*	16*	17*	18*
No. Name	Rate Unit Code			
8 AUTHORITY MTZ	11 oz/a A	88.8 a	99.0 a	99.0 a
SCOUT	32 fl oz/a D			70.0 ab
ANTHEM MAXX	2.5 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
9 ZIDUA PRO	4.5 fl oz/a A	90.0 a	99.0 a	99.0 a
SCOUT	32 fl oz/a D			91.3 a
PERPETUO	6 fl oz/a D			
SELECT MAX	9 fl oz/a D			
ACTIVATOR 90 - NIS	0.25 % v/v D			
DRY AMMONIUM SULFATE	3 lb ai/a D			
LSD P=.05	5.85	2.51	0.97	14.40
Standard Deviation	4.01	1.72	0.67	9.87
CV	4.9	1.97	0.76	14.56
Levene's F^	1.308	4.239	0.681	2.485
Levene's Prob(F)	0.281	0.002*	0.704	0.037*
Skewness^	-0.219	0.1207	-2.9835*	-0.2697
Kurtosis^	0.7151	3.2684*	15.913*	-0.5966
Replicate F	2.610	1.113	1.000	0.133
Replicate Prob(F)	0.0748	0.3635	0.4098	0.9393
Treatment F	236.245	1446.694	9777.251	33.000
Treatment Prob(F)	0.0001	0.0001	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=3.9; 19,20=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type					
Pest Code					
Pest Scientific Name					
Pest Name					
Crop Type, Code	C, GLXMA	C, GLXMA			
BBCH Scale	BSOY	BSOY			
Crop Scientific Name	Glycine max	Glycine max			
Crop Name	Soybean	Soybean			
Rating Date	Oct-5-2020	Oct-5-2020			
Rating Type	YIELD	YIELD			
Rating Unit/Min/Max	lb/plot, -, -	BU, -, -			
Sample Size	1 PLOT	1 A			
Number of Subsamples	1	1			
Assessed By	Haugrud, N	Haugrud, N			
Data Entry Date	Oct-22-2020				
Days After First/Last Applic.	129, 95	129, 95			
Plant-Eval Interval	131 DP-1	131 DP-1			
Days After Emergence	123 DE-1	123 DE-1			
ARM Action Codes		TY1			
Number of Decimals		1			
Trt No.	Treatment Name	Rate	Appl Code	19*	20*
1	Untreated Check			0.6588 e	4.0 e
2	SCOUT	32 fl oz/a B		7.4025 abc	45.3 abc
	DRY AMMONIUM SULFATE	3 lb ai/a B			
	SCOUT	32 fl oz/a C			
	SELECT MAX	9 fl oz/a C			
	ACTIVATOR 90 - NIS	0.25 % v/v C			
	DRY AMMONIUM SULFATE	3 lb ai/a C			
3	SCOUT	32 fl oz/a B		7.9180 a	48.4 a
	PERPETUO	6 fl oz/a B			
	DRY AMMONIUM SULFATE	3 lb ai/a B			
	SCOUT	32 fl oz/a C			
	SELECT MAX	9 fl oz/a C			
	ACTIVATOR 90 - NIS	0.25 % v/v C			
	DRY AMMONIUM SULFATE	3 lb ai/a C			
4	FIERCE EZ	6 fl oz/a A		5.5030 d	33.6 d
	SCOUT	32 fl oz/a D			
	SELECT MAX	9 fl oz/a D			
	ACTIVATOR 90 - NIS	0.25 % v/v D			
	DRY AMMONIUM SULFATE	3 lb ai/a D			
5	FIERCE MTZ	16 fl oz/a A		5.8485 cd	35.8 cd
	SCOUT	32 fl oz/a D			
	SELECT MAX	9 fl oz/a D			
	ACTIVATOR 90 - NIS	0.25 % v/v D			
	DRY AMMONIUM SULFATE	3 lb ai/a D			
6	FIERCE EZ	6 fl oz/a A		6.6990 a-d	41.0 a-d
	SCOUT	32 fl oz/a D			
	PERPETUO	6 fl oz/a D			
	SELECT MAX	9 fl oz/a D			
	ACTIVATOR 90 - NIS	0.25 % v/v D			
	DRY AMMONIUM SULFATE	3 lb ai/a D			
7	FIERCE MTZ	16 fl oz/a A		6.8225 a-d	41.7 a-d
	SCOUT	32 fl oz/a D			
	PERPETUO	6 fl oz/a D			
	SELECT MAX	9 fl oz/a D			
	ACTIVATOR 90 - NIS	0.25 % v/v D			
	DRY AMMONIUM SULFATE	3 lb ai/a D			

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=3.9; 19,20=3.6
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Type, Code	C, GLXMA	C, GLXMA	
BBCH Scale	BSOY	BSOY	
Crop Scientific Name	Glycine max	Glycine max	
Crop Name	Soybean	Soybean	
Rating Date	Oct-5-2020	Oct-5-2020	
Rating Type	YIELD	YIELD	
Rating Unit/Min/Max	lb/plot, -, -	BU, -, -	
Sample Size	1 PLOT	1 A	
Number of Subsamples	1	1	
Assessed By	Haugrud, N	Haugrud, N	
Data Entry Date	Oct-22-2020		
Days After First/Last Applic.	129, 95	129, 95	
Plant-Eval Interval	131 DP-1	131 DP-1	
Days After Emergence	123 DE-1	123 DE-1	
ARM Action Codes		TY1	
Number of Decimals		1	
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
			19*
			20*
8 AUTHORITY MTZ	11 oz/a	A	6.1805 bcd
SCOUT	32 fl oz/a	D	37.8 bcd
ANTHEM MAXX	2.5 fl oz/a	D	
SELECT MAX	9 fl oz/a	D	
ACTIVATOR 90 - NIS	0.25 % v/v	D	
DRY AMMONIUM SULFATE	3 lb ai/a	D	
9 ZIDUA PRO	4.5 fl oz/a	A	7.6820 ab
SCOUT	32 fl oz/a	D	47.0 ab
PERPETUO	6 fl oz/a	D	
SELECT MAX	9 fl oz/a	D	
ACTIVATOR 90 - NIS	0.25 % v/v	D	
DRY AMMONIUM SULFATE	3 lb ai/a	D	
LSD P=.05			1.08283
Standard Deviation			0.73841
CV			11.53
Levene's F^			0.873
Levene's Prob(F)			0.552
Skewness^			-0.4932
Kurtosis^			0.84
Replicate F			2.193
Replicate Prob(F)			0.1175
Treatment F			20.389
Treatment Prob(F)			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=3.9; 19,20=3.6

* Adjusted means

Could not calculate LSD (% mean diff) for columns 3,5,9,14 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Valent Actives in a Liberty Link System

Trial ID: 20S-PROSPER-SOY-15	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-SOY-15	Investigator (Creator): Dr. Joe Ikley	
Project ID: VUSA2020FIERCCEMD6401	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Trevor Israel, Valent	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

AMAPO, Amaranthus powellii, Powell amaranth = US

CHEAL, Chenopodium album, common lambsquarters = US

HELAN, Helianthus annuus, Common sunflower = US

Crop Type, Code

C = EPPO species (Bayer) codes

GLXMA, BSOY, Glycine max, Soybean = US

Rating Type

CONTRO = control / burndown or knockdown

YIELD = yield

Rating Unit/Min/Max

%, 0, 100 = percent

lb/plot, , = pounds per plot

BU, , = bushel

PLOT = total plot

A = acre

Assessed By

Haugrud, N = Research Specialist

Plant-Eval Interval

21 DP-1 = 1 GLXMA May-27-2020

35 DP-1 = 1 GLXMA May-27-2020

43 DP-1 = 1 GLXMA May-27-2020

58 DP-1 = 1 GLXMA May-27-2020

131 DP-1 = 1 GLXMA May-27-2020

ARM Action Codes

TY1 = 6.112887*[19]

Adjuvant Effects on Dicamba + Glyphosate. Dr. Howatt and Mettler. 'DKC40-77RIB' GT corn was planted near Fargo, North Dakota on May 15, 2020. Preemergence treatments were applied on May 15 with 77°F, 26% relative humidity, 10% cloud-cover, 3 mph wind velocity at 45°, and damp soil surface at 71°F. POST treatments were applied to 5 inch wild buckwheat, 2 to 4 inch redroot pigweed, 2 to 4 inch common lambsquarters, 2 to 4 inch common mallow, and 4 inch venice mallow on June 12 with 78°F, 38% relative humidity, 0% cloud-cover, 8 mph wind velocity at 45°, and dry soil surface at 71°F. All treatments were applied with a backpack sprayer delivering 17 gpa at 40 psi through 11002 TT nozzles to a 7-foot-wide area the length of 10 by 30-foot plots. The experiment was a randomized complete block design with four replicates.

		6/20	6/20	6/20	6/20	6/20	6/20	6/20
Treatment		Corn	Bar	Oat	Rrpw	Colq	Coma	Vema
		-----OZ AI/A, %V-----						
		-----%-----						
1	Acet&Mest&Clpy (Resicore)	4	95	95	97	93	93	93
2	Dica&Dffp (Status) + Glyt	6	85	79	71	65	65	69
3	Dica&Dffp + Glyt + SXP + AMS	6	91	86	76	74	76	83
4	Dica&Dffp + Glyt + SXP+AMS	6	96	93	93	89	90	89
5	Dica&Dffp + Glyt + SXP+AMS+SYK	5	94	92	96	92	91	95
6	Dica&Dffp + Glyt + SXP+AMS+SYK+PTM	5	94	92	95	93	90	91
7	Dica&Dffp + Glyt + SXP+AMS+SYK+DRT	4	96	94	96	93	90	95
8	Dica&Dffp + Glyt + SXP+AMS+SYK+LGE	6	97	95	96	92	89	95
CV		31	1	2	2	4	4	4
LSD P=0.5		3	1	3	2	5	5	5

		6/20	6/29	6/29	6/29	6/29	6/29	6/29
Treatment		Wibw	Corn	Bar	Oat	Rrpw	Colq	Coma
		-----OZ AI/A, %V-----						
		-----%-----						
1	Acet&Mest&Clpy (Resicore)	94	0	98	98	98	97	96
2	Dica&Dffp (Status) + Glyt	61	0	94	95	91	86	87
3	Dica&Dffp + Glyt + SXP + AMS	69	0	98	98	97	93	95
4	Dica&Dffp + Glyt + SXP+AMS	87	0	99	99	99	97	98
5	Dica&Dffp + Glyt + SXP+AMS+SYK	89	0	99	99	99	97	98
6	Dica&Dffp + Glyt + SXP+AMS+SYK+PTM	90	0	99	99	98	95	94
7	Dica&Dffp + Glyt + SXP+AMS+SYK+DRT	94	0	99	99	97	97	97
8	Dica&Dffp + Glyt + SXP+AMS+SYK+LGE	91	0	99	99	98	96	98
CV		3	0	0	1	2	2	3
LSD P=0.5		4	.	1	1	3	2	4

Treatment	6/29	6/29	7/10	7/10	7/10	7/10	7/10	7/10	7/10	10/6
	Vema	Wibw	Bar	Oat	Rrpw	Colq	Coma	Vema	Wibw	Yield
	-----%-----									-bu/acre-
1 Acet&Mest&Clpy (Resicore)	96	96	99	99	99	99	99	99	99	152
2 Dica&Dffp (Status) + Glyt	89	81	95	95	85	82	84	83	80	116
3 Dica&Dffp + Glyt + SXP + AMS	94	89	99	99	91	89	91	89	86	130
4 Dica&Dffp + Glyt + SXP+AMS	99	95	99	99	98	98	98	99	96	123
5 Dica&Dffp + Glyt + SXP+AMS+SYK	98	96	99	99	99	98	98	98	96	125
6 Dica&Dffp + Glyt + SXP+AMS+SYK+PTM	93	92	99	99	98	97	96	96	94	135
7 Dica&Dffp + Glyt + SXP+AMS+SYK+DRT	98	96	99	99	98	97	97	97	92	153
8 Dica&Dffp + Glyt + SXP+AMS+SYK+LGE	96	93	99	99	98	97	97	95	92	138
CV	3	2	0	0	1	2	2	2	2	12
LSD P=0.5	2	3	.	.	1	2	3	3	2	25

Topramezone Efficacy on Key Species and Corn Safety. Dr. Howatt and Mettler. ‘DKC40-77RIB’ GT Corn was seeded near Fargo, North Dakota on May 15, 2020. Treatments were applied to V1 corn, 4 to 5 leaf wheat, 4 to 5 leaf barley, 3 to 5 inch common mallow, 3 to 5 inch venice mallow, 2 to 5 inch redroot pigweed, and 5 inch wild buckwheat on June 12 with 78°F, 38% relative humidity, 0% cloud-cover, 8 mph wind velocity at 45°, and slightly dry soil surface at 71°F. All treatments were applied with a backpack sprayer delivering 17 gpa at 40 psi through 11002 TT nozzles to a 7-foot-wide area the length of 10 by 30-foot plots. The experiment was a randomized complete block design with four replicates.

Treatments	Rate OZ AI/A, % V/V	6/20	6/20	6/20	6/20	6/20	6/20	6/20	6/20	6/29	6/29	6/29	6/29	6/29	6/29	6/29
		Corn	Bar	Oat	Vema	Colq	Rrpw	Wibw	Yeft	Corn	Bar	Oat	Vema	Colq	Rrpw	Wibw
Untreated Check		4	6	8	0	0	0	0	6	0	0	0	0	0	0	0
Topr + MSO + AMS	0.262 + 1% + 9.5	5	40	67	70	61	67	42	66	0	15	71	88	89	86	0
Topr + MSO + AMS	0.35 + 1% + 9.5	5	47	69	72	74	76	45	71	0	22	75	91	94	91	19
Topr + MSO + AMS	0.525 + 1% + 9.5	5	50	74	81	84	85	59	74	0	32	85	95	96	96	32
Topr + MSO + AMS	0.7 + 1% + 9.5	6	61	75	84	85	88	64	79	0	42	84	98	99	97	45
Topr + MSO + AMS	1.4 + 1% + 9.5	6	69	80	85	89	94	71	80	0	70	93	99	99	99	70
CV		31	3	3	3	3	3	8	4	0	12	4	2	2	3	21
LSD P=0.05		3	2	3	3	4	4	8	4	-	5	5	3	2	2	9

Bar: barley
Vema: venice mallow
Colq: common lambsquarters
Rrpw: redroot pigweed
Yeft: yellow foxtail
Wibw: wild buckwheat

Glufosinate + Topramezone Premix in Enlist Corn. Dr. Howatt and Mettler. C49647883192 Mycogen GT/LL/Enlist Corn was seeded near Fargo on May 18, 2020. Treatments were applied to V1 corn, 3 to 4-inch common mallow, 3 to 4-inch venice mallow, 2 to 4-inch common ragweed, 2 to 4-inch redroot pigweed, and 4-inch wild buckwheat on June 12 with 82°F, 39% relative humidity, 0% cloud-cover, 7 mph wind velocity at 45°, and slightly dry soil at 71°F. All treatments were applied with a backpack sprayer delivering 8.5 gpa at 40 psi through 11001 TT nozzles. The experiment was a randomized complete block design with four replicates.

Treatment	Rate OZ AI/A, % V/V	6/20	6/20	6/20	6/20	6/20	6/20	6/20	6/20	6/29	6/29	6/29	6/29	6/29	6/29
		LL Corn	Corn	Bar	Oat	Vema	Yeft	Coma	Wibw	Bar	Oat	Vema	Yeft	Coma	Wibw
		-----%-----													
Untreated		0	5	5	8	0	0	0	0	0	0	0	0	0	0
Gluf&Topr (Sinate) + MSO + AMS	9 + 0.5% + 48	0	5	42	70	80	79	69	71	65	92	92	96	95	78
Gluf&Topr + Atra-4L + MSO + AMS	9 + 8 + 0.5% + 48	0	5	57	86	92	86	89	81	81	97	95	96	96	91
Gluf&Topr + Atra + NIS + AMS	9 + 8 + 0.25% + 48	0	5	52	85	91	86	84	80	75	95	90	89	94	91
Acet-H + Gluf&Topr + MSO + AMS	28 + 9 + 0.5% + 48	0	6	52	81	84	85	70	69	71	95	87	94	87	70
Acet-H + Gluf&Topr + Atra + MSO + AMS	28 + 9 + 8 + 0.5% + 48	0	6	55	90	93	90	90	88	86	96	96	94	96	92
Acet-H + Gluf&Topr + Atra + NIS + AMS	28 + 9 + 0.25% + 48	0	4	60	94	90	90	88	90	82	95	95	90	96	93
S-Meto(Dual II M) + Gluf&Topr + MSO + AMS	23 + 9 + 0.5% + 48	0	3	42	76	81	62	74	65	66	89	88	93	89	66
S-Meto + Gluf&Topr + Atra + MSO + AMS	23 + 9 + 8 + 0.5% + 48	0	6	65	90	91	89	90	89	86	97	93	95	96	89
S-Meto + Gluf&Topr + Atra + NIS + AMS	23 + 9 + 8 + 0.25% + 48	0	5	57	93	92	90	93	89	84	95	90	93	95	92
CV		0	35	9	4	4	4	4	4	4	2	2	2	2	5
LSD P=0.05		-	3	7	4	4	5	5	5	4	3	3	3	3	6

Treatment	Rate OZ A/A, % V/V	7/2	7/2	7/2	7/2	7/2	7/2	7/10	7/10	7/10	7/10	7/10	7/10
		Bar	Oat	Vema	Yeft	Coma	Wibw	Bar	Oat	Vema	Yeft	Coma	Wibw
Untreated		0	0	0	0	0	0	0	0	0	0	0	0
Gluf&Topr (Sinate) + MSO + AMS	9 + 0.5% + 48	66	91	88	94	91	72	65	89	85	94	86	70
Gluf&Topr + Atra-4L + MSO + AMS	9 + 8 + 0.5% + 48	87	98	95	96	98	90	87	98	94	96	86	89
Gluf&Topr + Atra + NIS + AMS	9 + 8 + 0.25% + 48	79	93	89	91	94	89	80	93	89	91	91	87
Acet-H + Gluf&Topr + MSO + AMS	28 + 9 + 0.5% + 48	76	90	86	92	89	74	74	89	82	90	87	71
Acet-H + Gluf&Topr + Atra + MSO + AMS	28 + 9 + 8 + 0.5% + 48	87	95	94	93	97	95	88	96	93	93	96	93
Acet-H + Gluf&Topr + Atra + NIS + AMS	28 + 9 + 0.25% + 48	87	95	91	91	95	90	86	95	91	90	93	87
S-Meto(Dual II M) + Gluf&Topr + MSO + AMS	23 + 9 + 0.5% + 48	66	82	80	85	89	50	62	79	75	85	86	45
S-Meto + Gluf&Topr + Atra + MSO + AMS	23 + 9 + 8 + 0.5% + 48	91	89	87	93	94	88	87	89	87	92	94	86
S-Meto + Gluf&Topr + Atra + NIS + AMS	23 + 9 + 8 + 0.25% + 48	80	85	87	86	92	86	79	83	84	86	91	80
CV		4	3	3	3	3	6	3	4	4	3	3	7
LSD P=0.05		4	3	4	4	2	9	4	4	4	4	4	7

Bar: barley
Vema: venice mallow
Yeft: yellow foxtail
Coma: common mallow
Wibw: wild buckwheat

Quizalofop-ethyl + 2,4-D in Enlist Corn. Dr. Howatt and DeSimini. 'C49647883192' corn was planted near Fargo on May 18, 2020. 3 to 5 inch weed treatments were applied to 3 to 4-inch barley, and 3 to 5-inch oat on June 11 with 80°F, 38% relative humidity, 0% cloud-cover, 7 mph velocity at 315°, and slightly dry soil at 71°F. The 1 DAT application was applied on the same weed pressure on June 12 with 78°F, 38% relative humidity, 0% cloud-cover, 8 mph wind velocity at 50°, and slightly dry soil at 71°F. All treatments were applied with a backpack sprayer delivering 17 gpa at 40 psi through 11002 TT nozzles to a 7-foot-wide area the length of 10 by 30-foot plots. The experiment was a randomized complete block design with four replicates.

Treatment	Rate OZ AI/A, % V/V	6/20	6/20	6/20	6/20	6/29	6/29	6/29	7/10	7/10	7/10
		Corn	Bar	Oat	Corn	Bar	Oat	Corn	Bar	Oat	Corn
Quiz + COC / 2,4-D-CH + COC	0.88 + 1% / 11.4 + 1%	4	74	82	89	95	98	99	99	99	99
Quiz + COC / 2,4-D-CH + COC	0.88 + 1% / 15.2 + 1%	3	75	81	88	95	98	99	99	99	99
Quiz + COC / 2,4-D-CH + COC	1.32 + 1% / 11.4 + 1%	4	71	81	87	96	99	99	99	99	99
Quiz + COC / 2,4-D-CH + COC	1.32 + 1% / 15.2 + 1%	6	74	81	89	97	98	99	99	99	99
Quiz + 2,4-D-CH + COC	0.88 + 11.4 + 1%	7	64	69	69	79	85	89	81	87	97
Quiz + 2,4-D-CH + COC	0.88 + 15.2 + 1%	6	62	66	67	71	79	84	71	80	82
Quiz + 2,4-D-CH + COC	1.32 + 11.4 + 1%	8	61	74	76	87	91	94	89	93	96
Quiz + 2,4-D-CH + COC	1.32 + 15.2 + 1	6	62	71	76	80	87	88	80	88	87
Quiz + 2,4-D-CH + Acet-H + COC	0.88 + 11.4 + 28 + 0.5	7	61	65	71	79	85	93	82	82	93
Quiz + 2,4-D-CH + S-meto + COC	1.32 + 11.4 + 23 + 0.5	6	64	67	74	80	82	92	80	80	93
CV		22	4	3	3	4	2	2	4	3	2
LSD P=0.05		2	4	4	4	5	3	2	5	4	3

Bar: barley

North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USAE01UKT3 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2020

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Kevin Thorsness, Bayer

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 10
Replications: 4 **Study Design:** RACOB Randomized Complete Block (RCB)

Soil Description

Description Name: NW22
 % Sand: 3 % OM: 5 **Texture:** SIC silty clay
 % Silt: 48 pH: 7.4 **Soil Name:** Fargo Silty Clay
 % Clay: 49 CEC: 51

Application Description

	A	B
Application Date	May-20-2020	Jun-15-2020
Appl. Start Time	6:50 AM	7:55 AM
Appl. Stop Time	7:30 AM	8:10 AM
Interval to Prev. Appl.		26 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Haugrud, N	Stith, J
Appl. Entry Date	Jul-28-2020	Jul-28-2020
Air Temperature Start, Stop	60, 60 F	87, 87 F
% Relative Humidity Start, Stop	78, 78	47, 47
Wind Velocity+Dir. Start	6 MPH, SSE	2.5 MPH, S
Wind Velocity+Dir. Stop	6 MPH, SSE	2 MPH, S
Wind Velocity+Dir. Max	8 MPH, SSE	4.5 MPH, S
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	60 F	78 F
Soil Moisture	NORMAL	NORMAL
Soil Surface Condition	CLOTRA	CLOTRA
% Cloud Cover	100	80

North Dakota State University

Trial ID: 20S-NW22-CORN-07	Balance Flexx, Capreno, Laudis, and Harness Programs in Corn
Protocol ID: 20S-NW22-CORN-07	Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
Project ID: HP20USAE01UKT3	Investigator (Creator): Dr. Joe Ikley
	Study Director: Dr. Joe Ikley
	Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment		
	A	B
Appl. Equipment	Mjolnir	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	8002
Nozzle Type	TEEJAI	XR
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes			
Context	Date	By	Notes
STATUS	Apr-14-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jul-28-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USAE01UKT3 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

				W, Weed AMATU Amaranthus tuberculatus Tall waterhemp		W, Weed AMATU Amaranthus tuberculatus Tall waterhemp	
				C, ZEAMX BCOR Zea mays Corn		C, ZEAMX BCOR Zea mays Corn	
				Jun-3-2020 PHYTO %, 0, 100 1 Haugrud, N Aug-20-2020 14, 14 15 DP-1 6 DE-1		Jun-3-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-20-2020 14, 14 15 DP-1 6 DE-1	
				Jun-15-2020 PHYTO %, 0, 100 1 Haugrud, N Aug-20-2020 26, 26 27 DP-1 18 DE-1		Jun-15-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-20-2020 26, 26 27 DP-1 18 DE-1	
Trt No.	Treatment Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*
1	Untreated Check			0.0 -	0.0 -	0.0 -	0.0 d
2	BALANCE FLEXX AATREX	5.5 fl oz/a 1 pt/a	A A	0.0 -	0.0 -	0.0 -	86.3 a
3	BALANCE FLEXX HARNESS AATREX	5.5 fl oz/a 2.5 pt/a 1 pt/a	A A A	0.0 -	0.0 -	-0.1 -	100.0 a
4	BALANCE FLEXX CAPRENO HARNESS ROUNDUP POWERMAX AATREX SUPERB HC HSPOC N-PAK AMS	4 fl oz/a 3 fl oz/a 2 pt/a 32 fl oz/a 16 fl oz/a 0.25 % v/v 8.5 lb ai/100 gal	A B B B B B B	0.0 -	0.0 -	-0.1 -	55.0 b
5	BALANCE FLEXX LAUDIS HARNESS ROUNDUP POWERMAX AATREX DESTINY HC HSMOC N-PAK AMS	4 fl oz/a 3 fl oz/a 2 pt/a 32 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal	A B B B B B B	0.0 -	0.0 -	-0.1 -	42.5 c
6	CAPRENO HARNESS ROUNDUP POWERMAX AATREX SUPERB HC HSPOC N-PAK AMS	3 fl oz/a 2 pt/a 32 fl oz/a 16 fl oz/a 0.25 % v/v 8.5 lb ai/100 gal	B B B B B B	0.0 -	0.0 -	-0.1 -	0.0 d
7	LAUDIS HARNESS ROUNDUP POWERMAX AATREX DESTINY HC HSMOC N-PAK AMS	3 fl oz/a 2 pt/a 32 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal	B B B B B B	0.0 -	0.0 -	0.0 -	0.0 d
8	CAPRENO DIFLEXX ROUNDUP POWERMAX AATREX SUPERB HC HSPOC CLASS ACT RIDION	3 fl oz/a 7.5 fl oz/a 32 fl oz/a 16 fl oz/a 0.5 % v/v 0.5 % v/v	B B B B B B	0.0 -	0.0 -	0.0 -	0.0 d

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

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 Sponsor Contact: Kevin Thorsness, Bayer

				W, Weed AMATU Amaranthus tuberculatus Tall waterhemp	W, Weed AMATU Amaranthus tuberculatus Tall waterhemp	
Pest Type						
Pest Code						
Pest Scientific Name						
Pest Name						
Crop Type, Code	C, ZEAMX			C, ZEAMX		
BBCH Scale	BCOR			BCOR		
Crop Scientific Name	Zea mays			Zea mays		
Crop Name	Corn			Corn		
Rating Date	Jun-3-2020		Jun-3-2020	Jun-15-2020	Jun-15-2020	
Rating Type	PHYTO		CONTRO	PHYTO	CONTRO	
Rating Unit/Min/Max	%, 0, 100		%, 0, 100	%, 0, 100	%, 0, 100	
Number of Subsamples	1		1	1	1	
Assessed By	Haugrud, N		Haugrud, N	Haugrud, N	Haugrud, N	
Data Entry Date	Aug-20-2020		Aug-20-2020	Aug-20-2020	Aug-20-2020	
Days After First/Last Applic.	14, 14		14, 14	26, 26	26, 26	
Plant-Eval Interval	15 DP-1		15 DP-1	27 DP-1	27 DP-1	
Days After Emergence	6 DE-1		6 DE-1	18 DE-1	18 DE-1	
Trt Treatment	Rate	Appl	1*	2*	3*	4*
No. Name	Rate Unit	Code				
9 LAUDIS	3 fl oz/a	B	0.0 -	0.0 -	0.0 -	0.0 d
DIFLEXX	7.5 fl oz/a	B				
ROUNDUP POWERMAX	32 fl oz/a	B				
AATREX	12 fl oz/a	B				
DESTINY HC HSMOC	0.5 % v/v	B				
CLASS ACT RIDION	0.5 % v/v	B				
10 ACURON FLEXI	56 fl oz/a	A	0.0 -	0.0 -	1.7 -	89.8 a
AATREX	12 fl oz/a	A				
LSD P=.05					1.23	12.03
Standard Deviation			0.00	0.00	0.84	8.29
CV			0.0	0.0	569.83	22.19
Levene's F^			.	.	0.977	1.879
Levene's Prob(F)			.	.	0.483	0.094
Skewness^			.	.	2.0499*	0.1776
Kurtosis^			.	.	12.2588*	2.1197*
Replicate F			0.000	0.000	0.911	2.037
Replicate Prob(F)			1.0000	1.0000	0.4523	0.1324
Treatment F			0.000	0.000	1.202	105.942
Treatment Prob(F)			1.0000	1.0000	0.3443	0.0001

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North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USAE01UKT3 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Unit	Appl Code	5*	6*	7*	8*
	1 Untreated Check				0.0 -	0.0 -	0.0 d	0.0 -
2	BALANCE FLEXX AATREX	5.5 fl oz/a 1 pt/a		A A	0.0 -	0.0 -	47.5 c	0.0 -
3	BALANCE FLEXX HARNESS AATREX	5.5 fl oz/a 2.5 pt/a 1 pt/a		A A A	0.0 -	0.0 -	96.3 a	0.0 -
4	BALANCE FLEXX CAPRENO HARNESS ROUNDUP POWERMAX AATREX SUPERB HC HSPOC N-PAK AMS	4 fl oz/a 3 fl oz/a 2 pt/a 32 fl oz/a 16 fl oz/a 0.25 % v/v 8.5 lb ai/100 gal		A B B B B B B	0.0 -	0.0 -	99.3 a	0.0 -
5	BALANCE FLEXX LAUDIS HARNESS ROUNDUP POWERMAX AATREX DESTINY HC HSMOC N-PAK AMS	4 fl oz/a 3 fl oz/a 2 pt/a 32 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal		A B B B B B B	0.0 -	0.0 -	98.0 a	0.0 -
6	CAPRENO HARNESS ROUNDUP POWERMAX AATREX SUPERB HC HSPOC N-PAK AMS	3 fl oz/a 2 pt/a 32 fl oz/a 16 fl oz/a 0.25 % v/v 8.5 lb ai/100 gal		B B B B B B	0.0 -	0.0 -	93.5 a	0.0 -
7	LAUDIS HARNESS ROUNDUP POWERMAX AATREX DESTINY HC HSMOC N-PAK AMS	3 fl oz/a 2 pt/a 32 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal		B B B B B B	0.0 -	0.0 -	98.0 a	0.0 -
8	CAPRENO DIFLEXX ROUNDUP POWERMAX AATREX SUPERB HC HSPOC CLASS ACT RIDION	3 fl oz/a 7.5 fl oz/a 32 fl oz/a 16 fl oz/a 0.5 % v/v 0.5 % v/v		B B B B B B	0.0 -	0.0 -	87.5 a	0.0 -

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 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07 Location: NW22, Reed Township, Fargo, ND Trial Year: 2020
 Protocol ID: 20S-NW22-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HP20USAE01UKT3 Study Director: Dr. Joe Ikley
 Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Unit	Appl Code	5*	6*	7*	8*
9	LAUDIS	3 fl oz/a		B	0.0 -	0.0 -	96.8 a	0.0 -
	DIFLEXX	7.5 fl oz/a		B				
	ROUNDUP POWERMAX	32 fl oz/a		B				
	AATREX	12 fl oz/a		B				
	DESTINY HC HSMOC	0.5 % v/v		B				
	CLASS ACT RIDION	0.5 % v/v		B				
10	ACURON FLEXI	56 fl oz/a		A	0.0 -	0.0 -	70.0 b	0.0 -
	AATREX	12 fl oz/a		A				
LSD P=.05					.	.	9.68	.
Standard Deviation					0.00	0.00	6.67	0.00
CV					0.0	0.0	8.48	0.0
Levene's F^					.	.	1.667	.
Levene's Prob(F)					.	.	0.141	.
Skewness^					.	.	0.9334*	.
Kurtosis^					.	.	4.3117*	.
Replicate F					0.000	0.000	1.950	0.000
Replicate Prob(F)					1.0000	1.0000	0.1453	1.0000
Treatment F					0.000	0.000	93.328	0.000
Treatment Prob(F)					1.0000	1.0000	0.0001	1.0000

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 Due to missing data, the effective replicates used for mean comparisons are: col. 1=3.5; 3=3.2
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,5,6,8 because error mean square = 0.
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Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

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Protocol ID: 20S-NW22-CORN-07	Investigator (Creator): Dr. Joe Ikley	
Project ID: HP20USAE01UKT3	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Kevin Thorsness, Bayer	

Pest Type	W, Weed	W, Weed		
Pest Code	AMATU	AMATU		
Pest Scientific Name	Amaranthus tuberculatus	Amaranthus tuberculatus		
Pest Name	Tall waterhemp	Tall waterhemp		
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-15-2020	Jul-28-2020		
Rating Type	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1		
Assessed By	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-20-2020	Aug-20-2020		
Days After First/Last Applic.	56, 30	69, 43		
Plant-Eval Interval	57 DP-1	70 DP-1		
Days After Emergence	48 DE-1	61 DE-1		
Trt Treatment	Rate	Appl	9*	10*
No. Name	Rate Unit	Code		
1 Untreated Check			0.0 d	0.0 d
2 BALANCE FLEXX	5.5 fl oz/a	A	32.5 c	20.0 c
AATREX	1 pt/a	A		
3 BALANCE FLEXX	5.5 fl oz/a	A	96.3 a	96.3 a
HARNESS	2.5 pt/a	A		
AATREX	1 pt/a	A		
4 BALANCE FLEXX	4 fl oz/a	A	100.0 a	100.0 a
CAPRENO	3 fl oz/a	B		
HARNESS	2 pt/a	B		
ROUNDUP POWERMAX	32 fl oz/a	B		
AATREX	16 fl oz/a	B		
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
5 BALANCE FLEXX	4 fl oz/a	A	98.8 a	98.8 a
LAUDIS	3 fl oz/a	B		
HARNESS	2 pt/a	B		
ROUNDUP POWERMAX	32 fl oz/a	B		
AATREX	12 fl oz/a	B		
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
6 CAPRENO	3 fl oz/a	B	90.0 a	85.0 a
HARNESS	2 pt/a	B		
ROUNDUP POWERMAX	32 fl oz/a	B		
AATREX	16 fl oz/a	B		
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
7 LAUDIS	3 fl oz/a	B	97.5 a	97.5 a
HARNESS	2 pt/a	B		
ROUNDUP POWERMAX	32 fl oz/a	B		
AATREX	12 fl oz/a	B		
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
8 CAPRENO	3 fl oz/a	B	86.3 a	82.5 a
DIFLEXX	7.5 fl oz/a	B		
ROUNDUP POWERMAX	32 fl oz/a	B		
AATREX	16 fl oz/a	B		
SUPERB HC HSPOC	0.5 % v/v	B		
CLASS ACT RIDION	0.5 % v/v	B		

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. 1=3.5; 3=3.2
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,5,6,8 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07	Location: NW22, Reed Township, Fargo, ND	Trial Year: 2020
Protocol ID: 20S-NW22-CORN-07	Investigator (Creator): Dr. Joe Ikley	
Project ID: HP20USAE01UKT3	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Kevin Thorsness, Bayer	

	W, Weed AMATU	W, Weed AMATU
Pest Type	Amaranthus tuberculatus	Amaranthus tuberculatus
Pest Code	Tall waterhemp	Tall waterhemp
Pest Scientific Name		
Pest Name		
Crop Type, Code		
BBCH Scale		
Crop Scientific Name		
Crop Name		
Rating Date	Jul-15-2020	Jul-28-2020
Rating Type	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100
Number of Subsamples	1	1
Assessed By	Haugrud, N	Haugrud, N
Data Entry Date	Aug-20-2020	Aug-20-2020
Days After First/Last Applic.	56, 30	69, 43
Plant-Eval Interval	57 DP-1	70 DP-1
Days After Emergence	48 DE-1	61 DE-1
Trt Treatment	9*	10*
No. Name		
Rate		
Rate Unit		
Appl Code		
9 LAUDIS	3 fl oz/a	B
DIFLEXX	7.5 fl oz/a	B
ROUNDUP POWERMAX	32 fl oz/a	B
AATREX	12 fl oz/a	B
DESTINY HC HSMOC	0.5 % v/v	B
CLASS ACT RIDION	0.5 % v/v	B
10 ACURON FLEXI	56 fl oz/a	A
AATREX	12 fl oz/a	A
LSD P=.05	11.41	13.39
Standard Deviation	7.86	9.23
CV	10.43	12.77
Levene's F^	1.21	2.068
Levene's Prob(F)	0.325	0.066
Skewness^	0.7161	0.1576
Kurtosis^	2.919*	0.7019
Replicate F	3.299	2.984
Replicate Prob(F)	0.0354	0.0488
Treatment F	77.882	62.785
Treatment Prob(F)	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. 1=3.5; 3=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,5,6,8 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Balance Flexx, Capreno, Laudis, and Harness Programs in Corn

Trial ID: 20S-NW22-CORN-07	Location: NW22, Reed Township, Fargo, ND	Trial Year: 2020
Protocol ID: 20S-NW22-CORN-07	Investigator (Creator): Dr. Joe Ikley	
Project ID: HP20USAE01UKT3	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Kevin Thorsness, Bayer	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMATU, Amaranthus tuberculatus, Tall waterhemp = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Haugrud, N = Research Specailist

Plant-Eval Interval

15 DP-1 = 1 ZEAMX May-19-2020

27 DP-1 = 1 ZEAMX May-19-2020

34 DP-1 = 1 ZEAMX May-19-2020

41 DP-1 = 1 ZEAMX May-19-2020

57 DP-1 = 1 ZEAMX May-19-2020

70 DP-1 = 1 ZEAMX May-19-2020

North Dakota State University

Sinate - Academic Awareness

Trial ID: 20S-PROSPER-CORN-03 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-03 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20C04H061 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-9-2020

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Provide academic researchers access to topramezone + glufosinate premix to apply as label directions.

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Rich Zollinger, AMVAC

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 7
Replications: 4 **Study Design:** RACOB Randomized Complete Block (RCB)

Soil Description

Description Name: Prosper, ND
% Sand: 23 **% OM:** 4.3 **Texture:** SIL silt loam
% Silt: 53 **pH:** 7 **Soil Name:** Kindred-Bearden Silty Clay Loam
% Clay: 24 **CEC:** 24

Application Description

	A
Application Date	Jun-19-2020
Appl. Start Time	10:45 AM
Appl. Stop Time	11:00 AM
Application Method	SPRAY
Application Timing	POST
Application Placement	BROFOL
Applied By	Haugrud, N
Appl. Entry Date	Aug-3-2020
Air Temperature Start, Stop	76, 76 F
% Relative Humidity Start, Stop	46, 46
Wind Velocity+Dir. Start	4 MPH, WNW
Wind Velocity+Dir. Stop	4 MPH, WNW
Wind Velocity+Dir. Max	7 MPH, WNW
Wet Leaves (Y/N)	N, no
Soil Temperature	69 F
Soil Moisture	SLIWET
Soil Surface Condition	COATRA
% Cloud Cover	5

North Dakota State University

Sinate - Academic Awareness

Trial ID: 20S-PROSPER-CORN-03	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-03	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H061	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Application Equipment

	A
Appl. Equipment	Narsil
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	8002
Nozzle Type	FLAFAN
Nozzle Spacing	20 IN
Boom Height	18 IN
Ground Speed	3 MPH
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	1119 mL
Propellant	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-3-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Senate - Academic Awareness

Trial ID: 20S-PROSPER-CORN-03	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-03	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H061	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

		W, Weed SETPU Setaria helvola yellow foxtail	W, Weed AMAPO Amaranthus powellii Powell amaranth	W, Weed XANST Xanthium strumarium Common cocklebur	W, Weed SETPU Setaria helvola yellow foxtail		
Pest Type							
Pest Code							
Pest Scientific Name							
Pest Name							
Crop Type, Code	C, ZEAMX						
BBCH Scale	BCOR						
Crop Scientific Name	Zea mays						
Crop Name	Corn						
Rating Date	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-16-2020		
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1	1		
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J	Ikley, J		
Data Entry Date	Aug-18-2020	Aug-18-2020	Aug-18-2020	Aug-18-2020	Aug-18-2020		
Days After First/Last Applic.	13, 13	13, 13	13, 13	13, 13	27, 27		
Trt-Eval Interval	13 DA-A	13 DA-A	13 DA-A	13 DA-A	27 DA-A		
Plant-Eval Interval	34 DP-1	34 DP-1	34 DP-1	34 DP-1	48 DP-1		
Days After Emergence	30 DE-1	30 DE-1	30 DE-1	30 DE-1	44 DE-1		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*	5*
1 Untreated			0.0 -	0.0 c	0.0 d	0.0 b	0.0 d
2 SINATE MSO ULTRA N-PAK AMS	21 fl oz/a A 1 % v/v A 3 lb ai/a A		0.0 -	82.5 ab	82.5 c	95.8 a	71.3 c
3 SINATE AATREX MSO ULTRA N-PAK AMS	21 fl oz/a A 0.5 lb ai/a A 1 % v/v A 3 lb ai/a A		0.0 -	92.5 ab	99.0 a	99.0 a	91.3 a
4 SINATE MSO ULTRA N-PAK AMS	28 fl oz/a A 1 % v/v A 3 lb ai/a A		0.0 -	91.3 ab	91.0 abc	98.0 a	87.5 ab
5 IMPACT MSO ULTRA N-PAK AMS	1 fl oz/a A 1 % v/v A 3 lb ai/a A		0.0 -	93.8 ab	93.8 ab	76.3 a	86.3 ab
6 LIBERTY 280 SL N-PAK AMS	32 fl oz/a A 3 lb ai/a A		0.0 -	81.0 b	87.5 bc	95.8 a	76.3 bc
7 HALEX GT AATREX ACTIVATOR 90 - NIS N-PAK AMS	3.6 pt/a A 1 pt/a A 0.25 % v/v A 2.5 % v/v A		0.0 -	98.0 a	99.0 a	99.0 a	99.0 a
LSD P=.05			.	11.00	7.82	19.78	10.85
Standard Deviation	0.00		0.00	7.40	5.27	13.32	7.31
CV	0.0		0.0	9.62	6.67	16.53	10.0
Levene's F^	.		.	16.049	1.777	0.829	6.936
Levene's Prob(F)	.		.	0.00*	0.153	0.561	0.00*
Skewness^	.		.	-0.1719	0.1803	-2.3409*	-0.0036
Kurtosis^	.		.	3.054*	-0.0812	10.1941*	1.1246
Replicate F	0.000		0.000	1.183	2.663	0.843	2.743
Replicate Prob(F)	1.0000		1.0000	0.3441	0.0791	0.4878	0.0733
Treatment F	0.000		0.000	86.816	179.972	29.907	84.156
Treatment Prob(F)	1.0000		1.0000	0.0001	0.0001	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.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Sinate - Academic Awareness

Trial ID: 20S-PROSPER-CORN-03	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-03	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H061	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type	W, Weed	W, Weed
Pest Code	AMAPO	XANST
Pest Scientific Name	Amaranthus powellii	Xanthium strumarium
Pest Name	Powell amaranth	Common cocklebur
Crop Type, Code		
BBCH Scale		
Crop Scientific Name		
Crop Name		
Rating Date	Jul-16-2020	Jul-16-2020
Rating Type	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100
Number of Subsamples	1	1
Assessed By	Ikley, J	Ikley, J
Data Entry Date	Aug-18-2020	Aug-18-2020
Days After First/Last Applic.	27, 27	27, 27
Trt-Eval Interval	27 DA-A	27 DA-A
Plant-Eval Interval	48 DP-1	48 DP-1
Days After Emergence	44 DE-1	44 DE-1
Trt Treatment	6*	7*
No. Name	Rate Unit	Appl Code
1 Untreated		
	0.0 c	0.0 b
2 SINATE	21 fl oz/a A	78.8 b
MSO ULTRA	1 % v/v A	93.5 a
N-PAK AMS	3 lb ai/a A	
3 SINATE	21 fl oz/a A	98.5 a
AATREX	0.5 lb ai/a A	97.3 a
MSO ULTRA	1 % v/v A	
N-PAK AMS	3 lb ai/a A	
4 SINATE	28 fl oz/a A	92.3 a
MSO ULTRA	1 % v/v A	93.5 a
N-PAK AMS	3 lb ai/a A	
5 IMPACT	1 fl oz/a A	96.0 a
MSO ULTRA	1 % v/v A	95.0 a
N-PAK AMS	3 lb ai/a A	
6 LIBERTY 280 SL	32 fl oz/a A	92.3 a
N-PAK AMS	3 lb ai/a A	96.0 a
7 HALEX GT	3.6 pt/a A	99.8 a
AATREX	1 pt/a A	99.5 a
ACTIVATOR 90 - NIS	0.25 % v/v A	
N-PAK AMS	2.5 % v/v A	
LSD P=.05	6.51	4.50
Standard Deviation	4.38	3.03
CV	5.5	3.69
Levene's F^	0.309	0.433
Levene's Prob(F)	0.925	0.848
Skewness^	-0.7604	-0.2941
Kurtosis^	0.228	0.0777
Replicate F	2.154	3.005
Replicate Prob(F)	0.1290	0.0575
Treatment F	266.784	573.732
Treatment Prob(F)	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.

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Sinate - Academic Awareness

Trial ID: 20S-PROSPER-CORN-03	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-03	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H061	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

AMAPO, Amaranthus powellii, Powell amaranth = US

XANST, Xanthium strumarium, Common cocklebur = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Ikley, J = Extension Agent

Plant-Eval Interval

34 DP-1 = 1 ZEAMX May-29-2020

48 DP-1 = 1 ZEAMX May-29-2020

North Dakota State University

Sinate + Group 15 Herbicides

Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H065	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established

ARM Trial Created On: Apr-9-2020

Conducted Under GLP: No

Conducted Under GEP: No

Objectives:

Determine crop safety and weed efficacy from Sinate applied with Group 15 herbicides.

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Rich Zollinger, AMVAC

Site and Design

Treated Plot Width: 6.67 FT

Treated Plot Length: 30 FT

Treated Plot Area: 200.1 FT² **Treatments:** 10

Replications: 4

Study Design: RAOBL Randomized Complete Block (RCB)

Soil Description

Description Name: Prosper, ND

% Sand: 23 **% OM:** 4.3 **Texture:** SIL silt loam

% Silt: 53 **pH:** 7 **Soil Name:** Kindred-Bearden Silty Clay Loam

% Clay: 24 **CEC:** 24

Application Description

	A
Application Date	Jun-19-2020
Appl. Start Time	9:55 AM
Appl. Stop Time	10:20 AM
Application Method	SPRAY
Application Timing	POST
Application Placement	BROFOL
Applied By	Haugrud, N
Appl. Entry Date	Aug-3-2020
Air Temperature Start, Stop	65, 65 F
% Relative Humidity Start, Stop	59, 59
Wind Velocity+Dir. Start	5 MPH, WNW
Wind Velocity+Dir. Stop	5 MPH, WNW
Wind Velocity+Dir. Max	8 MPH, WNW
Wet Leaves (Y/N)	N, no
Soil Temperature	68 F
Soil Moisture	NORMAL
Soil Surface Condition	COATRA
% Cloud Cover	5

North Dakota State University

Trial ID: 20S-PROSPER-CORN-04	Sinate + Group 15 Herbicides	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	
Project ID: 20C04H065	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Application Equipment	
	A
Appl. Equipment	Narsil
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	8002
Nozzle Type	FLAFAN
Nozzle Spacing	20 IN
Boom Height	18 IN
Ground Speed	3 MPH
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	1119 mL
Propellant	COMCO2

Notes			
Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-3-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Sinate + Group 15 Herbicides	
Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-04	Trial Year: 2020
Project ID: 20C04H065	Investigator (Creator): Dr. Joe Ikley
	Study Director: Dr. Joe Ikley
	Sponsor Contact: Rich Zollinger, AMVAC

Pest Type			W, Weed AMARE	W, Weed XANST	W, Weed SETPU			
Pest Code			Amaranthus retroflexus	Xanthium strumarium	Setaria helvola			
Pest Scientific Name			Redroot pigweed	Common cocklebur	yellow foxtail			
Pest Name	C, ZEAMX	C, ZEAMX						
Crop Type, Code	BCOR	BCOR						
BBCH Scale								
Crop Scientific Name	Zea mays	Zea mays						
Crop Name	Corn	Corn						
Rating Date	Jun-25-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020			
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	CONTRO			
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100			
Number of Subsamples	1	1	1	1	1			
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N			
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020			
Days After First/Last Applic.	6, 6	13, 13	13, 13	13, 13	13, 13			
Trt-Eval Interval	6 DA-A	13 DA-A	13 DA-A	13 DA-A	13 DA-A			
Plant-Eval Interval	29 DP-1	36 DP-1	36 DP-1	36 DP-1	36 DP-1			
Days After Emergence	23 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1			
Trt No.	Treatment Name	Rate	Appl Code	1*	2*	3*	4*	5*
1	Untreated			0.0 -	0.0 -	0.0 c	0.0 b	0.0 c
2	HARNES ROUNDUP POWERMAX MSO ULTRA N-PAK AMS	2 pt/a 32 fl oz/a 0.5 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	99.0 a	98.5 a	97.3 a
3	DUAL II MAGNUM ROUNDUP POWERMAX MSO ULTRA N-PAK AMS	1.5 pt/a 32 fl oz/a 0.5 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	97.0 ab	97.8 a	95.5 a
4	SINATE ACTIVATOR 90 - NIS N-PAK AMS	28 fl oz/a 0.25 % v/v 3 lb ai/a	A A A	0.0 -	0.0 -	95.0 ab	99.0 a	85.3 b
5	SINATE MSO ULTRA N-PAK AMS	28 fl oz/a 0.5 % v/v 3 lb ai/a	A A A	0.0 -	0.0 -	96.0 ab	97.3 a	86.2 b
6	SINATE HARNES ACTIVATOR 90 - NIS N-PAK AMS	28 fl oz/a 2 pt/a 0.25 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	98.0 ab	99.0 a	96.3 a
7	SINATE HARNES MSO ULTRA N-PAK AMS	28 fl oz/a 2 pt/a 0.5 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	98.5 ab	98.5 a	98.0 a
8	SINATE DUAL II MAGNUM ACTIVATOR 90 - NIS N-PAK AMS	28 fl oz/a 1.5 pt/a 0.25 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	95.5 ab	98.5 a	93.0 a
9	SINATE DUAL II MAGNUM MSO ULTRA N-PAK AMS	28 fl oz/a 1.5 pt/a 0.5 % v/v 3 lb ai/a	A A A A	0.0 -	0.0 -	96.8 ab	97.3 a	96.0 a

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. 5,9=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,6 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Sinate + Group 15 Herbicides

Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H065	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

Pest Type			W, Weed AMARE	W, Weed XANST	W, Weed SETPU
Pest Code					
Pest Scientific Name			Amaranthus retroflexus	Xanthium strumarium	Setaria helvola
Pest Name			Redroot pigweed	Common cocklebur	yellow foxtail
Crop Type, Code	C, ZEAMX	C, ZEAMX			
BBCH Scale	BCOR	BCOR			
Crop Scientific Name	Zea mays	Zea mays			
Crop Name	Corn	Corn			
Rating Date	Jun-25-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	6, 6	13, 13	13, 13	13, 13	13, 13
Trt-Eval Interval	6 DA-A	13 DA-A	13 DA-A	13 DA-A	13 DA-A
Plant-Eval Interval	29 DP-1	36 DP-1	36 DP-1	36 DP-1	36 DP-1
Days After Emergence	23 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1
Trt Treatment	Rate	Appl			
No. Name	Rate Unit	Code	1*	2*	3*
10 LIBERTY 280 SL	32 fl oz/a A		0.0 -	0.0 -	92.3 b
N-PAK AMS	3 lb ai/a A				96.0 a
LSD P=.05					82.9 b
Standard Deviation	0.00	0.00	4.05	2.41	4.50
CV	0.0	0.0	2.79	1.66	3.09
Levene's F^			3.22	1.88	3.72
Levene's Prob(F)			1.769	0.419	2.333
Skewness^			0.117	0.914	0.042*
Kurtosis^			-0.7534*	-1.7977*	0.9672*
Replicate F	0.000	0.000	0.5854	5.1995*	4.3953*
Replicate Prob(F)	1.0000	1.0000	0.538	2.254	1.133
Treatment F	0.000	0.000	0.6605	0.1049	0.3549
Treatment Prob(F)	1.0000	1.0000	478.277	1391.345	370.039
			0.0001	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. 5,9=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,6 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Sinate + Group 15 Herbicides

Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H065	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type		W, Weed AMARE	W, Weed XANST	W, Weed SETPU		
Pest Code						
Pest Scientific Name		Amaranthus retroflexus	Xanthium strumarium	Setaria helvola		
Pest Name		Redroot pigweed	Common cocklebur	yellow foxtail		
Crop Type, Code	C, ZEAMX					
BBCH Scale	BCOR					
Crop Scientific Name	Zea mays					
Crop Name	Corn					
Rating Date	Jul-16-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020		
Days After First/Last Applic.	27, 27	27, 27	27, 27	27, 27		
Trt-Eval Interval	27 DA-A	27 DA-A	27 DA-A	27 DA-A		
Plant-Eval Interval	50 DP-1	50 DP-1	50 DP-1	50 DP-1		
Days After Emergence	44 DE-1	44 DE-1	44 DE-1	44 DE-1		
Trt Treatment	Rate	Appl	6*	7*	8*	9*
No. Name	Rate Unit	Code				
1 Untreated			0.0 -	0.0 b	0.0 b	0.0 f
2 HARNESS	2 pt/a	A	0.0 -	98.0 a	99.0 a	92.5 ab
ROUNDUP POWERMAX	32 fl oz/a	A				
MSO ULTRA	0.5 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
3 DUAL II MAGNUM	1.5 pt/a	A	0.0 -	98.0 a	99.0 a	75.0 cd
ROUNDUP POWERMAX	32 fl oz/a	A				
MSO ULTRA	0.5 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
4 SINATE	28 fl oz/a	A	0.0 -	94.3 a	99.0 a	50.0 e
ACTIVATOR 90 - NIS	0.25 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
5 SINATE	28 fl oz/a	A	0.0 -	96.8 a	98.0 a	67.0 d
MSO ULTRA	0.5 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
6 SINATE	28 fl oz/a	A	0.0 -	96.8 a	96.8 a	87.5 abc
HARNESS	2 pt/a	A				
ACTIVATOR 90 - NIS	0.25 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
7 SINATE	28 fl oz/a	A	0.0 -	98.0 a	98.0 a	94.5 a
HARNESS	2 pt/a	A				
MSO ULTRA	0.5 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
8 SINATE	28 fl oz/a	A	0.0 -	94.8 a	99.0 a	77.5 bcd
DUAL II MAGNUM	1.5 pt/a	A				
ACTIVATOR 90 - NIS	0.25 % v/v	A				
N-PAK AMS	3 lb ai/a	A				
9 SINATE	28 fl oz/a	A	0.0 -	98.0 a	99.0 a	85.0 abc
DUAL II MAGNUM	1.5 pt/a	A				
MSO ULTRA	0.5 % v/v	A				
N-PAK AMS	3 lb ai/a	A				

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. 5,9=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,6 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Sinate + Group 15 Herbicides

Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H065	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

		W, Weed AMARE	W, Weed XANST	W, Weed SETPU
Pest Type		Amaranthus retroflexus	Xanthium strumarium	Setaria helvola
Pest Code		Redroot pigweed	Common cocklebur	yellow foxtail
Pest Scientific Name				
Pest Name				
Crop Type, Code	C, ZEAMX			
BBCH Scale	BCOR			
Crop Scientific Name	Zea mays			
Crop Name	Corn			
Rating Date	Jul-16-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	27, 27	27, 27	27, 27	27, 27
Trt-Eval Interval	27 DA-A	27 DA-A	27 DA-A	27 DA-A
Plant-Eval Interval	50 DP-1	50 DP-1	50 DP-1	50 DP-1
Days After Emergence	44 DE-1	44 DE-1	44 DE-1	44 DE-1
Trt Treatment	Rate Appl	6*	7*	8*
No. Name	Rate Unit Code			9*
10 LIBERTY 280 SL	32 fl oz/a A	0.0 -	87.5 a	94.3 a
N-PAK AMS	3 lb ai/a A			50.3 e
LSD P=.05			6.51	5.04
Standard Deviation	0.00		4.49	3.47
CV	0.0		5.2	3.94
Levene's F^			0.435	0.734
Levene's Prob(F)			0.905	0.675
Skewness^			-1.6407*	-2.4107*
Kurtosis^			3.51*	9.9977*
Replicate F	0.000		0.209	0.836
Replicate Prob(F)	1.0000		0.8895	0.4862
Treatment F	0.000		184.386	319.615
Treatment Prob(F)	1.0000		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. 5,9=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,6 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Sinate + Group 15 Herbicides

Trial ID: 20S-PROSPER-CORN-04	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-04	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20C04H065	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

AMARE, Amaranthus retroflexus, Redroot pigweed = US

XANST, Xanthium strumarium, Common cocklebur = US

SETPU, Setaria helvola, yellow foxtail = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Haugrud, N = Research Specailist

Plant-Eval Interval

29 DP-1 = 1 ZEAMX May-27-2020

36 DP-1 = 1 ZEAMX May-27-2020

50 DP-1 = 1 ZEAMX May-27-2020

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05 Protocol ID: 20S-PROSPER-CORN-05 Project ID:	Weed Management Programs in Corn Location: Prosper, ND Investigator (Creator): Dr. Joe Ikley Study Director: Dr. Joe Ikley Sponsor Contact: Syngenta, Corteva, FMC, Bayer	Trial Year: 2020
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General Trial Information	
Study Director: Dr. Joe Ikley Investigator: Dr. Joe Ikley	
Trial Status: E established	
ARM Trial Created On: Apr-9-2020	
Conducted Under GLP: No Conducted Under GEP: No	

Contacts	
Role: STYDIR study director Study Director: Dr. Joe Ikley Role: INVEST investigator Investigator: Dr. Joe Ikley Role: SPONSR sponsor Sponsor: Syngenta, Corteva, FMC, Bayer	

Site and Design	
Treated Plot Width: 6.67 FT Treated Plot Length: 30 FT Treated Plot Area: 200.1 FT2 Treatments: 16 Replications: 4	
Study Design: RACOB L Randomized Complete Block (RCB)	

Application Description		
	A	B
Application Date	May-29-2020	Jun-19-2020
Appl. Start Time	10:50 AM	9:15 AM
Appl. Stop Time	11:20 AM	9:40 AM
Interval to Prev. Appl.		21 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Haugrud, N	Haugrud, N
Appl. Entry Date	Aug-4-2020	Aug-4-2020
Air Temperature Start, Stop	66, 66 F	67, 67 F
% Relative Humidity Start, Stop	44, 44	50, 50
Wind Velocity+Dir. Start	7 MPH, N	4.5 MPH, WNW
Wind Velocity+Dir. Stop	7 MPH, N	4.5 MPH, WNW
Wind Velocity+Dir. Max	9 MPH, N	7.5 MPH, WNW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	61 F	69 F
Soil Moisture	NORMAL	NORMAL
Soil Surface Condition	COATRA	COATRA
% Cloud Cover	10	5

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05 Protocol ID: 20S-PROSPER-CORN-05 Project ID:	Weed Management Programs in Corn Location: Prosper, ND Investigator (Creator): Dr. Joe Ikley Study Director: Dr. Joe Ikley Sponsor Contact: Syngenta, Corteva, FMC, Bayer	Trial Year: 2020
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Application Equipment		
	A	B
Appl. Equipment	Narsil	Narsil
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	8002
Nozzle Type	TEEJAI	FLAFAN
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes			
Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-4-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

Pest Type				W, Weed XANST			W, Weed XANST	
Pest Code				Xanthium strumarium			Xanthium strumarium	
Pest Scientific Name				Common cocklebur			Common cocklebur	
Pest Name								
Crop Type, Code	C, ZEAMX	C, ZEAMX			C, ZEAMX			
BBCH Scale	BCOR	BCOR			BCOR			
Crop Scientific Name	Zea mays	Zea mays			Zea mays			
Crop Name	Corn	Corn			Corn			
Rating Date	Jun-11-2020	Jun-17-2020		Jun-17-2020	Jun-25-2020		Jun-25-2020	
Rating Type	PHYTO	PHYTO		CONTRO	PHYTO		CONTRO	
Rating Unit/Min/Max	%, 0, 100	%, 0, 100		%, 0, 100	%, 0, 100		%, 0, 100	
Number of Subsamples	1	1		1	1		1	
Assessed By	Haugrud, N	Haugrud, N		Haugrud, N	Haugrud, N		Haugrud, N	
Data Entry Date	Sep-2-2020	Sep-2-2020		Sep-2-2020	Sep-2-2020		Sep-2-2020	
Days After First/Last Applic.	13, 13	19, 19		19, 19	27, 6		27, 6	
Plant-Eval Interval	15 DP-1	21 DP-1		21 DP-1	29 DP-1		29 DP-1	
Days After Emergence	9 DE-1	15 DE-1		15 DE-1	23 DE-1		23 DE-1	
Trt	Treatment	Rate	Appl	1*	2*	3*	4*	5*
No.	Name	Rate	Code					
1	Untreated Check			0.0 -	0.0 -	2.6 d	0.0 -	0.0 d
2	LUMAX EZ	2.7 qt/a	A	0.0 -	0.0 -	76.0 ab	0.0 -	52.5 c
3	BICEP LITE II MAGNUM	1 qt/a	A	0.0 -	0.0 -	72.6 ab	0.0 -	94.3 a
	HALEX GT	3.6 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
4	ACURON	2.5 qt/a	A	0.0 -	0.0 -	96.0 a	0.0 -	66.7 bc
5	LUMAX EZ	1.5 qt/a	A	0.0 -	0.0 -	72.6 ab	0.0 -	94.5 a
	HALEX GT	3.6 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
6	ACURON	1.25 qt/a	A	0.0 -	0.0 -	59.3 abc	0.0 -	98.0 a
	ACURON	1.25 qt/a	B					
	ROUNDUP POWERMAX	32 fl oz/a	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
7	ACURON FLEXI	1.125 qt/a	A	0.0 -	0.0 -	69.3 ab	0.0 -	96.8 a
	ACURON FLEXI	1.125 qt/a	B					
	ROUNDUP POWERMAX	32 fl oz/a	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
8	SURESTART II	2 pt/a	A	0.0 -	0.0 -	42.6 bc	0.0 -	86.0 ab
	RESICORE	1.25 pt/a	B					
	DURANGO DMA	24 fl oz/a	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
9	KEYSTONE LA NXT	1.5 pt/a	A	0.0 -	0.0 -	26.0 cd	0.0 -	94.5 a
	REALM Q @ 4 OZ/A							
	MATRIX	1.2 oz/a	B					
	DRY 50% MESOTRIONE	2.5 oz/a	B					
	ISOXADIFEN	0.6 oz/a	B					
	DURANGO DMA	24 fl oz/a	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
10	RESICORE	1.75 qt/a	A	0.0 -	0.0 -	70.0 ab	0.0 -	92.3 a
	AATREX	0.5 lb ai/a	A					
	DURANGO DMA	24 fl oz/a	B					
	N-PAK AMS	8.5 lb ai/100 gal	B					
11	ANTHEM MAXX	4 fl oz/a	A	0.0 -	0.0 -	85.0 ab	0.0 -	85.7 ab
	CALLISTO	6 fl oz/a	A					
	AATREX	0.75 qt/a	A					

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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

Pest Type				W, Weed			W, Weed	
Pest Code				XANST			XANST	
Pest Scientific Name				Xanthium strumarium			Xanthium strumarium	
Pest Name				Common cocklebur			Common cocklebur	
Crop Type, Code	C, ZEAMX	C, ZEAMX			C, ZEAMX			
BBCH Scale	BCOR	BCOR			BCOR			
Crop Scientific Name	Zea mays	Zea mays			Zea mays			
Crop Name	Corn	Corn			Corn			
Rating Date	Jun-11-2020	Jun-17-2020		Jun-17-2020	Jun-25-2020		Jun-25-2020	
Rating Type	PHYTO	PHYTO		CONTRO	PHYTO		CONTRO	
Rating Unit/Min/Max	% , 0, 100	% , 0, 100		% , 0, 100	% , 0, 100		% , 0, 100	
Number of Subsamples	1	1		1	1		1	
Assessed By	Haugrud, N	Haugrud, N		Haugrud, N	Haugrud, N		Haugrud, N	
Data Entry Date	Sep-2-2020	Sep-2-2020		Sep-2-2020	Sep-2-2020		Sep-2-2020	
Days After First/Last Applic.	13, 13	19, 19		19, 19	27, 6		27, 6	
Plant-Eval Interval	15 DP-1	21 DP-1		21 DP-1	29 DP-1		29 DP-1	
Days After Emergence	9 DE-1	15 DE-1		15 DE-1	23 DE-1		23 DE-1	
Trt Treatment	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
12 ANTHEM MAXX	4 fl oz/a	B		0.0 -	0.0 -	0.0 d	0.0 -	92.3 a
CALLISTO	3 fl oz/a	B						
AATREX	1 pt/a	B						
ROUNDUP WEATHERMAX	22 fl oz/a	B						
N-PAK AMS	2.5 % v/v	B						
13 BALANCE FLEXX	4 fl oz/a	A		0.0 -	0.0 -	57.5 abc	0.0 -	96.8 a
CAPRENO	3 fl oz/a	B						
HARNESS	2 pt/a	B						
ROUNDUP POWERMAX	32 fl oz/a	B						
AATREX	16 fl oz/a	B						
SUPERB HC HSPOC	0.25 % v/v	B						
N-PAK AMS	8.5 lb ai/100 gal	B						
14 BALANCE FLEXX	4 fl oz/a	A		0.0 -	0.0 -	42.5 bc	0.0 -	90.8 a
LAUDIS	3 fl oz/a	B						
HARNESS	2 pt/a	B						
ROUNDUP POWERMAX	32 fl oz/a	B						
AATREX	12 fl oz/a	B						
DESTINY HC HSMOC	0.5 % v/v	B						
N-PAK AMS	8.5 lb ai/100 gal	B						
15 CAPRENO	3 fl oz/a	B		0.0 -	0.0 -	0.0 d	0.0 -	87.3 ab
HARNESS	2 pt/a	B						
ROUNDUP POWERMAX	32 fl oz/a	B						
AATREX	16 fl oz/a	B						
SUPERB HC HSPOC	0.25 % v/v	B						
N-PAK AMS	8.5 lb ai/100 gal	B						
16 LAUDIS	3 fl oz/a	B		0.0 -	0.0 -	0.0 d	0.0 -	94.5 a
HARNESS	2 pt/a	B						
ROUNDUP POWERMAX	32 fl oz/a	B						
AATREX	12 fl oz/a	B						
DESTINY HC HSMOC	0.5 % v/v	B						
N-PAK AMS	8.5 lb ai/100 gal	B						
LSD P=.05				.	.	23.89	.	15.77
Standard Deviation				0.00	0.00	16.66	0.00	11.06
CV				0.0	0.0	36.65	0.0	13.34
Levene's F^				.	.	3.316	.	1.51
Levene's Prob(F)				.	.	0.001*	.	0.141
Skewness^				.	.	-0.1592	.	0.3285
Kurtosis^				.	.	0.7809	.	2.7708*
Replicate F				0.000	0.000	0.771	0.000	0.804
Replicate Prob(F)				1.0000	1.0000	0.5179	1.0000	0.4985
Treatment F				0.000	0.000	13.543	0.000	20.524
Treatment Prob(F)				1.0000	1.0000	0.0001	1.0000	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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed			
Pest Code	SETPU	XANST	SETPU	SETPU			
Pest Scientific Name	Setaria helvola	Xanthium strumarium	Setaria helvola	Setaria helvola			
Pest Name	yellow foxtail	Common cocklebur	yellow foxtail	yellow foxtail			
Crop Type, Code		C, ZEAMX					
BBCH Scale		BCOR					
Crop Scientific Name		Zea mays					
Crop Name		Corn					
Rating Date	Jun-25-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020			
Rating Type	CONTRO	PHYTO	CONTRO	CONTRO			
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100			
Number of Subsamples	1	1	1	1			
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N			
Data Entry Date	Sep-2-2020	Sep-2-2020	Sep-2-2020	Sep-2-2020			
Days After First/Last Applic.	27, 6	34, 13	34, 13	34, 13			
Plant-Eval Interval	29 DP-1	36 DP-1	36 DP-1	36 DP-1			
Days After Emergence	23 DE-1	30 DE-1	30 DE-1	30 DE-1			
Trt Treatment	Rate	Unit	Appl Code	6*	7*	8*	9*
1 Untreated Check				0.0 c	0.0 -	0.0 c	0.0 b
2 LUMAX EZ	2.7 qt/a		A	77.9 ab	0.0 -	76.3 ab	77.5 a
3 BICEP LITE II MAGNUM	1 qt/a		A	100.2 a	0.0 -	94.5 ab	96.5 a
HALEX GT	3.6 pt/a		B				
ACTIVATOR 90 - NIS	0.25 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
4 ACURON	2.5 qt/a		A	77.9 ab	0.0 -	71.3 b	81.8 a
5 LUMAX EZ	1.5 qt/a		A	100.6 a	0.0 -	94.8 ab	97.0 a
HALEX GT	3.6 pt/a		B				
ACTIVATOR 90 - NIS	0.25 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
6 ACURON	1.25 qt/a		A	100.9 a	0.0 -	96.8 ab	98.3 a
ACURON	1.25 qt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
7 ACURON FLEXI	1.125 qt/a		A	100.6 a	0.0 -	96.3 ab	97.8 a
ACURON FLEXI	1.125 qt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
8 SURESTART II	2 pt/a		A	100.2 a	0.0 -	94.8 ab	98.0 a
RESICORE	1.25 pt/a		B				
DURANGO DMA	24 fl oz/a		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
9 KEYSTONE LA NXT	1.5 pt/a		A	100.6 a	0.0 -	97.8 a	95.8 a
REALM Q @ 4 OZ/A							
MATRIX	1.2 oz/a		B				
DRY 50% MESOTRIONE	2.5 oz/a		B				
ISOXADIFEN	0.6 oz/a		B				
DURANGO DMA	24 fl oz/a		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
10 RESICORE	1.75 qt/a		A	100.9 a	0.0 -	96.8 ab	94.8 a
AATREX	0.5 lb ai/a		A				
DURANGO DMA	24 fl oz/a		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
11 ANTHEM MAXX	4 fl oz/a		A	67.3 b	0.0 -	89.3 ab	68.3 a
CALLISTO	6 fl oz/a		A				
AATREX	0.75 qt/a		A				

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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

Pest Type	W, Weed SETPU	W, Weed XANST	W, Weed SETPU				
Pest Code	Setaria helvola	Xanthium strumarium	Setaria helvola				
Pest Scientific Name	yellow foxtail	Common cocklebur	yellow foxtail				
Pest Name							
Crop Type, Code		C, ZEAMX					
BBCH Scale		BCOR					
Crop Scientific Name		Zea mays					
Crop Name		Corn					
Rating Date	Jun-25-2020	Jul-2-2020	Jul-2-2020				
Rating Type	CONTRO	PHYTO	CONTRO				
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100				
Number of Subsamples	1	1	1				
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N				
Data Entry Date	Sep-2-2020	Sep-2-2020	Sep-2-2020				
Days After First/Last Applic.	27, 6	34, 13	34, 13				
Plant-Eval Interval	29 DP-1	36 DP-1	36 DP-1				
Days After Emergence	23 DE-1	30 DE-1	30 DE-1				
Trt Treatment No. Name	Rate	Rate Unit	Appl Code	6*	7*	8*	9*
12 ANTHEM MAXX	4 fl oz/a		B	96.8 a	0.0 -	95.5 ab	95.8 a
CALLISTO	3 fl oz/a		B				
AATREX	1 pt/a		B				
ROUNDUP WEATHERMAX	22 fl oz/a		B				
N-PAK AMS	2.5 % v/v		B				
13 BALANCE FLEXX	4 fl oz/a		A	99.0 a	0.0 -	98.8 a	99.0 a
CAPRENO	3 fl oz/a		B				
HARNESS	2 pt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
AATREX	16 fl oz/a		B				
SUPERB HC HSPOC	0.25 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
14 BALANCE FLEXX	4 fl oz/a		A	99.0 a	0.0 -	95.3 ab	97.0 a
LAUDIS	3 fl oz/a		B				
HARNESS	2 pt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
AATREX	12 fl oz/a		B				
DESTINY HC HSMOC	0.5 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
15 CAPRENO	3 fl oz/a		B	96.0 a	0.0 -	91.8 ab	97.3 a
HARNESS	2 pt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
AATREX	16 fl oz/a		B				
SUPERB HC HSPOC	0.25 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
16 LAUDIS	3 fl oz/a		B	97.0 a	0.0 -	96.0 ab	96.5 a
HARNESS	2 pt/a		B				
ROUNDUP POWERMAX	32 fl oz/a		B				
AATREX	12 fl oz/a		B				
DESTINY HC HSMOC	0.5 % v/v		B				
N-PAK AMS	8.5 lb ai/100 gal		B				
LSD P=.05				16.59	.	14.53	17.69
Standard Deviation				11.57	0.00	10.20	12.42
CV				13.35	0.0	11.74	14.29
Levene's F^				3.221	.	1.166	2.024
Levene's Prob(F)				0.002*	.	0.33	0.033*
Skewness^				-0.6882*	.	-1.5607*	-1.4279*
Kurtosis^				4.4137*	.	7.4846*	5.6263*
Replicate F				1.547	0.000	4.049	2.869
Replicate Prob(F)				0.2190	1.0000	0.0126	0.0468
Treatment F				18.901	0.000	22.632	15.973
Treatment Prob(F)				0.0001	1.0000	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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

	W, Weed AMARE		W, Weed XANST	W, Weed SETPU
Pest Type	Amaranthus retroflexus		Xanthium strumarium	Setaria helvola
Pest Code				
Pest Scientific Name	Redroot pigweed		Common cocklebur	yellow foxtail
Pest Name				
Crop Type, Code		C, ZEAMX		
BBCH Scale		BCOR		
Crop Scientific Name		Zea mays		
Crop Name		Corn		
Rating Date	Jul-2-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020
Rating Type	CONTRO	PHYTO	CONTRO	CONTRO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Sep-2-2020	Sep-2-2020	Sep-2-2020	Sep-2-2020
Days After First/Last Applic.	34, 13	48, 27	48, 27	48, 27
Plant-Eval Interval	36 DP-1	50 DP-1	50 DP-1	50 DP-1
Days After Emergence	30 DE-1	44 DE-1	44 DE-1	44 DE-1
Trt Treatment				
No. Name	Rate Unit	10*	11*	12*
	Appl Code			13*
1 Untreated Check		0.0 b	0.0 -	0.0 c
2 LUMAX EZ	2.7 qt/a A	99.0 a	0.0 -	86.3 ab
3 BICEP LITE II MAGNUM	1 qt/a A	99.6 a	0.0 -	96.8 a
HALEX GT	3.6 pt/a B			
ACTIVATOR 90 - NIS	0.25 % v/v B			
N-PAK AMS	8.5 lb ai/100 gal B			
4 ACURON	2.5 qt/a A	99.3 a	0.0 -	83.4 b
5 LUMAX EZ	1.5 qt/a A	99.3 a	0.0 -	95.8 a
HALEX GT	3.6 pt/a B			
ACTIVATOR 90 - NIS	0.25 % v/v B			
N-PAK AMS	8.5 lb ai/100 gal B			
6 ACURON	1.25 qt/a A	99.6 a	0.0 -	98.5 a
ACURON	1.25 qt/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
7 ACURON FLEXI	1.125 qt/a A	99.8 a	0.0 -	95.8 a
ACURON FLEXI	1.125 qt/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
8 SURESTART II	2 pt/a A	99.8 a	0.0 -	95.0 a
RESICORE	1.25 pt/a B			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
9 KEYSTONE LA NXT	1.5 pt/a A	99.3 a	0.0 -	93.5 a
REALM Q @ 4 OZ/A				
MATRIX	1.2 oz/a B			
DRY 50% MESOTRIONE	2.5 oz/a B			
ISOXADIFEN	0.6 oz/a B			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
10 RESICORE	1.75 qt/a A	99.3 a	0.0 -	93.4 a
AATREX	0.5 lb ai/a A			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
11 ANTHEM MAXX	4 fl oz/a A	99.2 a	0.0 -	94.7 a
CALLISTO	6 fl oz/a A			
AATREX	0.75 qt/a A			

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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Weed Management Programs in Corn				
Trial ID: 20S-PROSPER-CORN-05		Location: Prosper, ND		Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05		Investigator (Creator): Dr. Joe Ikley		
Project ID:		Study Director: Dr. Joe Ikley		
Sponsor Contact: Syngenta, Corteva, FMC, Bayer				
Pest Type		W, Weed		W, Weed
Pest Code		AMARE		XANST
Pest Scientific Name		Amaranthus retroflexus		Xanthium strumarium
Pest Name		Redroot pigweed		Common cocklebur
Crop Type, Code			C, ZEAMX	
BBCH Scale			BCOR	
Crop Scientific Name			Zea mays	
Crop Name			Corn	
Rating Date		Jul-2-2020	Jul-16-2020	Jul-16-2020
Rating Type		CONTRO	PHYTO	CONTRO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples		1	1	1
Assessed By		Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date		Sep-2-2020	Sep-2-2020	Sep-2-2020
Days After First/Last Applic.		34, 13	48, 27	48, 27
Plant-Eval Interval		36 DP-1	50 DP-1	50 DP-1
Days After Emergence		30 DE-1	44 DE-1	44 DE-1
Trt Treatment		10*	11*	12*
No. Name	Rate	Unit	Appl Code	
12 ANTHEM MAXX	4 fl oz/a	B		99.3 a
CALLISTO	3 fl oz/a	B		0.0 -
AATREX	1 pt/a	B		96.8 a
ROUNDUP WEATHERMAX	22 fl oz/a	B		92.0 a
N-PAK AMS	2.5 % v/v	B		
13 BALANCE FLEXX	4 fl oz/a	A		99.8 a
CAPRENO	3 fl oz/a	B		0.0 -
HARNESS	2 pt/a	B		98.0 a
ROUNDUP POWERMAX	32 fl oz/a	B		97.0 a
AATREX	16 fl oz/a	B		
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
14 BALANCE FLEXX	4 fl oz/a	A		99.6 a
LAUDIS	3 fl oz/a	B		0.0 -
HARNESS	2 pt/a	B		97.0 a
ROUNDUP POWERMAX	32 fl oz/a	B		97.0 a
AATREX	12 fl oz/a	B		
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
15 CAPRENO	3 fl oz/a	B		99.6 a
HARNESS	2 pt/a	B		0.0 -
ROUNDUP POWERMAX	32 fl oz/a	B		94.3 a
AATREX	16 fl oz/a	B		93.3 a
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
16 LAUDIS	3 fl oz/a	B		99.3 a
HARNESS	2 pt/a	B		0.0 -
ROUNDUP POWERMAX	32 fl oz/a	B		99.0 a
AATREX	12 fl oz/a	B		94.5 a
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
LSD P=.05		0.59	.	7.28
Standard Deviation		0.40	0.00	5.10
CV		0.44	0.0	5.77
Levene's F^		1.141	.	0.62
Levene's Prob(F)		0.374	.	0.843
Skewness^		-0.0018	.	-1.4314*
Kurtosis^		-0.6895	.	3.8102*
Replicate F		5.538	0.000	0.210
Replicate Prob(F)		0.0055	1.0000	0.8886
Treatment F		14932.091	0.000	88.270
Treatment Prob(F)		0.0001	1.0000	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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Weed Management Programs in Corn	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

	W, Weed AMARE	W, Weed XANST	W, Weed SETPU	W, Weed AMARE
Pest Type	Amaranthus retroflexus	Xanthium strumarium	Setaria helvola	Amaranthus retroflexus
Pest Code				
Pest Scientific Name				
Pest Name	Redroot pigweed	Common cocklebur	yellow foxtail	Redroot pigweed
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-16-2020	Jul-29-2020	Jul-29-2020	Jul-29-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Sep-2-2020	Sep-2-2020	Sep-2-2020	Sep-2-2020
Days After First/Last Applic.	48, 27	61, 40	61, 40	61, 40
Plant-Eval Interval	50 DP-1	63 DP-1	63 DP-1	63 DP-1
Days After Emergence	44 DE-1	57 DE-1	57 DE-1	57 DE-1
Trt Treatment				
No. Name	Rate Unit Appl Code	14*	15*	16*
1 Untreated Check		0.0 b	0.0 c	0.0 b
2 LUMAX EZ	2.7 qt/a A	99.0 a	83.8 ab	82.5 a
3 BICEP LITE II MAGNUM	1 qt/a A	99.0 a	96.8 ab	89.8 a
HALEX GT	3.6 pt/a B			
ACTIVATOR 90 - NIS	0.25 % v/v B			
N-PAK AMS	8.5 lb ai/100 gal B			
4 ACURON	2.5 qt/a A	99.0 a	82.9 b	65.0 a
5 LUMAX EZ	1.5 qt/a A	99.0 a	95.8 ab	95.8 a
HALEX GT	3.6 pt/a B			
ACTIVATOR 90 - NIS	0.25 % v/v B			
N-PAK AMS	8.5 lb ai/100 gal B			
6 ACURON	1.25 qt/a A	99.0 a	99.0 a	98.0 a
ACURON	1.25 qt/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
7 ACURON FLEXI	1.125 qt/a A	99.0 a	95.8 ab	89.8 a
ACURON FLEXI	1.125 qt/a B			
ROUNDUP POWERMAX	32 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
8 SURESTART II	2 pt/a A	99.0 a	94.6 ab	82.0 a
RESICORE	1.25 pt/a B			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
9 KEYSTONE LA NXT	1.5 pt/a A	99.0 a	93.5 ab	87.0 a
REALM Q @ 4 OZ/A				
MATRIX	1.2 oz/a B			
DRY 50% MESOTRIONE	2.5 oz/a B			
ISOXADIFEN	0.6 oz/a B			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
10 RESICORE	1.75 qt/a A	96.0 a	92.9 ab	70.0 a
AATREX	0.5 lb ai/a A			
DURANGO DMA	24 fl oz/a B			
N-PAK AMS	8.5 lb ai/100 gal B			
11 ANTHEM MAXX	4 fl oz/a A	99.0 a	92.9 ab	64.8 a
CALLISTO	6 fl oz/a A			
AATREX	0.75 qt/a A			

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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Investigator (Creator): Dr. Joe Ikley	
Project ID:	Study Director: Dr. Joe Ikley	
Sponsor Contact: Syngenta, Corteva, FMC, Bayer		

	W, Weed AMARE	W, Weed XANST	W, Weed SETPU	W, Weed AMARE
Pest Type	Amaranthus retroflexus	Xanthium strumarium	Setaria helvola	Amaranthus retroflexus
Pest Code				
Pest Scientific Name				
Pest Name	Redroot pigweed	Common cocklebur	yellow foxtail	Redroot pigweed
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-16-2020	Jul-29-2020	Jul-29-2020	Jul-29-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Sep-2-2020	Sep-2-2020	Sep-2-2020	Sep-2-2020
Days After First/Last Applic.	48, 27	61, 40	61, 40	61, 40
Plant-Eval Interval	50 DP-1	63 DP-1	63 DP-1	63 DP-1
Days After Emergence	44 DE-1	57 DE-1	57 DE-1	57 DE-1
Trt Treatment	14*	15*	16*	17*
No. Name	Rate	Rate	Rate	Rate
	Unit	Unit	Unit	Unit
	Appl	Appl	Appl	Appl
	Code	Code	Code	Code
12 ANTHEM MAXX	4 fl oz/a	B	99.0 a	99.0 a
CALLISTO	3 fl oz/a	B	95.8 ab	95.8 ab
AATREX	1 pt/a	B	89.5 a	89.5 a
ROUNDUP WEATHERMAX	22 fl oz/a	B	97.9 a	97.9 a
N-PAK AMS	2.5 % v/v	B		
13 BALANCE FLEXX	4 fl oz/a	A	99.0 a	99.0 a
CAPRENO	3 fl oz/a	B	98.0 ab	98.0 ab
HARNESS	2 pt/a	B	98.0 a	98.0 a
ROUNDUP POWERMAX	32 fl oz/a	B	97.9 a	97.9 a
AATREX	16 fl oz/a	B		
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
14 BALANCE FLEXX	4 fl oz/a	A	99.0 a	99.0 a
LAUDIS	3 fl oz/a	B	95.8 ab	95.8 ab
HARNESS	2 pt/a	B	97.0 a	97.0 a
ROUNDUP POWERMAX	32 fl oz/a	B	97.9 a	97.9 a
AATREX	12 fl oz/a	B		
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
15 CAPRENO	3 fl oz/a	B	99.0 a	99.0 a
HARNESS	2 pt/a	B	91.8 ab	91.8 ab
ROUNDUP POWERMAX	32 fl oz/a	B	90.8 a	90.8 a
AATREX	16 fl oz/a	B	97.9 a	97.9 a
SUPERB HC HSPOC	0.25 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
16 LAUDIS	3 fl oz/a	B	99.0 a	99.0 a
HARNESS	2 pt/a	B	99.0 a	99.0 a
ROUNDUP POWERMAX	32 fl oz/a	B	93.3 a	93.3 a
AATREX	12 fl oz/a	B	96.8 a	96.8 a
DESTINY HC HSMOC	0.5 % v/v	B		
N-PAK AMS	8.5 lb ai/100 gal	B		
LSD P=.05	1.88	8.36	24.63	1.43
Standard Deviation	1.30	5.85	17.29	0.99
CV	1.43	6.66	21.4	1.09
Levene's F^	0.845	1.045	1.33	0.635
Levene's Prob(F)	0.625	0.432	0.222	0.825
Skewness^	-2.6648*	-1.4385*	-0.5221	0.0
Kurtosis^	20.7137*	4.9028*	0.3895	12.9613*
Replicate F	0.667	0.423	3.262	10.333
Replicate Prob(F)	0.5791	0.7378	0.0300	0.0001
Treatment F	1417.622	66.627	7.814	2445.556
Treatment Prob(F)	0.0001	0.0001	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. 1,3,6=3.4; 5=3.8; 8=3.9; 10=2.3; 12,15=3.7; 14=3; 17=3.1
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,4,7,11 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Weed Management Programs in Corn		
Trial ID: 20S-PROSPER-CORN-05	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-05	Investigator (Creator): Dr. Joe Ikley	
Project ID:	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Syngenta, Corteva, FMC, Bayer	

<u>Pest Type</u> W, Weed = Weed or volunteer crop <u>Pest Code</u> XANST, Xanthium strumarium, Common cocklebur = US SETPU, Setaria helvola, yellow foxtail = US AMARE, Amaranthus retroflexus, Redroot pigweed = US <u>Crop Type, Code</u> C = EPPO species (Bayer) codes ZEAMX, BCOR, Zea mays, Corn = US <u>Rating Type</u> CONTRO = control / burndown or knockdown <u>Rating Unit/Min/Max</u> %, 0, 100 = percent <u>Assessed By</u> Haugrud, N = Research Specailist <u>Plant-Eval Interval</u> 15 DP-1 = 1 ZEAMX May-27-2020 21 DP-1 = 1 ZEAMX May-27-2020 29 DP-1 = 1 ZEAMX May-27-2020 36 DP-1 = 1 ZEAMX May-27-2020 50 DP-1 = 1 ZEAMX May-27-2020 63 DP-1 = 1 ZEAMX May-27-2020
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North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-06	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI002A4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-9-2020

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

In a one-pass PRE system, does Acuron XR or Acuron Flexi XR provide better and/or longer residual weed control that results in higher yield than Corvus, Resicore, Surestart, Anthem ATZ, or Harness Max?

In a two-pass system (including glyphosate in the POST treatment), does split applications of Acuron XR or Acuron Flexi XR provide better and/or longer residual weed control that results in higher yield than split applications of Resicore, Harness Max, or programs of Corvus followed by Capreno or Vervit followed by Status?

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Brett Miller, Syngenta

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 14
Replications: 4 **Study Design:** RACOB Randomized Complete Block (RCB)

Soil Description

Description Name: Prosper
% Sand: 23 **% OM:** 4.3 **Texture:** SIL silt loam
% Silt: 53 **pH:** 7 **Soil Name:** Kindred-Bearden Silty Clay Loam
% Clay: 24 **CEC:** 24

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Application Description

	A	B
Application Date	May-29-2020	Jun-19-2020
Appl. Start Time	12:40 PM	11:00 AM
Appl. Stop Time	1:30 AM	11:30 AM
Interval to Prev. Appl.		21 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Haugrud, N	Haugrud, N
Appl. Entry Date	Aug-4-2020	Aug-4-2020
Air Temperature Start, Stop	70, 70 F	77, 77 F
% Relative Humidity Start, Stop	49, 49	46, 46
Wind Velocity+Dir. Start	8 MPH, NNW	4 MPH, WNW
Wind Velocity+Dir. Stop	7 MPH, NNW	5 MPH, WNW
Wind Velocity+Dir. Max	9.5 MPH, NNW	7 MPH, WNW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	69 F	69 F
Soil Moisture	NORMAL	SLIWET
Soil Surface Condition	COATRA	COATRA
% Cloud Cover	50	5

Application Equipment

	A	B
Appl. Equipment	Narsil	Narsil
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	8002
Nozzle Type	TEEJAI	FLAFAN
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-4-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type Pest Code Pest Scientific Name		W, Weed SETPU Setaria helvola	W, Weed PANMI Panicum miliaceum	W, Weed AMARE Amaranthus retroflexus	W, Weed XANST Xanthium strumarium		
Pest Name Crop Type, Code BBCH Scale Crop Scientific Name Crop Name Rating Date Rating Type Rating Unit/Min/Max Sample Size Number of Subsamples Assessed By Data Entry Date Days After First/Last Applic. Plant-Eval Interval Days After Emergence ARM Action Codes Number of Decimals	C, ZEAMX BCOR Zea mays Corn Jun-19-2020 PHYTO %, 0, 100 1 Haugrud, N Aug-24-2020 21, 21 23 DP-1 17 DE-1	yellow foxtail Jun-19-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-24-2020 21, 21 23 DP-1 17 DE-1	Proso millet Jun-19-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-24-2020 21, 21 23 DP-1 17 DE-1	Redroot pigweed Jun-19-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-24-2020 21, 21 23 DP-1 17 DE-1	Common cocklebur Jun-19-2020 CONTRO %, 0, 100 1 Haugrud, N Aug-24-2020 21, 21 23 DP-1 17 DE-1		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*	5*
1 Untreated Check			0.0 -	0.0 c	0.0 c	0.0 d	0.0 c
2 ACURON XR	3.5 qt/a A		0.0 -	92.5 a	90.0 a	100.0 a	91.3 a
3 ACURON FLEXI XR	3 qt/a A		0.0 -	95.0 a	91.7 a	100.0 a	85.0 a
4 RESICORE	2.75 qt/a A		0.0 -	85.0 a	73.3 ab	100.0 a	78.8 ab
5 HARNESS MAX	75 fl oz/a A		0.0 -	85.0 a	90.0 a	101.2 a	88.8 a
6 SURESTART II	3 pt/a A		0.0 -	70.0 a	80.1 ab	95.0 a	68.1 ab
7 CORVUS	5.6 fl oz/a A		0.0 -	62.5 a	65.1 ab	97.9 a	67.5 ab
8 VERDICT	16 fl oz/a A		0.0 -	80.0 a	60.0 ab	85.0 b	71.4 ab
9 ACURON XR ACURON XR ROUNDUP POWERMAX N-PAK AMS	1.75 qt/a A 1.75 qt/a B 22 fl oz/a B 2.5 % v/v B		0.0 -	78.8 a	92.6 a	99.8 a	83.8 a
10 ACURON FLEXI XR ACURON FLEXI XR ROUNDUP POWERMAX N-PAK AMS	1.5 qt/a A 1.5 qt/a B 22 fl oz/a B 2.5 % v/v B		0.0 -	87.5 a	95.1 a	95.0 a	70.0 ab
11 RESICORE RESICORE ROUNDUP POWERMAX N-PAK AMS	1.375 qt/a A 1.375 qt/a B 22 fl oz/a B 2.5 % v/v B		0.0 -	85.6 a	85.1 a	98.8 a	70.0 ab
12 HARNESS MAX HARNESS MAX ROUNDUP POWERMAX N-PAK AMS	35 fl oz/a A 40 fl oz/a B 22 fl oz/a B 2.5 % v/v B		0.0 -	88.8 a	66.7 ab	96.3 a	75.0 ab
13 VERDICT STATUS ROUNDUP POWERMAX N-PAK AMS	16 fl oz/a A 3 oz/a B 22 fl oz/a B 2.5 % v/v B		0.0 -	83.8 a	66.7 ab	90.0 ab	67.5 ab

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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type		W, Weed SETPU	W, Weed PANMI	W, Weed AMARE	W, Weed XANST	
Pest Code		Setaria helvola	Panicum miliaceum	Amaranthus retroflexus	Xanthium strumarium	
Pest Scientific Name		yellow foxtail	Proso millet	Redroot pigweed	Common cocklebur	
Pest Name						
Crop Type, Code	C, ZEAMX					
BBCH Scale	BCOR					
Crop Scientific Name	Zea mays					
Crop Name	Corn					
Rating Date	Jun-19-2020	Jun-19-2020	Jun-19-2020	Jun-19-2020	Jun-19-2020	
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	CONTRO	
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	
Sample Size						
Number of Subsamples	1	1	1	1	1	
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	
Days After First/Last Applic.	21, 21	21, 21	21, 21	21, 21	21, 21	
Plant-Eval Interval	23 DP-1	23 DP-1	23 DP-1	23 DP-1	23 DP-1	
Days After Emergence	17 DE-1	17 DE-1	17 DE-1	17 DE-1	17 DE-1	
ARM Action Codes						
Number of Decimals						
Trt Treatment	Rate Appl	1*	2*	3*	4*	5*
No. Name	Rate Unit Code					
14 CORVUS	3.3 fl oz/a A	0.0 -	22.5 b	50.1 b	54.6 c	54.8 b
CAPRENO	3 fl oz/a B					
ROUNDUP POWERMAX	22 fl oz/a B					
SUPERB HC HSPOC	0.5 % v/v B					
N-PAK AMS	2.5 % v/v B					
LSD P=.05		.	19.83	18.22	7.15	14.85
Standard Deviation		0.00	13.85	10.70	4.98	10.36
CV		0.0	19.12	15.47	5.75	14.8
Levene's F^		.	1.071	0.525	1.513	0.428
Levene's Prob(F)		.	0.409	0.885	0.156	0.949
Skewness^		.	-0.632	-0.0669	-0.4488	-0.2771
Kurtosis^		.	0.9091	0.5066	1.3612*	-0.7994
Replicate F		0.000	1.273	5.852	5.073	4.493
Replicate Prob(F)		1.0000	0.2973	0.0100	0.0049	0.0089
Treatment F		0.000	15.947	14.781	119.575	18.278
Treatment Prob(F)		1.0000	0.0001	0.0001	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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield					
Trial ID: 20S-PROSPER-CORN-06		Location: Prosper, ND		Trial Year: 2020	
Protocol ID: 20S-PROSPER-CORN-06		Investigator (Creator): Dr. Joe Ikley			
Project ID: HBI002A4-2020US		Study Director: Dr. Joe Ikley			
Sponsor Contact: Brett Miller, Syngenta					

Pest Type Pest Code Pest Scientific Name			W, Weed SETPU Setaria helvola	W, Weed PANMI Panicum miliaceum	W, Weed AMARE Amaranthus retroflexus		
Pest Name			yellow foxtail	Proso millet	Redroot pigweed		
Crop Type, Code	C, ZEAMX	C, ZEAMX					
BBCH Scale	BCOR	BCOR					
Crop Scientific Name	Zea mays	Zea mays					
Crop Name	Corn	Corn					
Rating Date	Jun-25-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020		
Rating Type	PHYTO	PHYTO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size							
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	27, 6	48, 27	48, 27	48, 27	48, 27		
Plant-Eval Interval	29 DP-1	50 DP-1	50 DP-1	50 DP-1	50 DP-1		
Days After Emergence	23 DE-1	44 DE-1	44 DE-1	44 DE-1	44 DE-1		
ARM Action Codes							
Number of Decimals							
Trt Treatment	Rate	Appl	6*	7*	8*	9*	10*
No. Name	Rate Unit	Code					
1 Untreated Check			0.0 -	0.0 -	0.0 f	0.0 f	0.0 b
2 ACURON XR	3.5 qt/a A		0.0 -	0.0 -	81.3 abc	80.0 abc	99.0 a
3 ACURON FLEXI XR	3 qt/a A		0.0 -	0.0 -	81.3 abc	81.7 abc	99.0 a
4 RESICORE	2.75 qt/a A		0.0 -	0.0 -	55.0 de	50.0 de	99.0 a
5 HARNESS MAX	75 fl oz/a A		0.0 -	0.0 -	62.5 cd	60.0 b-e	99.6 a
6 SURESTART II	3 pt/a A		0.0 -	0.0 -	45.0 de	53.5 cde	89.5 a
7 CORVUS	5.6 fl oz/a A		0.0 -	0.0 -	35.0 e	38.5 e	85.3 a
8 VERDICT	16 fl oz/a A		0.0 -	0.0 -	47.5 de	36.7 e	89.5 a
9 ACURON XR	1.75 qt/a A		0.0 -	0.0 -	99.0 a	102.5 a	99.0 a
ACURON XR	1.75 qt/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
N-PAK AMS	2.5 % v/v B						
10 ACURON FLEXI XR	1.5 qt/a A		0.0 -	0.0 -	99.0 a	102.5 a	99.0 a
ACURON FLEXI XR	1.5 qt/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
N-PAK AMS	2.5 % v/v B						
11 RESICORE	1.375 qt/a A		0.0 -	0.0 -	98.0 a	102.5 a	99.0 a
RESICORE	1.375 qt/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
N-PAK AMS	2.5 % v/v B						
12 HARNESS MAX	35 fl oz/a A		0.0 -	0.0 -	98.8 a	99.0 a	99.0 a
HARNESS MAX	40 fl oz/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
N-PAK AMS	2.5 % v/v B						
13 VERDICT	16 fl oz/a A		0.0 -	0.0 -	86.3 ab	85.0 ab	99.0 a
STATUS	3 oz/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
N-PAK AMS	2.5 % v/v B						

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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type			W, Weed SETPU	W, Weed PANMI	W, Weed AMARE		
Pest Code			Setaria helvola	Panicum miliaceum	Amaranthus retroflexus		
Pest Scientific Name			yellow foxtail	Proso millet	Redroot pigweed		
Pest Name	C, ZEAMX	C, ZEAMX					
Crop Type, Code	BCOR	BCOR					
BBCH Scale							
Crop Scientific Name	Zea mays	Zea mays					
Crop Name	Corn	Corn					
Rating Date	Jun-25-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020		
Rating Type	PHYTO	PHYTO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size							
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	27, 6	48, 27	48, 27	48, 27	48, 27		
Plant-Eval Interval	29 DP-1	50 DP-1	50 DP-1	50 DP-1	50 DP-1		
Days After Emergence	23 DE-1	44 DE-1	44 DE-1	44 DE-1	44 DE-1		
ARM Action Codes							
Number of Decimals							
Trt Treatment	Rate	Appl	6*	7*	8*	9*	10*
No. Name	Rate Unit Code						
14 CORVUS	3.3 fl oz/a A		0.0 -	0.0 -	73.8 bc	68.5 bcd	99.6 a
CAPRENO	3 fl oz/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
SUPERB HC HSPOC	0.5 % v/v B						
N-PAK AMS	2.5 % v/v B						
LSD P=.05					15.21	15.67	8.15
Standard Deviation			0.00	0.00	10.64	10.62	5.68
CV			0.0	0.0	15.47	16.57	6.36
Levene's F^			.	.	1.321	0.438	5.54
Levene's Prob(F)			.	.	0.24	0.937	0.00*
Skewness^			.	.	-0.5079	-0.0057	-0.5518
Kurtosis^			.	.	0.5226	-0.2153	3.2304*
Replicate F			0.000	0.000	3.025	2.296	2.207
Replicate Prob(F)			1.0000	1.0000	0.0409	0.1087	0.1047
Treatment F			0.000	0.000	30.844	24.131	84.705
Treatment Prob(F)			1.0000	1.0000	0.0001	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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed	C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX				
Pest Code	XANST	BCOR	BCOR	BCOR	BCOR				
Pest Scientific Name	Xanthium strumarium	Zea mays	Zea mays	Zea mays	Zea mays				
Pest Name	Common cocklebur	Corn	Corn	Corn	Corn				
Crop Type, Code		Corn	Corn	Corn	Corn				
BBCH Scale		MOICON	MOICON	MOICON	WEITES				
Crop Scientific Name		YIELD	YIELD	YIELD	YIELD				
Crop Name		BU, -, -	BU, -, -	BU, -, -	BU, -, -				
Rating Date	Jul-16-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020				
Rating Type	CONTRO	YIELD	YIELD	MOICON	WEITES				
Rating Unit/Min/Max	% , 0, 100	lb/plot, -, -	BU, -, -	% , 0, 100	LB, -, -				
Sample Size		1 PLOT	1 A						
Number of Subsamples	1	1	1	1	1				
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N				
Data Entry Date	Aug-24-2020	Oct-13-2020	Oct-13-2020	Oct-13-2020	Oct-13-2020				
Days After First/Last Applic.	48, 27	132, 111	132, 111	132, 111	132, 111				
Plant-Eval Interval	50 DP-1	134 DP-1	134 DP-1	134 DP-1	134 DP-1				
Days After Emergence	44 DE-1	128 DE-1	128 DE-1	128 DE-1	128 DE-1				
ARM Action Codes			TY1						
Number of Decimals			1						
Trt No.	Treatment Name	Rate	Appl Unit	Code	11*	12*	13*	14*	15*
1	Untreated Check				0.0 f	26.764 -	163.4 -	17.19 -	56.41 -
2	ACURON XR	3.5 qt/a	A		80.0 bc	29.730 -	175.3 -	19.85 -	57.48 -
3	ACURON FLEXI XR	3 qt/a	A		78.8 bc	30.585 -	183.6 -	18.48 -	57.43 -
4	RESICORE	2.75 qt/a	A		67.5 cd	31.055 -	185.3 -	18.98 -	57.73 -
5	HARNESS MAX	75 fl oz/a	A		89.1 ab	30.253 -	179.2 -	19.53 -	57.33 -
6	SURESTART II	3 pt/a	A		58.0 de	30.268 -	179.0 -	19.83 -	56.53 -
7	CORVUS	5.6 fl oz/a	A		50.0 e	30.345 -	180.8 -	19.15 -	57.98 -
8	VERDICT	16 fl oz/a	A		68.0 cd	30.513 -	181.7 -	19.10 -	57.20 -
9	ACURON XR	1.75 qt/a	A		99.0 a	30.083 -	180.4 -	18.50 -	57.43 -
	ACURON XR	1.75 qt/a	B						
	ROUNDUP POWERMAX	22 fl oz/a	B						
	N-PAK AMS	2.5 % v/v	B						
10	ACURON FLEXI XR	1.5 qt/a	A		99.0 a	30.180 -	177.3 -	20.26 -	56.68 -
	ACURON FLEXI XR	1.5 qt/a	B						
	ROUNDUP POWERMAX	22 fl oz/a	B						
	N-PAK AMS	2.5 % v/v	B						
11	RESICORE	1.375 qt/a	A		99.0 a	31.287 -	184.6 -	19.86 -	56.68 -
	RESICORE	1.375 qt/a	B						
	ROUNDUP POWERMAX	22 fl oz/a	B						
	N-PAK AMS	2.5 % v/v	B						
12	HARNESS MAX	35 fl oz/a	A		96.8 a	30.668 -	178.0 -	21.18 -	57.83 -
	HARNESS MAX	40 fl oz/a	B						
	ROUNDUP POWERMAX	22 fl oz/a	B						
	N-PAK AMS	2.5 % v/v	B						
13	VERDICT	16 fl oz/a	A		99.0 a	30.285 -	179.7 -	19.38 -	56.75 -
	STATUS	3 oz/a	B						
	ROUNDUP POWERMAX	22 fl oz/a	B						
	N-PAK AMS	2.5 % v/v	B						

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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-06 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI002A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed						
Pest Code	XANST						
Pest Scientific Name	Xanthium strumarium						
Pest Name	Common cocklebur						
Crop Type, Code	C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX		
BBCH Scale	BCOR	BCOR	BCOR	BCOR	BCOR		
Crop Scientific Name	Zea mays	Zea mays	Zea mays	Zea mays	Zea mays		
Crop Name	Corn	Corn	Corn	Corn	Corn		
Rating Date	Jul-16-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020		
Rating Type	CONTRO	YIELD	YIELD	MOICON	WEITES		
Rating Unit/Min/Max	% , 0, 100	lb/plot, -, -	BU, -, -	% , 0, 100	LB, -, -		
Sample Size	1	1 PLOT	1 A	1	1		
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Oct-13-2020	Oct-13-2020	Oct-13-2020	Oct-13-2020		
Days After First/Last Applic.	48, 27	132, 111	132, 111	132, 111	132, 111		
Plant-Eval Interval	50 DP-1	134 DP-1	134 DP-1	134 DP-1	134 DP-1		
Days After Emergence	44 DE-1	128 DE-1	128 DE-1	128 DE-1	128 DE-1		
ARM Action Codes			TY1				
Number of Decimals			1				
Trt Treatment No. Name	Rate Unit	Appl Code	11*	12*	13*	14*	15*
14 CORVUS	3.3 fl oz/a A		94.3 a	30.725 -	185.7 -	17.85 -	57.80 -
CAPRENO	3 fl oz/a B						
ROUNDUP POWERMAX	22 fl oz/a B						
SUPERB HC HSPOC	0.5 % v/v B						
N-PAK AMS	2.5 % v/v B						
LSD P=.05	9.29		2.6903	15.52	2.412	1.491	
Standard Deviation	6.46		1.8760	10.82	1.682	1.040	
CV	8.28		6.2	6.02	8.73	1.82	
Levene's F^	1.511		0.511	0.713	0.849	0.30	
Levene's Prob(F)	0.16		0.904	0.739	0.609	0.989	
Skewness^	-0.6405		-0.0181	-0.138	-0.5078	0.1793	
Kurtosis^	2.4021*		-0.2047	-0.3231	-0.3718	-0.4751	
Replicate F	1.476		3.742	5.359	1.706	1.318	
Replicate Prob(F)	0.2383		0.0194	0.0037	0.1831	0.2835	
Treatment F	71.115		0.997	0.887	1.293	1.041	
Treatment Prob(F)	0.0001		0.4739	0.5730	0.2618	0.4367	

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. 2=3.9; 3,9=2.5; 4,5,12-15=3.7; 10=3.6; 11=3.4
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,6,7 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron XR and Acuron Flexi XR: Evaluation of Weed Control, Crop Tolerance, and Yield

Trial ID: 20S-PROSPER-CORN-06	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-06	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI002A4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

PANMI, Panicum miliaceum, Proso millet = US

AMARE, Amaranthus retroflexus, Redroot pigweed = US

XANST, Xanthium strumarium, Common cocklebur = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

YIELD = yield

MOICON = moisture content

WEITES = weight - test

Rating Unit/Min/Max

%, 0, 100 = percent

lb/plot, , = pounds per plot

BU, , = bushel

LB, , = pound

PLOT = total plot

A = acre

Assessed By

Haugrud, N = Research Specialist

Plant-Eval Interval

23 DP-1 = 1 ZEAMX May-27-2020

29 DP-1 = 1 ZEAMX May-27-2020

50 DP-1 = 1 ZEAMX May-27-2020

134 DP-1 = 1 ZEAMX May-27-2020

ARM Action Codes

TY1 = 6.222857*[C12]*(100-[C14])/84.5

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI007A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established

ARM Trial Created On: Apr-9-2020

Conducted Under GLP: No

Conducted Under GEP: No

Objectives:

Are there differences in weed control, crop safety, and yield among POST applications of Acuron GT, Halex GT, and competitive treatments?

Contacts

Role: STYDIR study director

Study Director: Dr. Joe Ikley

Role: INVEST investigator

Investigator: Dr. Joe Ikley

Role: SPONSR sponsor

Sponsor: Brett Miller, Syngenta

Site and Design

Treated Plot Width: 6.67 FT

Treated Plot Length: 30 FT

Treated Plot Area: 200.1 FT² **Treatments:** 9

Replications: 4

Study Design: RACOB Randomized Complete Block (RCB)

Application Description

	A
Application Date	Jun-12-2020
Appl. Start Time	12:20 PM
Appl. Stop Time	12:35 PM
Application Method	SPRAY
Application Timing	POST
Application Placement	BROFOL
Applied By	Haugrud, N
Appl. Entry Date	Aug-4-2020
Air Temperature Start, Stop	70, 70 F
% Relative Humidity Start, Stop	42, 42
Wind Velocity+Dir. Start	8.5 MPH, NNE
Wind Velocity+Dir. Stop	8.5 MPH, NNE
Wind Velocity+Dir. Max	9.5 MPH, NNE
Wet Leaves (Y/N)	N, no
Soil Temperature	75 F
Soil Moisture	NORMAL
Soil Surface Condition	COATRA
% Cloud Cover	30

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-07	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI007A4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Application Equipment

	A
Appl. Equipment	Narsil
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	8002
Nozzle Type	FLAFAN
Nozzle Spacing	20 IN
Boom Height	18 IN
Ground Speed	3 MPH
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	1119 mL
Propellant	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-4-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI007A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type			W, Weed SETPU	W, Weed AMARE	W, Weed XANST		
Pest Code			Setaria helvola	Amaranthus retroflexus	Xanthium strumarium		
Pest Scientific Name			yellow foxtail	Redroot pigweed	Common cocklebur		
Pest Name	C, ZEAMX	C, ZEAMX					
Crop Type, Code	BCOR	BCOR					
BBCH Scale							
Crop Scientific Name	Zea mays	Zea mays					
Crop Name	Corn	Corn					
Rating Date	Jun-19-2020	Jul-10-2020	Jul-10-2020	Jul-10-2020	Jul-10-2020		
Rating Type	PHYTO	PHYTO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1	1		
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S		
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020		
Days After First/Last Applic.	7, 7	28, 28	28, 28	28, 28	28, 28		
Trt-Eval Interval	7 DA-A	28 DA-A	28 DA-A	28 DA-A	28 DA-A		
Plant-Eval Interval	23 DP-1	44 DP-1	44 DP-1	44 DP-1	44 DP-1		
Days After Emergence	17 DE-1	38 DE-1	38 DE-1	38 DE-1	38 DE-1		
Trt Treatment No. Name	Rate	Appl Code	1*	2*	3*	4*	5*
1 Untreated Check			0.0 -	0.0 -	0.0 b	0.0 e	0.0 e
2 ACURON GT	3.75 pt/a	A	0.0 -	0.0 -	76.3 a	72.5 bc	77.5 ab
ACTIVATOR 90 - NIS	0.25 % v/v	A					
N-PAK AMS	2.5 % v/v	A					
3 HALEX GT	3.6 pt/a	A	0.0 -	0.0 -	68.8 a	71.3 bc	71.3 abc
ACTIVATOR 90 - NIS	0.25 % v/v	A					
N-PAK AMS	2.5 % v/v	A					
4 RESICORE	1.25 qt/a	A	0.0 -	0.0 -	73.8 a	83.8 ab	87.5 a
ROUNDUP POWERMAX	26.6 fl oz/a	A					
N-PAK AMS	2.5 % v/v	A					
5 CAPRENO	3 fl oz/a	A	0.0 -	0.0 -	78.8 a	50.0 d	55.0 d
ROUNDUP POWERMAX	26.6 fl oz/a	A					
SUPERB HC HSPOC	0.5 % v/v	A					
N-PAK AMS	2.5 % v/v	A					
6 HARNESS MAX	40 fl oz/a	A	0.0 -	0.0 -	70.0 a	90.8 a	86.3 a
ROUNDUP POWERMAX	26.6 fl oz/a	A					
N-PAK AMS	2.5 % v/v	A					
7 ARMEZON PRO	20 fl oz/a	A	0.0 -	0.0 -	66.3 a	67.5 c	65.0 bcd
ROUNDUP POWERMAX	26.6 fl oz/a	A					
N-PAK AMS	2.5 % v/v	A					
8 LAUDIS	3 fl oz/a	A	0.0 -	0.0 -	61.3 a	63.8 c	60.0 cd
ROUNDUP POWERMAX	26.6 fl oz/a	A					
SUPERB HC HSPOC	0.5 % v/v	A					
N-PAK AMS	2.5 % v/v	A					
9 LAUDIS	3 fl oz/a	A	0.0 -	0.0 -	53.8 a	71.3 bc	75.0 abc
ROUNDUP POWERMAX	26.6 fl oz/a	A					
XTENDIMAX	17 fl oz/a	A					
CLASS ACT RIDION	1 % v/v	A					
INTACT	0.5 % v/v	A					
LSD P=.05			0.00	0.00	19.09	10.19	11.59
Standard Deviation			0.0	0.0	13.08	6.99	7.94
CV			0.0	0.0	21.45	11.01	12.37
Levene's F^			.	.	1.21	0.726	0.451
Levene's Prob(F)			.	.	0.33	0.667	0.879
Skewness^			.	.	-0.2701	-0.0452	-0.4342
Kurtosis^			.	.	-0.5094	0.3062	0.0646
Replicate F			0.000	0.000	2.774	3.148	1.719
Replicate Prob(F)			1.0000	1.0000	0.0633	0.0436	0.1898
Treatment F			0.000	0.000	13.594	57.225	44.405
Treatment Prob(F)			1.0000	1.0000	0.0001	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.
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI007A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code	AMBEL	SETPU	AMARE	XANST
Pest Scientific Name	Ambrosia artemisiifolia	Setaria helvola	Amaranthus retroflexus	Xanthium strumarium
Pest Name	Common ragweed	yellow foxtail	Redroot pigweed	Common cocklebur
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-10-2020	Aug-7-2020	Aug-7-2020	Aug-7-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	28, 28	56, 56	56, 56	56, 56
Trt-Eval Interval	28 DA-A	56 DA-A	56 DA-A	56 DA-A
Plant-Eval Interval	44 DP-1	72 DP-1	72 DP-1	72 DP-1
Days After Emergence	38 DE-1	66 DE-1	66 DE-1	66 DE-1
Trt Treatment	6*	7*	8*	9*
No. Name				
Rate				
Appl				
Code				
1 Untreated Check	0.0 d	0.0 b	0.0 d	0.0 d
2 ACURON GT	81.3 ab	75.0 a	71.8 b	77.5 ab
ACTIVATOR 90 - NIS				
N-PAK AMS				
3 HALEX GT	81.3 ab	67.5 a	69.3 b	66.3 bc
ACTIVATOR 90 - NIS				
N-PAK AMS				
4 RESICORE	86.0 a	73.0 a	83.3 a	87.5 a
ROUNDUP POWERMAX				
N-PAK AMS				
5 CAPRENO	61.3 c	76.0 a	50.0 c	51.3 c
ROUNDUP POWERMAX				
SUPERB HC HSPOC				
N-PAK AMS				
6 HARNESS MAX	88.3 a	68.5 a	90.8 a	86.3 a
ROUNDUP POWERMAX				
N-PAK AMS				
7 ARMEZON PRO	66.3 bc	66.3 a	66.3 b	63.8 bc
ROUNDUP POWERMAX				
N-PAK AMS				
8 LAUDIS	66.3 bc	57.5 a	63.8 b	58.8 bc
ROUNDUP POWERMAX				
SUPERB HC HSPOC				
N-PAK AMS				
9 LAUDIS	77.5 ab	49.5 a	68.8 b	75.0 ab
ROUNDUP POWERMAX				
XTENDIMAX				
CLASS ACT RIDION				
INTACT				
LSD P=.05	11.43	19.70	10.41	14.52
Standard Deviation	7.83	13.50	7.13	9.95
CV	11.59	22.79	11.38	15.81
Levene's F^	0.912	0.679	0.808	1.074
Levene's Prob(F)	0.521	0.706	0.602	0.41
Skewness^	0.5946	-0.3281	0.0302	-0.3958
Kurtosis^	0.9288	-0.5545	0.3528	-0.337
Replicate F	1.889	3.575	3.691	1.242
Replicate Prob(F)	0.1584	0.0287	0.0257	0.3164
Treatment F	47.687	12.421	53.858	28.453
Treatment Prob(F)	0.0001	0.0001	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.

* Adjusted means

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

^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-07 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI007A4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed		
Pest Code	AMBEL		
Pest Scientific Name	Ambrosia artemisiifolia		
Pest Name	Common ragweed		
Crop Type, Code			
BBCH Scale			
Crop Scientific Name			
Crop Name			
Rating Date	Aug-7-2020		
Rating Type	CONTRO		
Rating Unit/Min/Max	% , 0, 100		
Number of Subsamples	1		
Assessed By	DeSimini, S		
Data Entry Date	Aug-26-2020		
Days After First/Last Applic.	56, 56		
Trt-Eval Interval	56 DA-A		
Plant-Eval Interval	72 DP-1		
Days After Emergence	66 DE-1		
Trt Treatment	Rate	Appl	10*
No. Name	Rate Unit	Code	
1 Untreated Check			0.0 d
2 ACURON GT	3.75 pt/a	A	80.0 ab
ACTIVATOR 90 - NIS	0.25 % v/v	A	
N-PAK AMS	2.5 % v/v	A	
3 HALEX GT	3.6 pt/a	A	81.3 ab
ACTIVATOR 90 - NIS	0.25 % v/v	A	
N-PAK AMS	2.5 % v/v	A	
4 RESICORE	1.25 qt/a	A	82.5 ab
ROUNDUP POWERMAX	26.6 fl oz/a	A	
N-PAK AMS	2.5 % v/v	A	
5 CAPRENO	3 fl oz/a	A	60.0 c
ROUNDUP POWERMAX	26.6 fl oz/a	A	
SUPERB HC HSPOC	0.5 % v/v	A	
N-PAK AMS	2.5 % v/v	A	
6 HARNESS MAX	40 fl oz/a	A	86.3 a
ROUNDUP POWERMAX	26.6 fl oz/a	A	
N-PAK AMS	2.5 % v/v	A	
7 ARMEZON PRO	20 fl oz/a	A	61.3 c
ROUNDUP POWERMAX	26.6 fl oz/a	A	
N-PAK AMS	2.5 % v/v	A	
8 LAUDIS	3 fl oz/a	A	65.0 bc
ROUNDUP POWERMAX	26.6 fl oz/a	A	
SUPERB HC HSPOC	0.5 % v/v	A	
N-PAK AMS	2.5 % v/v	A	
9 LAUDIS	3 fl oz/a	A	76.3 abc
ROUNDUP POWERMAX	26.6 fl oz/a	A	
XTENDIMAX	17 fl oz/a	A	
CLASS ACT RIDION	1 % v/v	A	
INTACT	0.5 % v/v	A	
LSD P=.05			13.32
Standard Deviation			9.13
CV			13.87
Levene's F^			0.619
Levene's Prob(F)			0.754
Skewness^			0.6168
Kurtosis^			1.4583
Replicate F			1.473
Replicate Prob(F)			0.2471
Treatment F			33.789
Treatment Prob(F)			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.

* Adjusted means

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

^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control and Crop Tolerance in a One Pass System

Trial ID: 20S-PROSPER-CORN-07	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-07	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI007A4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

AMARE, Amaranthus retroflexus, Redroot pigweed = US

XANST, Xanthium strumarium, Common cocklebur = US

AMBEL, Ambrosia artemisiifolia, Common ragweed = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

DeSimini, S = Research Specialist

Plant-Eval Interval

23 DP-1 = 1 ZEAMX May-27-2020

44 DP-1 = 1 ZEAMX May-27-2020

72 DP-1 = 1 ZEAMX May-27-2020

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-9-2020

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Are there differences in weed control, crop safety, and yield among treatments containing Acuron GT and other competitive products?

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Brett Miller, Syngenta

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 12
Replications: 4 **Study Design:** RAOBL Randomized Complete Block (RCB)

Soil Description

Description Name: Prosper
% Sand: 23 **% OM:** 4.3 **Texture:** SIL silt loam
% Silt: 53 **pH:** 7 **Soil Name:** Kindred-Bearden Silty Clay Loam
% Clay: 24 **CEC:** 24

Application Description

	A	B
Application Date	May-29-2020	Jun-23-2020
Appl. Start Time	12:10 PM	1:45 AM
Appl. Stop Time	12:40 PM	2:15 AM
Interval to Prev. Appl.		25 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Ikley, J	Haugrud, N
Appl. Entry Date	Aug-4-2020	Aug-4-2020
Air Temperature Start, Stop	62, 62 F	83, 86 F
% Relative Humidity Start, Stop	47, 47	47, 43
Wind Velocity+Dir. Start	7 MPH, NNW	5 MPH, N
Wind Velocity+Dir. Stop	7 MPH, NNW	2.5 MPH, N
Wind Velocity+Dir. Max	9 MPH, NNW	6 MPH, N
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	67 F	80 F
Soil Moisture	NORMAL	NORMAL
Soil Surface Condition	COATRA	COATRA
% Cloud Cover	25	60

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-08	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI008B4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Application Equipment

	A	B
Appl. Equipment	Mjolnir	Narsil
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	8002
Nozzle Type	TEEJAI	FLAFAN
Nozzle Spacing	20 IN	20 IN
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-9-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-4-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type		W, Weed SETPU	W, Weed AMARE					
Pest Code		Setaria helvola	Amaranthus retroflexus					
Pest Scientific Name		yellow foxtail	Redroot pigweed					
Pest Name	C, ZEAMX			C, ZEAMX	C, ZEAMX			
Crop Type, Code	BCOR			BCOR	BCOR			
BBCH Scale	Zea mays			Zea mays	Zea mays			
Crop Scientific Name	Corn			Corn	Corn			
Crop Name	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-30-2020	Jul-22-2020			
Rating Date	PHYTO	CONTRO	CONTRO	PHYTO	PHYTO			
Rating Type	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100			
Rating Unit/Min/Max								
Sample Size	1	1	1	1	1			
Number of Subsamples	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N			
Assessed By	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020			
Data Entry Date	24, 24	24, 24	24, 24	32, 7	54, 29			
Days After First/Last Applic.	26 DP-1	26 DP-1	26 DP-1	34 DP-1	56 DP-1			
Plant-Eval Interval	20 DE-1	20 DE-1	20 DE-1	28 DE-1	50 DE-1			
Days After Emergence								
ARM Action Codes								
Number of Decimals								
Trt No.	Treatment Name	Rate	Appl Code	1*	2*	3*	4*	5*
		Rate Unit						
1	Untreated Check			0.0 -	0.0 c	0.0 c	0.0 -	0.0 -
2	BICEP LITE II MAGNUM	1 qt/a	A	0.0 -	55.0 a	67.5 b	0.0 -	0.0 -
	ACURON GT	3.75 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
3	LUMAX EZ	1.5 qt/a	A	0.0 -	62.5 a	87.3 a	0.0 -	0.0 -
	ACURON GT	3.75 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
4	SURESTART II	1.75 pt/a	A	0.0 -	50.0 a	92.3 a	0.0 -	0.0 -
	ACURON GT	3.75 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
5	HARNESS	1.5 pt/a	A	0.0 -	65.0 a	80.0 ab	0.0 -	0.0 -
	ACURON GT	3.75 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
6	VERDICT	14 fl oz/a	A	0.0 -	50.0 a	84.8 a	0.0 -	0.0 -
	ACURON GT	3.75 pt/a	B					
	ACTIVATOR 90 - NIS	0.25 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
7	SURESTART II	1.75 pt/a	A	0.0 -	62.5 a	94.5 a	0.0 -	0.0 -
	RESICORE	1.25 qt/a	B					
	ROUNDUP POWERMAX	26.6 fl oz/a	B					
	N-PAK AMS	2.5 % v/v	B					
8	HARNESS	1.5 pt/a	A	0.0 -	55.0 a	79.8 ab	0.0 -	0.0 -
	LAUDIS	3 fl oz/a	B					
	ROUNDUP POWERMAX	26.6 fl oz/a	B					
	SUPERB HC HSPOC	0.5 % v/v	B					
	N-PAK AMS	2.5 % v/v	B					
9	VERDICT	14 fl oz/a	A	0.0 -	65.0 a	87.5 a	0.0 -	0.0 -
	ARMEZON PRO	20 fl oz/a	B					
	ROUNDUP POWERMAX	26.6 fl oz/a	B					
	N-PAK AMS	2.5 % v/v	B					

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. 6,9=3.9
 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type		W, Weed SETPU	W, Weed AMARE				
Pest Code		Setaria helvola	Amaranthus retroflexus				
Pest Scientific Name		yellow foxtail	Redroot pigweed				
Pest Name							
Crop Type, Code	C, ZEAMX			C, ZEAMX	C, ZEAMX		
BBCH Scale	BCOR			BCOR	BCOR		
Crop Scientific Name	Zea mays			Zea mays	Zea mays		
Crop Name	Corn			Corn	Corn		
Rating Date	Jun-22-2020	Jun-22-2020	Jun-22-2020	Jun-30-2020	Jul-22-2020		
Rating Type	PHYTO	CONTRO	CONTRO	PHYTO	PHYTO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size							
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	24, 24	24, 24	24, 24	32, 7	54, 29		
Plant-Eval Interval	26 DP-1	26 DP-1	26 DP-1	34 DP-1	56 DP-1		
Days After Emergence	20 DE-1	20 DE-1	20 DE-1	28 DE-1	50 DE-1		
ARM Action Codes							
Number of Decimals							
Trt Treatment	Rate	Appl	1*	2*	3*	4*	5*
No. Name	Rate Unit	Code					
10 KEYSTONE LA NXT	1.5 pt/a	A	0.0 -	50.0 a	89.8 a	0.0 -	0.0 -
REALM Q @ 4 OZ/A		B					
MATRIX	1.2 oz/a	B					
DRY 50% MESOTRIONE	2.5 oz/a	B					
ISOXADIFEN	0.6 oz/a	B					
DURANGO DMA	24 fl oz/a	B					
N-PAK AMS	8.5 lb ai/100 gal	B					
11 VERDICT	16 fl oz/a	A	0.0 -	70.0 a	88.8 a	0.0 -	0.0 -
STATUS	3 oz/a	B					
ROUNDUP POWERMAX	22 fl oz/a	B					
N-PAK AMS	2.5 % v/v	B					
12 BALANCE FLEXX	4 fl oz/a	A	0.0 -	20.0 b	77.5 ab	0.0 -	0.0 -
CAPRENO	3 fl oz/a	B					
HARNESS	2 pt/a	B					
AATREX	1 pt/a	B					
ROUNDUP POWERMAX	22 fl oz/a	B					
SUPERB HC HSPOC	0.5 % v/v	B					
N-PAK AMS	2.5 % v/v	B					
LSD P=.05			.	16.25	11.34	.	.
Standard Deviation			0.00	11.29	7.88	0.00	0.00
CV			0.0	22.4	10.18	0.0	0.0
Levene's F^			.	0.328	0.987	.	.
Levene's Prob(F)			.	0.974	0.476	.	.
Skewness^			.	-0.2719	0.3565	.	.
Kurtosis^			.	-0.1528	-0.9149	.	.
Replicate F			0.000	4.030	11.243	0.000	0.000
Replicate Prob(F)			1.0000	0.0151	0.0001	1.0000	1.0000
Treatment F			0.000	13.147	41.812	0.000	0.000
Treatment Prob(F)			1.0000	0.0001	0.0001	1.0000	1.0000

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 ^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed		
Pest Code	SETPU	AMARE	XANST	SETPU		
Pest Scientific Name	Setaria helvola	Amaranthus retroflexus	Xanthium strumarium	Setaria helvola		
Pest Name	yellow foxtail	Redroot pigweed	Common cocklebur	yellow foxtail		
Crop Type, Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Rating Date	Jul-22-2020	Jul-22-2020	Jul-22-2020	Aug-17-2020		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Sample Size						
Number of Subsamples	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Aug-24-2020	Aug-24-2020		
Days After First/Last Applic.	54, 29	54, 29	54, 29	80, 55		
Plant-Eval Interval	56 DP-1	56 DP-1	56 DP-1	82 DP-1		
Days After Emergence	50 DE-1	50 DE-1	50 DE-1	76 DE-1		
ARM Action Codes						
Number of Decimals						
Trt Treatment	Rate	Appl	6*	7*	8*	9*
No. Name	Rate Unit	Code				
1 Untreated Check			0.0 d	0.0 -	0.0 b	0.0 d
2 BICEP LITE II MAGNUM	1 qt/a	A	92.5 ab	99.0 -	97.0 a	92.5 ab
ACURON GT	3.75 pt/a	B				
ACTIVATOR 90 - NIS	0.25 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
3 LUMAX EZ	1.5 qt/a	A	87.5 ab	99.0 -	99.0 a	88.8 ab
ACURON GT	3.75 pt/a	B				
ACTIVATOR 90 - NIS	0.25 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
4 SURESTART II	1.75 pt/a	A	85.0 b	99.0 -	99.0 a	78.8 b
ACURON GT	3.75 pt/a	B				
ACTIVATOR 90 - NIS	0.25 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
5 HARNESS	1.5 pt/a	A	87.5 ab	99.0 -	99.0 a	86.3 ab
ACURON GT	3.75 pt/a	B				
ACTIVATOR 90 - NIS	0.25 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
6 VERDICT	14 fl oz/a	A	88.8 ab	99.0 -	99.0 a	86.3 ab
ACURON GT	3.75 pt/a	B				
ACTIVATOR 90 - NIS	0.25 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
7 SURESTART II	1.75 pt/a	A	90.0 ab	99.0 -	99.0 a	88.8 ab
RESICORE	1.25 qt/a	B				
ROUNDUP POWERMAX	26.6 fl oz/a	B				
N-PAK AMS	2.5 % v/v	B				
8 HARNESS	1.5 pt/a	A	75.0 c	99.0 -	99.0 a	68.8 c
LAUDIS	3 fl oz/a	B				
ROUNDUP POWERMAX	26.6 fl oz/a	B				
SUPERB HC HSPOC	0.5 % v/v	B				
N-PAK AMS	2.5 % v/v	B				
9 VERDICT	14 fl oz/a	A	90.0 ab	99.0 -	99.0 a	90.0 ab
ARMEZON PRO	20 fl oz/a	B				
ROUNDUP POWERMAX	26.6 fl oz/a	B				
N-PAK AMS	2.5 % v/v	B				

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^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed	W, Weed			
Pest Code	AMARE	XANST			
Pest Scientific Name	Amaranthus retroflexus	Xanthium strumarium			
Pest Name	Redroot pigweed	Common cocklebur			
Crop Type, Code			C, ZEAMX	C, ZEAMX	C, ZEAMX
BBCH Scale			BCOR	BCOR	BCOR
Crop Scientific Name			Zea mays	Zea mays	Zea mays
Crop Name			Corn	Corn	Corn
Rating Date	Aug-17-2020	Aug-17-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020
Rating Type	CONTRO	CONTRO	YIELD	YIELD	MOICON
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	lb/plot, -, -	BU, -, -	%, 0, 100
Sample Size			1 PLOT	1 A	
Number of Subsamples	1	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-24-2020	Aug-24-2020	Oct-13-2020		Oct-13-2020
Days After First/Last Applic.	80, 55	80, 55	132, 107	132, 107	132, 107
Plant-Eval Interval	82 DP-1	82 DP-1	134 DP-1	134 DP-1	134 DP-1
Days After Emergence	76 DE-1	76 DE-1	128 DE-1	128 DE-1	128 DE-1
ARM Action Codes				TY1	
Number of Decimals				1	
Trt Treatment	Rate	Appl	10*	11*	12*
No. Name	Rate Unit	Code			
1 Untreated Check			0.0 -	0.0 b	23.400 b
2 BICEP LITE II MAGNUM	1 qt/a	A	99.0 -	97.0 a	30.245 a
ACURON GT	3.75 pt/a	B			174.0 a
ACTIVATOR 90 - NIS	0.25 % v/v	B			19.65 -
N-PAK AMS	2.5 % v/v	B			21.90 -
3 LUMAX EZ	1.5 qt/a	A	99.0 -	99.0 a	31.555 a
ACURON GT	3.75 pt/a	B			186.4 a
ACTIVATOR 90 - NIS	0.25 % v/v	B			19.85 -
N-PAK AMS	2.5 % v/v	B			
4 SURESTART II	1.75 pt/a	A	99.0 -	99.0 a	31.548 a
ACURON GT	3.75 pt/a	B			183.9 a
ACTIVATOR 90 - NIS	0.25 % v/v	B			20.75 -
N-PAK AMS	2.5 % v/v	B			
5 HARNESS	1.5 pt/a	A	99.0 -	99.0 a	30.125 a
ACURON GT	3.75 pt/a	B			175.5 a
ACTIVATOR 90 - NIS	0.25 % v/v	B			20.83 -
N-PAK AMS	2.5 % v/v	B			
6 VERDICT	14 fl oz/a	A	99.0 -	99.0 a	32.293 a
ACURON GT	3.75 pt/a	B			187.6 a
ACTIVATOR 90 - NIS	0.25 % v/v	B			21.08 -
N-PAK AMS	2.5 % v/v	B			
7 SURESTART II	1.75 pt/a	A	99.0 -	99.0 a	30.300 a
RESICORE	1.25 qt/a	B			177.9 a
ROUNDUP POWERMAX	26.6 fl oz/a	B			20.55 -
N-PAK AMS	2.5 % v/v	B			
8 HARNESS	1.5 pt/a	A	99.0 -	99.0 a	30.030 a
LAUDIS	3 fl oz/a	B			177.2 a
ROUNDUP POWERMAX	26.6 fl oz/a	B			19.78 -
SUPERB HC HSPOC	0.5 % v/v	B			
N-PAK AMS	2.5 % v/v	B			
9 VERDICT	14 fl oz/a	A	99.0 -	99.0 a	30.350 a
ARMEZON PRO	20 fl oz/a	B			177.4 a
ROUNDUP POWERMAX	26.6 fl oz/a	B			20.65 -
N-PAK AMS	2.5 % v/v	B			

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North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-08 Investigator (Creator): Dr. Joe Ikley
 Project ID: HBI008B4-2020US Study Director: Dr. Joe Ikley
 Sponsor Contact: Brett Miller, Syngenta

Pest Type	W, Weed	W, Weed					
Pest Code	AMARE	XANST					
Pest Scientific Name	Amaranthus retroflexus	Xanthium strumarium					
Pest Name	Redroot pigweed	Common cocklebur					
Crop Type, Code			C, ZEAMX	C, ZEAMX	C, ZEAMX		
BBCH Scale			BCOR	BCOR	BCOR		
Crop Scientific Name			Zea mays	Zea mays	Zea mays		
Crop Name			Corn	Corn	Corn		
Rating Date	Aug-17-2020	Aug-17-2020	Oct-8-2020	Oct-8-2020	Oct-8-2020		
Rating Type	CONTRO	CONTRO	YIELD	YIELD	MOICON		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	lb/plot, -, -	BU, -, -	%, 0, 100		
Sample Size			1 PLOT	1 A			
Number of Subsamples	1	1	1	1	1		
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N		
Data Entry Date	Aug-24-2020	Aug-24-2020	Oct-13-2020		Oct-13-2020		
Days After First/Last Applic.	80, 55	80, 55	132, 107	132, 107	132, 107		
Plant-Eval Interval	82 DP-1	82 DP-1	134 DP-1	134 DP-1	134 DP-1		
Days After Emergence	76 DE-1	76 DE-1	128 DE-1	128 DE-1	128 DE-1		
ARM Action Codes				TY1			
Number of Decimals				1			
Trt Treatment	Rate	Appl	10*	11*	12*	13*	14*
No. Name	Rate Unit	Code					
10 KEYSTONE LA NXT	1.5 pt/a	A	99.0 -	99.0 a	29.180 a	168.2 a	21.70 -
REALM Q @ 4 OZ/A		B					
MATRIX	1.2 oz/a	B					
DRY 50% MESOTRIONE	2.5 oz/a	B					
ISOXADIFEN	0.6 oz/a	B					
DURANGO DMA	24 fl oz/a	B					
N-PAK AMS	8.5 lb ai/100 gal	B					
11 VERDICT	16 fl oz/a	A	99.0 -	99.0 a	26.920 ab	155.8 ab	21.43 -
STATUS	3 oz/a	B					
ROUNDUP POWERMAX	22 fl oz/a	B					
N-PAK AMS	2.5 % v/v	B					
12 BALANCE FLEXX	4 fl oz/a	A	99.0 -	99.0 a	29.218 a	169.7 a	21.05 -
CAPRENO	3 fl oz/a	B					
HARNESS	2 pt/a	B					
AATREX	1 pt/a	B					
ROUNDUP POWERMAX	22 fl oz/a	B					
SUPERB HC HSPOC	0.5 % v/v	B					
N-PAK AMS	2.5 % v/v	B					
LSD P=.05				1.80	3.8122	23.19	3.548
Standard Deviation	0.00			0.82	2.6499	16.12	2.467
CV	0.0			0.9	8.95	9.33	11.88
Levene's F^					1.52	1.871	0.983
Levene's Prob(F)					0.167	0.077	0.479
Skewness^				0.0	0.065	0.094	-0.0795
Kurtosis^				9.124*	-0.2479	0.658	-0.1736
Replicate F	0.000			1.000	0.817	1.708	2.062
Replicate Prob(F)	1.0000			0.3388	0.4937	0.1844	0.1242
Treatment F	0.000			2442.250	3.249	2.894	0.353
Treatment Prob(F)	1.0000			0.0001	0.0043	0.0089	0.9654

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North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-08	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI008B4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Type, Code			C, ZEAMX
BBCH Scale			BCOR
Crop Scientific Name			Zea mays
Crop Name			Corn
Rating Date			Oct-8-2020
Rating Type			WEITES
Rating Unit/Min/Max			LB, -, -
Sample Size			
Number of Subsamples			1
Assessed By			
Data Entry Date			Oct-13-2020
Days After First/Last Applic.			132, 107
Plant-Eval Interval			134 DP-1
Days After Emergence			128 DE-1
ARM Action Codes			
Number of Decimals			
Trt No.	Treatment Name	Rate Rate Unit	Appl Code
			15*
1	Untreated Check		55.30 -
2	BICEP LITE II MAGNUM	1 qt/a	A
	ACURON GT	3.75 pt/a	B
	ACTIVATOR 90 - NIS	0.25 % v/v	B
	N-PAK AMS	2.5 % v/v	B
3	LUMAX EZ	1.5 qt/a	A
	ACURON GT	3.75 pt/a	B
	ACTIVATOR 90 - NIS	0.25 % v/v	B
	N-PAK AMS	2.5 % v/v	B
4	SURESTART II	1.75 pt/a	A
	ACURON GT	3.75 pt/a	B
	ACTIVATOR 90 - NIS	0.25 % v/v	B
	N-PAK AMS	2.5 % v/v	B
5	HARNESS	1.5 pt/a	A
	ACURON GT	3.75 pt/a	B
	ACTIVATOR 90 - NIS	0.25 % v/v	B
	N-PAK AMS	2.5 % v/v	B
6	VERDICT	14 fl oz/a	A
	ACURON GT	3.75 pt/a	B
	ACTIVATOR 90 - NIS	0.25 % v/v	B
	N-PAK AMS	2.5 % v/v	B
7	SURESTART II	1.75 pt/a	A
	RESICORE	1.25 qt/a	B
	ROUNDUP POWERMAX	26.6 fl oz/a	B
	N-PAK AMS	2.5 % v/v	B
8	HARNESS	1.5 pt/a	A
	LAUDIS	3 fl oz/a	B
	ROUNDUP POWERMAX	26.6 fl oz/a	B
	SUPERB HC HSPOC	0.5 % v/v	B
	N-PAK AMS	2.5 % v/v	B
9	VERDICT	14 fl oz/a	A
	ARMEZON PRO	20 fl oz/a	B
	ROUNDUP POWERMAX	26.6 fl oz/a	B
	N-PAK AMS	2.5 % v/v	B

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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Due to missing data, the effective replicates used for mean comparisons are: col. 6,9=3.9
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^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-08	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI008B4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Pest Type			
Pest Code			
Pest Scientific Name			
Pest Name			
Crop Type, Code		C, ZEAMX	
BBCH Scale		BCOR	
Crop Scientific Name		Zea mays	
Crop Name		Corn	
Rating Date		Oct-8-2020	
Rating Type		WEITES	
Rating Unit/Min/Max		LB, -, -	
Sample Size			
Number of Subsamples			1
Assessed By			
Data Entry Date		Oct-13-2020	
Days After First/Last Applic.		132, 107	
Plant-Eval Interval		134 DP-1	
Days After Emergence		128 DE-1	
ARM Action Codes			
Number of Decimals			
Trt No.	Treatment Name	Rate Rate Unit	Appl Code
			15*
10	KEYSTONE LA NXT	1.5 pt/a	A
	REALM Q @ 4 OZ/A		B
	MATRIX	1.2 oz/a	B
	DRY 50% MESOTRIONE	2.5 oz/a	B
	ISOXADIFEN	0.6 oz/a	B
	DURANGO DMA	24 fl oz/a	B
	N-PAK AMS	8.5 lb ai/100 gal	B
11	VERDICT	16 fl oz/a	A
	STATUS	3 oz/a	B
	ROUNDUP POWERMAX	22 fl oz/a	B
	N-PAK AMS	2.5 % v/v	B
12	BALANCE FLEXX	4 fl oz/a	A
	CAPRENO	3 fl oz/a	B
	HARNESS	2 pt/a	B
	AATREX	1 pt/a	B
	ROUNDUP POWERMAX	22 fl oz/a	B
	SUPERB HC HSPOC	0.5 % v/v	B
	N-PAK AMS	2.5 % v/v	B
LSD P=.05			2.305
Standard Deviation			1.602
CV			2.81
Levene's F^			0.676
Levene's Prob(F)			0.752
Skewness^			0.7995*
Kurtosis^			2.3078*
Replicate F			2.155
Replicate Prob(F)			0.1120
Treatment F			0.965
Treatment Prob(F)			0.4953

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. 6,9=3.9

* Adjusted means

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North Dakota State University

Acuron GT: Evaluation of Weed Control, Crop Tolerance, and Yield in a Two Pass System

Trial ID: 20S-PROSPER-CORN-08	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-08	Investigator (Creator): Dr. Joe Ikley	
Project ID: HBI008B4-2020US	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Brett Miller, Syngenta	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

AMARE, Amaranthus retroflexus, Redroot pigweed = US

XANST, Xanthium strumarium, Common cocklebur = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

YIELD = yield

MOICON = moisture content

WEITES = weight - test

Rating Unit/Min/Max

%, 0, 100 = percent

lb/plot, , = pounds per plot

BU, , = bushel

LB, , = pound

PLOT = total plot

A = acre

Assessed By

Haugrud, N = Research Specailist

Plant-Eval Interval

26 DP-1 = 1 ZEAMX May-27-2020

34 DP-1 = 1 ZEAMX May-27-2020

56 DP-1 = 1 ZEAMX May-27-2020

82 DP-1 = 1 ZEAMX May-27-2020

134 DP-1 = 1 ZEAMX May-27-2020

ARM Action Codes

TY1 = 6.222857*[12]*(100-[14])/84.5

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-10 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20CO4H069 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

General Trial Information

Study Director: Dr. Joe Ikley
Investigator: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-22-2020

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Evaluation of Impact CORE programs applied early postemergence for performance and corn safety compared to competitive programs in academic trials.

Contacts

Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: INVEST investigator
Investigator: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Rich Zollinger, AMVAC

Site and Design

Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT² **Treatments:** 10
Replications: 4 **Study Design:** RACOB L Randomized Complete Block (RCB)

Soil Description

Description Name: Prosper, ND
 % Sand: 23 % OM: 4.3 **Texture:** SIL silt loam
 % Silt: 53 pH: 7 **Soil Name:** Kindred-Bearden Silty Clay Loam
 % Clay: 24 **CEC:** 24

Application Description

	A
Application Date	Jun-19-2020
Appl. Start Time	11:40 AM
Appl. Stop Time	12:10 PM
Application Method	SPRAY
Application Timing	POST
Application Placement	BROFOL
Applied By	Haugrud, N
Appl. Entry Date	Aug-7-2020
Air Temperature Start, Stop	74, 74 F
% Relative Humidity Start, Stop	52, 52
Wind Velocity+Dir. Start	4 MPH, WNW
Wind Velocity+Dir. Stop	4 MPH, WNW
Wind Velocity+Dir. Max	8 MPH, WNW
Wet Leaves (Y/N)	N, no
Soil Temperature	70 F
Soil Moisture	SLIWET
Soil Surface Condition	COATRA
% Cloud Cover	10

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

Application Equipment

	A
Appl. Equipment	Narsil
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	8002
Nozzle Type	FLAFAN
Nozzle Spacing	20 IN
Boom Height	18 IN
Ground Speed	3 MPH
Carrier	WATER
Application Amount	15 GAL/AC
Mix Size	1119 mL
Propellant	COMCO2

Notes

Context	Date	By	Notes
STATUS	Apr-22-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-7-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Planting Date entered.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-10 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20CO4H069 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

Pest Type			W, Weed SETPU Setaria helvola yellow foxtail	W, Weed AMAPO Amaranthus powellii Powell amaranth	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed		
Pest Code							
Pest Scientific Name							
Pest Name							
Crop Type, Code	C, ZEAMX	C, ZEAMX					
BBCH Scale	BCOR	BCOR					
Crop Scientific Name	Zea mays	Zea mays					
Crop Name	Corn	Corn					
Rating Date	Jun-26-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020		
Rating Type	PHYTO	PHYTO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1	1		
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J	Ikley, J		
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020		
Days After First/Last Applic.	7, 7	13, 13	13, 13	13, 13	13, 13		
Trt-Eval Interval	7 DA-A	13 DA-A	13 DA-A	13 DA-A	13 DA-A		
Plant-Eval Interval	30 DP-1	36 DP-1	36 DP-1	36 DP-1	36 DP-1		
Days After Emergence	24 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*	5*
1 Untreated Check			0.0 b	0.0 -	0.0 c	0.0 b	0.0 b
2 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A		0.0 b	0.0 -	98.0 a	99.0 a	92.3 a
3 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A		0.0 b	0.0 -	97.0 a	99.0 a	98.0 a
4 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A		0.5 b	0.0 -	98.5 a	99.0 a	99.0 a
5 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A		1.3 b	0.0 -	99.0 a	99.0 a	99.0 a
6 IMPACT CORE MSO ULTRA N-PAK AMS	30 fl oz/a A 0.25 % v/v A 2 lb ai/a A		1.0 b	0.0 -	88.0 b	99.0 a	95.5 a
7 IMPACT CORE AATREX MSO ULTRA N-PAK AMS	30 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A		2.8 a	0.0 -	82.5 b	96.8 a	99.0 a
8 ARMEZON PRO ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	14 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A		0.0 b	0.0 -	99.0 a	99.0 a	88.3 a
9 RESICORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	40 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A		0.5 b	0.0 -	99.0 a	99.0 a	99.0 a

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-10 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20CO4H069 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

Pest Type			W, Weed SETPU Setaria helvola yellow foxtail	W, Weed AMAPO Amaranthus powellii Powell amaranth	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed		
Pest Code							
Pest Scientific Name							
Pest Name							
Crop Type, Code	C, ZEAMX	C, ZEAMX					
BBCH Scale	BCOR	BCOR					
Crop Scientific Name	Zea mays	Zea mays					
Crop Name	Corn	Corn					
Rating Date	Jun-26-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020	Jul-2-2020		
Rating Type	PHYTO	PHYTO	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100		
Number of Subsamples	1	1	1	1	1		
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J	Ikley, J		
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020		
Days After First/Last Applic.	7, 7	13, 13	13, 13	13, 13	13, 13		
Trt-Eval Interval	7 DA-A	13 DA-A	13 DA-A	13 DA-A	13 DA-A		
Plant-Eval Interval	30 DP-1	36 DP-1	36 DP-1	36 DP-1	36 DP-1		
Days After Emergence	24 DE-1	30 DE-1	30 DE-1	30 DE-1	30 DE-1		
Trt Treatment No. Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*	5*
10 HALEX GT	3.6 pt/a	A	0.0 b	0.0 -	97.5 a	99.0 a	98.0 a
AATREX	16 fl oz/a	A					
ACTIVATOR 90 - NIS	0.25 % v/v	A					
N-PAK AMS	2 lb ai/a	A					
LSD P=.05	1.13	.	6.40	2.06	9.64		
Standard Deviation	0.78	0.00	4.41	1.42	6.65		
CV	130.29	0.0	5.13	1.6	7.66		
Levene's F^	3.261	.	1.495	0.711	0.995		
Levene's Prob(F)	0.007*	.	0.195	0.694	0.465		
Skewness^	0.6473	.	-1.6097*	-3.2005*	-2.269*		
Kurtosis^	0.8399	.	7.6931*	18.2785*	10.1676*		
Replicate F	0.545	0.000	1.720	1.000	1.239		
Replicate Prob(F)	0.6554	1.0000	0.1864	0.4079	0.3148		
Treatment F	5.109	0.000	193.768	1927.222	85.428		
Treatment Prob(F)	0.0004	1.0000	0.0001	0.0001	0.0001		

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-10 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20CO4H069 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code	XANST	SETPU	AMAPO	AMBEL
Pest Scientific Name	Xanthium strumarium	Setaria helvola	Amaranthus powellii	Ambrosia artemisiifolia
Pest Name	Common cocklebur	yellow foxtail	Powell amaranth	Common ragweed
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-2-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	13, 13	27, 27	27, 27	27, 27
Trt-Eval Interval	13 DA-A	27 DA-A	27 DA-A	27 DA-A
Plant-Eval Interval	36 DP-1	50 DP-1	50 DP-1	50 DP-1
Days After Emergence	30 DE-1	44 DE-1	44 DE-1	44 DE-1
Trt Treatment	6*	7*	8*	9*
No. Name				
1 Untreated Check	0.0 b	0.0 b	0.0 b	0.0 b
2 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	95.5 a	87.5 a	98.8 a
3 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	96.0 a	100.0 a
4 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	92.5 a	100.0 a
5 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	95.5 a	100.0 a
6 IMPACT CORE MSO ULTRA N-PAK AMS	30 fl oz/a A 0.25 % v/v A 2 lb ai/a A	96.0 a	82.5 a	99.3 a
7 IMPACT CORE AATREX MSO ULTRA N-PAK AMS	30 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	86.3 a	99.3 a
8 ARMEZON PRO ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	14 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	90.0 a	99.5 a
9 RESICORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	40 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.0 a	97.0 a	98.5 a

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.
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North Dakota State University

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Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

	W, Weed XANST	W, Weed SETPU	W, Weed AMAP0	W, Weed AMBEL
Pest Type	Xanthium strumarium	Setaria helvola	Amaranthus powellii	Ambrosia artemisiifolia
Pest Code	Common cocklebur	yellow foxtail	Powell amaranth	Common ragweed
Pest Scientific Name				
Pest Name				
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-2-2020	Jul-16-2020	Jul-16-2020	Jul-16-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	13, 13	27, 27	27, 27	27, 27
Trt-Eval Interval	13 DA-A	27 DA-A	27 DA-A	27 DA-A
Plant-Eval Interval	36 DP-1	50 DP-1	50 DP-1	50 DP-1
Days After Emergence	30 DE-1	44 DE-1	44 DE-1	44 DE-1
Trt Treatment	6*	7*	8*	9*
No. Name				
Rate				
Unit				
Appl Code				
10 HALEX GT	96.8 a	96.0 a	100.0 a	99.5 a
AATREX				
ACTIVATOR 90 - NIS				
N-PAK AMS				
LSD P=.05	3.94	9.98	1.65	6.49
Standard Deviation	2.72	6.88	1.13	4.47
CV	3.08	8.36	1.27	5.09
Levene's F^	0.768	1.178	0.601	2.478
Levene's Prob(F)	0.646	0.344	0.786	0.03*
Skewness^	-2.2811*	-1.0278*	-2.1142*	-0.8304*
Kurtosis^	8.7869*	2.0457*	6.693*	2.2475*
Replicate F	0.915	1.296	0.899	1.037
Replicate Prob(F)	0.4469	0.2961	0.4543	0.3920
Treatment F	521.347	72.685	3073.909	192.029
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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* Adjusted means
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^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10 Location: Prosper, ND Trial Year: 2020
 Protocol ID: 20S-PROSPER-CORN-10 Investigator (Creator): Dr. Joe Ikley
 Project ID: 20CO4H069 Study Director: Dr. Joe Ikley
 Sponsor Contact: Rich Zollinger, AMVAC

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code	XANST	SETPU	AMAPO	AMBEL
Pest Scientific Name	Xanthium strumarium	Setaria helvola	Amaranthus powellii	Ambrosia artemisiifolia
Pest Name	Common cocklebur	yellow foxtail	Powell amaranth	Common ragweed
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-16-2020	Jul-29-2020	Jul-29-2020	Jul-29-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	27, 27	40, 40	40, 40	40, 40
Trt-Eval Interval	27 DA-A	40 DA-A	40 DA-A	40 DA-A
Plant-Eval Interval	50 DP-1	63 DP-1	63 DP-1	63 DP-1
Days After Emergence	44 DE-1	57 DE-1	57 DE-1	57 DE-1
Trt Treatment	10*	11*	12*	13*
No. Name				
1 Untreated Check	0.0 b	0.0 b	0.0 b	0.0 b
2 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	95.0 a	82.5 a	98.8 a
3 IMPACT CORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	98.3 a	92.3 a	100.0 a
4 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	20 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	100.0 a	88.8 a	100.0 a
5 IMPACT CORE ROUNDUP POWERMAX AATREX ACTIVATOR 90 - NIS N-PAK AMS	30 fl oz/a A 32 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	100.0 a	97.5 a	100.0 a
6 IMPACT CORE MSO ULTRA N-PAK AMS	30 fl oz/a A 0.25 % v/v A 2 lb ai/a A	94.8 a	83.8 a	97.0 a
7 IMPACT CORE AATREX MSO ULTRA N-PAK AMS	30 fl oz/a A 16 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.5 a	85.0 a	97.0 a
8 ARMEZON PRO ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	14 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	98.3 a	87.5 a	99.8 a
9 RESICORE ROUNDUP POWERMAX ACTIVATOR 90 - NIS N-PAK AMS	40 fl oz/a A 32 fl oz/a A 0.25 % v/v A 2 lb ai/a A	99.5 a	95.8 a	98.5 a

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 * Adjusted means
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 ^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

	W, Weed XANST	W, Weed SETPU	W, Weed AMAP0	W, Weed AMBEL
Pest Type	Xanthium strumarium	Setaria helvola	Amaranthus powellii	Ambrosia artemisiifolia
Pest Code	Common cocklebur	yellow foxtail	Powell amaranth	Common ragweed
Pest Scientific Name				
Pest Name				
Crop Type, Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	Jul-16-2020	Jul-29-2020	Jul-29-2020	Jul-29-2020
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1
Assessed By	Ikley, J	Ikley, J	Ikley, J	Ikley, J
Data Entry Date	Aug-19-2020	Aug-19-2020	Aug-19-2020	Aug-19-2020
Days After First/Last Applic.	27, 27	40, 40	40, 40	40, 40
Trt-Eval Interval	27 DA-A	40 DA-A	40 DA-A	40 DA-A
Plant-Eval Interval	50 DP-1	63 DP-1	63 DP-1	63 DP-1
Days After Emergence	44 DE-1	57 DE-1	57 DE-1	57 DE-1
Trt Treatment	10*	11*	12*	13*
No. Name				
Rate				
Unit				
Appl Code				
10 HALEX GT	98.8 a	96.0 a	100.0 a	99.5 a
AATREX				
ACTIVATOR 90 - NIS				
N-PAK AMS				
LSD P=.05	3.31	11.08	3.17	7.18
Standard Deviation	2.28	7.63	2.18	4.95
CV	2.58	9.44	2.45	5.65
Levene's F^	1.127	0.753	0.373	1.867
Levene's Prob(F)	0.375	0.658	0.939	0.097
Skewness^	-0.4918	-0.9424*	-1.2566*	-1.0568*
Kurtosis^	2.3896*	0.7084	2.2049*	3.0847*
Replicate F	0.051	2.017	2.765	1.144
Replicate Prob(F)	0.9843	0.1352	0.0612	0.3493
Treatment F	745.947	57.433	822.384	156.471
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001

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

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type			W, Weed
Pest Code			XANST
Pest Scientific Name			Xanthium strumarium
Pest Name			Common cocklebur
Crop Type, Code			
BBCH Scale			
Crop Scientific Name			
Crop Name			
Rating Date			Jul-29-2020
Rating Type			CONTRO
Rating Unit/Min/Max			%, 0, 100
Number of Subsamples			1
Assessed By			Ikley, J
Data Entry Date			Aug-19-2020
Days After First/Last Applic.			40, 40
Trt-Eval Interval			40 DA-A
Plant-Eval Interval			63 DP-1
Days After Emergence			57 DE-1
Trt Treatment	Rate	Appl	14*
No. Name	Rate Unit	Code	
1 Untreated Check			0.0 b
2 IMPACT CORE	20 fl oz/a A		95.0 a
ROUNDUP POWERMAX	32 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		
3 IMPACT CORE	30 fl oz/a A		96.0 a
ROUNDUP POWERMAX	32 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		
4 IMPACT CORE	20 fl oz/a A		100.0 a
ROUNDUP POWERMAX	32 fl oz/a A		
AATREX	16 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
5 IMPACT CORE	30 fl oz/a A		100.0 a
ROUNDUP POWERMAX	32 fl oz/a A		
AATREX	16 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
6 IMPACT CORE	30 fl oz/a A		93.5 a
MSO ULTRA	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		
7 IMPACT CORE	30 fl oz/a A		99.5 a
AATREX	16 fl oz/a A		
MSO ULTRA	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		
8 ARMEZON PRO	14 fl oz/a A		97.0 a
ROUNDUP POWERMAX	32 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		
9 RESICORE	40 fl oz/a A		99.5 a
ROUNDUP POWERMAX	32 fl oz/a A		
ACTIVATOR 90 - NIS	0.25 % v/v A		
N-PAK AMS	2 lb ai/a A		

Means followed by same letter or symbol do not significantly differ (P=0.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 2 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
Sponsor Contact: Rich Zollinger, AMVAC		

Pest Type	W, Weed	
Pest Code	XANST	
Pest Scientific Name	Xanthium strumarium	
Pest Name	Common cocklebur	
Crop Type, Code		
BBCH Scale		
Crop Scientific Name		
Crop Name		
Rating Date	Jul-29-2020	
Rating Type	CONTRO	
Rating Unit/Min/Max	%, 0, 100	
Number of Subsamples	1	
Assessed By	Ikley, J	
Data Entry Date	Aug-19-2020	
Days After First/Last Applic.	40, 40	
Trt-Eval Interval	40 DA-A	
Plant-Eval Interval	63 DP-1	
Days After Emergence	57 DE-1	
Trt Treatment	Rate	Appl
No. Name	Rate Unit	Code
10 HALEX GT	3.6 pt/a	A
AATREX	16 fl oz/a	A
ACTIVATOR 90 - NIS	0.25 % v/v	A
N-PAK AMS	2 lb ai/a	A
	14*	
10 HALEX GT	99.8 a	
AATREX		
ACTIVATOR 90 - NIS		
N-PAK AMS		
LSD P=.05	4.12	
Standard Deviation	2.84	
CV	3.23	
Levene's F^	2.029	
Levene's Prob(F)	0.071	
Skewness^	0.0372	
Kurtosis^	1.6307*	
Replicate F	0.830	
Replicate Prob(F)	0.4890	
Treatment F	477.343	
Treatment Prob(F)	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.

* Adjusted means

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

^Calculated from residual.

North Dakota State University

Evaluation of Impact CORE programs for performance and corn safety compared to competitive programs in academic trials.

Trial ID: 20S-PROSPER-CORN-10	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-10	Investigator (Creator): Dr. Joe Ikley	
Project ID: 20CO4H069	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Rich Zollinger, AMVAC	

Pest Type

W, Weed = Weed or volunteer crop

Pest Code

SETPU, Setaria helvola, yellow foxtail = US

AMAPO, Amaranthus powellii, Powell amaranth = US

AMBEL, Ambrosia artemisiifolia, Common ragweed = US

XANST, Xanthium strumarium, Common cocklebur = US

Crop Type, Code

C = EPPO species (Bayer) codes

ZEAMX, BCOR, Zea mays, Corn = US

Rating Type

CONTRO = control / burndown or knockdown

Rating Unit/Min/Max

%, 0, 100 = percent

Assessed By

Ikley, J = Extension Agent

Plant-Eval Interval

30 DP-1 = 1 ZEAMX May-27-2020

36 DP-1 = 1 ZEAMX May-27-2020

50 DP-1 = 1 ZEAMX May-27-2020

63 DP-1 = 1 ZEAMX May-27-2020

North Dakota State University

Trial ID: 20S-PROSPER-CORN-12 Protocol ID: 20S-PROSPER-CORN-12 Project ID:	Shieldex Visibility Location: Prosper, ND Investigator (Creator): Dr. Joe Ikley Study Director: Dr. Joe Ikley Sponsor Contact: Jay Turner, Summit Agro	Trial Year: 2020
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General Trial Information	
Study Director: Dr. Joe Ikley Investigator: Dr. Joe Ikley	
Trial Status: E established	
ARM Trial Created On: Apr-22-2020	
Conducted Under GLP: No Conducted Under GEP: No	

Contacts	
Role: STYDIR study director Study Director: Dr. Joe Ikley Role: INVEST investigator Investigator: Dr. Joe Ikley Role: SPONSR sponsor Sponsor: Jay Turner, Summit Agro	

Site and Design	
Treated Plot Width: 6.67 FT Treated Plot Length: 30 FT Treated Plot Area: 200.1 FT2 Treatments: 5 Replications: 4	
Study Design: RACOB L Randomized Complete Block (RCB)	

Application Description		
	A	B
Application Date	May-29-2020	Jun-24-2020
Appl. Start Time	11:15 AM	12:20 PM
Appl. Stop Time	11:35 AM	12:40 PM
Interval to Prev. Appl.		26 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROFOL	BROFOL
Applied By	Ikley, J	Haugrud, N
Appl. Entry Date	Aug-13-2020	Aug-13-2020
Air Temperature Start, Stop	65, 65 F	77, 77 F
% Relative Humidity Start, Stop	50, 50	40, 40
Wind Velocity+Dir. Start	4 MPH, WNW	3 MPH, WNW
Wind Velocity+Dir. Stop	4 MPH, WNW	3 MPH, WNW
Wind Velocity+Dir. Max	8 MPH, WNW	4 MPH, WNW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	61 F	80 F
Soil Moisture	SLIDRY	SLIDRY
Soil Surface Condition	COATRA	COATRA
% Cloud Cover	5	0

North Dakota State University

Trial ID: 20S-PROSPER-CORN-12	Shieldex Visibility	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-12	Location: Prosper, ND	
Project ID:	Investigator (Creator): Dr. Joe Ikley	
	Study Director: Dr. Joe Ikley	
	Sponsor Contact: Jay Turner, Summit Agro	

Application Equipment		
	A	B
Appl. Equipment	Mjolnir	Narsil
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	8002
Nozzle Type	TEEJAI	FLAFAN
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	
Boom Height	18 IN	18 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1119 mL	1119 mL
Propellant	COMCO2	COMCO2

Notes			
Context	Date	By	Notes
STATUS	Apr-22-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Aug-13-2020	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Emergence Date entered.

North Dakota State University

Shieldex Visibility	
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley
Project ID:	Study Director: Dr. Joe Ikley
Sponsor Contact: Jay Turner, Summit Agro	
Trial Year: 2020	

		W, Weed AMBEL	W, Weed XANST	W, Weed SETPU	
Pest Type		Ambrosia artemisiifolia	Xanthium strumarium	Setaria helvola	
Pest Code					
Pest Scientific Name		Common ragweed	Common cocklebur	yellow foxtail	
Pest Name					
Crop Type, Code	C, ZEAMX				C, ZEAMX
BBCH Scale	BCOR				BCOR
Crop Scientific Name	Zea mays				Zea mays
Crop Name	Corn				Corn
Rating Date	Jun-5-2020	Jun-5-2020	Jun-5-2020	Jun-5-2020	Jun-12-2020
Rating Type	PHYTO	CONTRO	CONTRO	CONTRO	PHYTO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	7, 7	7, 7	7, 7	7, 7	14, 14
Plant-Eval Interval	9 DP-1	9 DP-1	9 DP-1	9 DP-1	16 DP-1
Days After Emergence	3 DE-1	3 DE-1	3 DE-1	3 DE-1	10 DE-1
Trt Treatment	Rate	1*	2*	3*	4*
No. Name	Rate Unit	Appl Code			
1 Untreated Check			0.0 -	0.0 -	0.0 -
2 DUAL II MAGNUM AATREX	1 pt/a 12 fl oz/a	A A	0.0 -	0.0 -	0.0 -
3 DUAL II MAGNUM AATREX SHIELDDEX AATREX PRIME OIL	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v	A A B B B	0.0 -	0.0 -	0.0 -
4 DUAL II MAGNUM AATREX IMPACT AATREX MSO ULTRA N-PAK AMS	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v 8.5 lb ai/100 gal	A A B B B B	0.0 -	0.0 -	0.0 -
5 DUAL II MAGNUM AATREX LAUDIS AATREX DESTINY HC HSMOC N-PAK AMS	1 pt/a 12 fl oz/a 3 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal	A A B B B B	0.0 -	0.0 -	0.0 -
LSD P=.05			0.00	0.00	0.00
Standard Deviation			0.00	0.00	0.00
CV			0.0	0.0	0.0
Levene's F^			.	.	.
Levene's Prob(F)			.	.	.
Skewness^			.	.	.
Kurtosis^			.	.	.
Replicate F			0.000	0.000	0.000
Replicate Prob(F)			1.0000	1.0000	1.0000
Treatment F			0.000	0.000	0.000
Treatment Prob(F)			1.0000	1.0000	1.0000

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Trial ID: 20S-PROSPER-CORN-12 Protocol ID: 20S-PROSPER-CORN-12 Project ID:	Shieldex Visibility Location: Prosper, ND Investigator (Creator): Dr. Joe Ikley Study Director: Dr. Joe Ikley Sponsor Contact: Jay Turner, Summit Agro	Trial Year: 2020
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	W, Weed AMBEL	W, Weed XANST	W, Weed SETPU		
Pest Type	Ambrosia artemisiifolia	Xanthium strumarium	Setaria helvola		
Pest Code					
Pest Scientific Name					
Pest Name	Common ragweed	Common cocklebur	yellow foxtail		
Crop Type, Code				C, ZEAMX	C, ZEAMX
BBCH Scale				BCOR	BCOR
Crop Scientific Name				Zea mays	Zea mays
Crop Name				Corn	Corn
Rating Date	Jun-12-2020	Jun-12-2020	Jun-12-2020	Jun-19-2020	Jun-26-2020
Rating Type	CONTRO	CONTRO	CONTRO	PHYTO	PHYTO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	14, 14	14, 14	14, 14	21, 21	28, 2
Plant-Eval Interval	16 DP-1	16 DP-1	16 DP-1	23 DP-1	30 DP-1
Days After Emergence	10 DE-1	10 DE-1	10 DE-1	17 DE-1	24 DE-1
Trt Treatment	6*	7*	8*	9*	10*
No. Name					
Rate					
Unit					
Appl Code					
1 Untreated Check	0.0 b	0.0 b	0.0 b	0.0 -	0.0 -
2 DUAL II MAGNUM AATREX	37.1 a 1 pt/a 12 fl oz/a A	27.0 ab	36.3 a	0.0 -	0.0 -
3 DUAL II MAGNUM AATREX SHIELDX AATREX PRIME OIL	61.8 a 1 pt/a 12 fl oz/a A 1 fl oz/a B 12 fl oz/a B 1 % v/v B	54.3 a	65.5 a	0.0 -	0.0 -
4 DUAL II MAGNUM AATREX IMPACT AATREX MSO ULTRA N-PAK AMS	66.3 a 1 pt/a 12 fl oz/a A 1 fl oz/a B 12 fl oz/a B 1 % v/v B 8.5 lb ai/100 gal B	56.3 a	56.3 a	0.0 -	0.0 -
5 DUAL II MAGNUM AATREX LAUDIS AATREX DESTINY HC HSMOC N-PAK AMS	62.5 a 1 pt/a 12 fl oz/a A 3 fl oz/a B 12 fl oz/a B 0.5 % v/v B 8.5 lb ai/100 gal B	65.0 a	57.5 a	0.0 -	0.0 -
LSD P=.05	27.24	31.21	33.05	.	.
Standard Deviation	17.50	20.06	21.45	0.00	0.00
CV	38.18	48.73	49.77	0.0	0.0
Levene's F^	0.631	0.943	1.448	.	.
Levene's Prob(F)	0.649	0.468	0.267	.	.
Skewness^	0.8737	0.235	-0.0497	.	.
Kurtosis^	1.0977	-0.4191	-0.8733	.	.
Replicate F	9.934	4.680	3.054	0.000	0.000
Replicate Prob(F)	0.0018	0.0242	0.0698	1.0000	1.0000
Treatment F	10.172	7.008	6.057	0.000	0.000
Treatment Prob(F)	0.0011	0.0047	0.0066	1.0000	1.0000

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Shieldex Visibility	
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley
Project ID:	Study Director: Dr. Joe Ikley
Sponsor Contact: Jay Turner, Summit Agro	
Trial Year: 2020	

	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed	W, Weed XANST Xanthium strumarium Common cocklebur	W, Weed SETPU Setaria helvola yellow foxtail			
Pest Type						
Pest Code						
Pest Scientific Name						
Pest Name						
Crop Type, Code				C, ZEAMX		
BBCH Scale				BCOR		
Crop Scientific Name				Zea mays		
Crop Name				Corn		
Rating Date	Jun-26-2020	Jun-26-2020	Jun-26-2020	Jul-1-2020		
Rating Type	CONTRO	CONTRO	CONTRO	PHYTO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Number of Subsamples	1	1	1	1		
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S		
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020		
Days After First/Last Applic.	28, 2	28, 2	28, 2	33, 7		
Plant-Eval Interval	30 DP-1	30 DP-1	30 DP-1	35 DP-1		
Days After Emergence	24 DE-1	24 DE-1	24 DE-1	29 DE-1		
Trt Treatment No. Name	Rate Unit	Appl Code	11*	12*	13*	14*
1 Untreated Check			0.0 b	0.0 b	0.0 b	0.0 -
2 DUAL II MAGNUM AATREX	1 pt/a 12 fl oz/a	A A	33.0 a	22.1 b	57.5 a	0.0 -
3 DUAL II MAGNUM AATREX SHIELDDEX AATREX PRIME OIL	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v	A A B B B	72.5 a	65.0 a	68.8 a	0.0 -
4 DUAL II MAGNUM AATREX IMPACT AATREX MSO ULTRA N-PAK AMS	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v 8.5 lb ai/100 gal	A A B B B B	56.3 a	60.0 a	71.3 a	0.0 -
5 DUAL II MAGNUM AATREX LAUDIS AATREX DESTINY HC HSMOC N-PAK AMS	1 pt/a 12 fl oz/a 3 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal	A A B B B B	55.0 a	60.0 a	68.8 a	0.0 -
LSD P=.05	29.91	28.92	10.69			
Standard Deviation	19.22	18.58	6.94	0.00		
CV	43.21	42.54	13.03	0.0		
Levene's F^	0.757	0.245	0.991	.		
Levene's Prob(F)	0.57	0.908	0.442	.		
Skewness^	-0.2397	-0.4501	0.1178	.		
Kurtosis^	-1.1373	-0.6848	-0.7927	.		
Replicate F	5.188	5.263	7.299	0.000		
Replicate Prob(F)	0.0178	0.0170	0.0048	1.0000		
Treatment F	8.282	8.791	76.013	0.000		
Treatment Prob(F)	0.0025	0.0019	0.0001	1.0000		

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Shieldex Visibility	
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley
Project ID:	Study Director: Dr. Joe Ikley
Sponsor Contact: Jay Turner, Summit Agro	
Trial Year: 2020	

	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed	W, Weed XANST Xanthium strumarium Common cocklebur	W, Weed SETPU Setaria helvola yellow foxtail			
Pest Type						
Pest Code						
Pest Scientific Name						
Pest Name						
Crop Type, Code				C, ZEAMX		
BBCH Scale				BCOR		
Crop Scientific Name				Zea mays		
Crop Name				Corn		
Rating Date	Jul-1-2020	Jul-1-2020	Jul-1-2020	Jul-8-2020		
Rating Type	CONTRO	CONTRO	CONTRO	PHYTO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Number of Subsamples	1	1	1	1		
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S		
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020		
Days After First/Last Applic.	33, 7	33, 7	33, 7	40, 14		
Plant-Eval Interval	35 DP-1	35 DP-1	35 DP-1	42 DP-1		
Days After Emergence	29 DE-1	29 DE-1	29 DE-1	36 DE-1		
Trt Treatment No. Name	Rate	Appl Code	15*	16*	17*	18*
1 Untreated Check			0.0 c	0.0 c	0.0 c	0.0 -
2 DUAL II MAGNUM AATREX	1 pt/a 12 fl oz/a	A A	13.8 b	6.8 b	38.8 b	0.0 -
3 DUAL II MAGNUM AATREX SHIELDX AATREX PRIME OIL	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v	A A B B B	97.0 a	97.3 a	98.5 a	0.0 -
4 DUAL II MAGNUM AATREX IMPACT AATREX MSO ULTRA N-PAK AMS	1 pt/a 12 fl oz/a 1 fl oz/a 12 fl oz/a 1 % v/v 8.5 lb ai/100 gal	A A B B B B	94.3 a	96.0 a	98.3 a	0.0 -
5 DUAL II MAGNUM AATREX LAUDIS AATREX DESTINY HC HSMOC N-PAK AMS	1 pt/a 12 fl oz/a 3 fl oz/a 12 fl oz/a 0.5 % v/v 8.5 lb ai/100 gal	A A B B B B	94.3 a	95.3 a	98.5 a	0.0 -
LSD P=.05	7.37	3.53	20.04			.
Standard Deviation	4.73	2.27	13.01			0.00
CV	7.61	3.67	19.47			0.0
Levene's F^	0.233	0.298	1.604			.
Levene's Prob(F)	0.915	0.875	0.225			.
Skewness^	0.2591	0.4176	-0.7778			.
Kurtosis^	-0.0416	-0.2687	5.0431*			.
Replicate F	6.273	7.640	0.975			0.000
Replicate Prob(F)	0.0097	0.0049	0.4368			1.0000
Treatment F	398.314	1878.195	48.739			0.000
Treatment Prob(F)	0.0001	0.0001	0.0001			1.0000

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Shieldex Visibility		
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND	Trial Year: 2020
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley	
Project ID:	Study Director: Dr. Joe Ikley	
Sponsor Contact: Jay Turner, Summit Agro		

	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed	W, Weed XANST Xanthium strumarium Common cocklebur	W, Weed SETPU Setaria helvola yellow foxtail	C, ZEAMX BCOR Zea mays Corn	C, ZEAMX BCOR Zea mays Corn
Pest Type					
Pest Code					
Pest Scientific Name					
Pest Name					
Crop Type, Code					
BBCH Scale					
Crop Scientific Name					
Crop Name					
Rating Date	Jul-8-2020	Jul-8-2020	Jul-8-2020	Jul-15-2020	Jul-22-2020
Rating Type	CONTRO	CONTRO	CONTRO	PHYTO	PHYTO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	40, 14	40, 14	40, 14	47, 21	54, 28
Plant-Eval Interval	42 DP-1	42 DP-1	42 DP-1	49 DP-1	56 DP-1
Days After Emergence	36 DE-1	36 DE-1	36 DE-1	43 DE-1	50 DE-1
Trt Treatment	19*	20*	21*	22*	23*
No. Name					
Rate					
Rate Unit					
Appl Code					
1 Untreated Check	0.0 c	0.0 c	0.0 c	0.0 -	0.0 -
2 DUAL II MAGNUM	15.0 b	12.5 b	10.0 b	0.0 -	0.0 -
AATREX	12 fl oz/a				
3 DUAL II MAGNUM	97.3 a	97.5 a	98.0 a	0.0 -	0.0 -
AATREX	12 fl oz/a				
SHIELDDEX	1 fl oz/a				
AATREX	12 fl oz/a				
PRIME OIL	1 % v/v				
4 DUAL II MAGNUM	95.5 a	95.8 a	97.8 a	0.0 -	0.0 -
AATREX	12 fl oz/a				
IMPACT	1 fl oz/a				
AATREX	12 fl oz/a				
MSO ULTRA	1 % v/v				
N-PAK AMS	8.5 lb ai/100 gal				
5 DUAL II MAGNUM	94.3 a	94.8 a	98.3 a	0.0 -	0.0 -
AATREX	12 fl oz/a				
LAUDIS	3 fl oz/a				
AATREX	12 fl oz/a				
DESTINY HC HSMOC	0.5 % v/v				
N-PAK AMS	8.5 lb ai/100 gal				
LSD P=.05	12.01	8.66	5.88	.	.
Standard Deviation	7.80	5.62	3.82	0.00	0.00
CV	12.91	9.35	6.28	0.0	0.0
Levene's F^	0.319	0.721	1.447	.	.
Levene's Prob(F)	0.861	0.591	0.267	.	.
Skewness^	1.5525*	1.4998*	0.0277	.	.
Kurtosis^	3.7522*	4.2996*	4.378*	.	.
Replicate F	2.460	2.111	0.751	0.000	0.000
Replicate Prob(F)	0.1129	0.1522	0.5425	1.0000	1.0000
Treatment F	155.325	308.402	716.354	0.000	0.000
Treatment Prob(F)	0.0001	0.0001	0.0001	1.0000	1.0000

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Shieldex Visibility	
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley
Project ID:	Study Director: Dr. Joe Ikley
Sponsor Contact: Jay Turner, Summit Agro	
Trial Year: 2020	

	W, Weed AMBEL Ambrosia artemisiifolia Common ragweed	W, Weed XANST Xanthium strumarium Common cocklebur	W, Weed SETPU Setaria helvola yellow foxtail	
Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Type, Code				C, ZEAMX
BBCH Scale				BCOR
Crop Scientific Name				Zea mays
Crop Name				Corn
Rating Date	Jul-22-2020	Jul-22-2020	Jul-22-2020	Aug-5-2020
Rating Type	CONTRO	CONTRO	CONTRO	PHYTO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	54, 28	54, 28	54, 28	68, 42
Plant-Eval Interval	56 DP-1	56 DP-1	56 DP-1	70 DP-1
Days After Emergence	50 DE-1	50 DE-1	50 DE-1	64 DE-1
Trt Treatment	24*	25*	26*	27*
No. Name				
1 Untreated Check	0.0 c	0.0 c	0.0 c	0.0 -
2 DUAL II MAGNUM AATREX	13.8 b 1 pt/a 12 fl oz/a A	12.5 b	7.5 b	0.0 -
3 DUAL II MAGNUM AATREX SHIELDX AATREX PRIME OIL	97.0 a 1 pt/a 12 fl oz/a A 1 fl oz/a B 12 fl oz/a B 1 % v/v B	97.3 a	98.0 a	0.0 -
4 DUAL II MAGNUM AATREX IMPACT AATREX MSO ULTRA N-PAK AMS	93.3 a 1 pt/a 12 fl oz/a A 1 fl oz/a B 12 fl oz/a B 1 % v/v B 8.5 lb ai/100 gal B	93.0 a	97.0 a	0.0 -
5 DUAL II MAGNUM AATREX LAUDIS AATREX DESTINY HC HSMOC N-PAK AMS	92.8 a 1 pt/a 12 fl oz/a A 3 fl oz/a B 12 fl oz/a B 0.5 % v/v B 8.5 lb ai/100 gal B	92.5 a	97.0 a	0.0 -
LSD P=.05	11.04	8.96	4.65	.
Standard Deviation	7.17	5.82	3.02	0.00
CV	12.08	9.85	5.04	0.0
Levene's F^	0.143	0.493	7.037	.
Levene's Prob(F)	0.964	0.741	0.002*	.
Skewness^	1.2488*	1.326*	0.0723	.
Kurtosis^	1.5923	3.7182*	2.1145*	.
Replicate F	3.385	1.882	0.945	0.000
Replicate Prob(F)	0.0541	0.1864	0.4495	1.0000
Treatment F	180.712	277.513	1158.044	0.000
Treatment Prob(F)	0.0001	0.0001	0.0001	1.0000

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. 6,7,11,12,15,16=3.8
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.
 ^Calculated from residual.

North Dakota State University

Shieldex Visibility			
Trial ID: 20S-PROSPER-CORN-12		Location: Prosper, ND	
Protocol ID: 20S-PROSPER-CORN-12		Investigator (Creator): Dr. Joe Ikley	
Project ID:		Study Director: Dr. Joe Ikley	
Sponsor Contact: Jay Turner, Summit Agro			
Trial Year: 2020			
Pest Type	W, Weed	W, Weed	W, Weed
Pest Code	AMBEL	XANST	SETPU
Pest Scientific Name	Ambrosia artemisiifolia	Xanthium strumarium	Setaria helvola
Pest Name	Common ragweed	Common cocklebur	yellow foxtail
Crop Type, Code			
BBCH Scale			
Crop Scientific Name			
Crop Name			
Rating Date	Aug-5-2020	Aug-5-2020	Aug-5-2020
Rating Type	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100
Number of Subsamples	1	1	1
Assessed By	DeSimini, S	DeSimini, S	DeSimini, S
Data Entry Date	Aug-26-2020	Aug-26-2020	Aug-26-2020
Days After First/Last Applic.	68, 42	68, 42	68, 42
Plant-Eval Interval	70 DP-1	70 DP-1	70 DP-1
Days After Emergence	64 DE-1	64 DE-1	64 DE-1
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
1 Untreated Check			28*
			29*
			30*
2 DUAL II MAGNUM	1 pt/a	A	
AATREX	12 fl oz/a	A	
3 DUAL II MAGNUM	1 pt/a	A	
AATREX	12 fl oz/a	A	
SHIELDDEX	1 fl oz/a	B	
AATREX	12 fl oz/a	B	
PRIME OIL	1 % v/v	B	
4 DUAL II MAGNUM	1 pt/a	A	
AATREX	12 fl oz/a	A	
IMPACT	1 fl oz/a	B	
AATREX	12 fl oz/a	B	
MSO ULTRA	1 % v/v	B	
N-PAK AMS	8.5 lb ai/100 gal	B	
5 DUAL II MAGNUM	1 pt/a	A	
AATREX	12 fl oz/a	A	
LAUDIS	3 fl oz/a	B	
AATREX	12 fl oz/a	B	
DESTINY HC HSMOC	0.5 % v/v	B	
N-PAK AMS	8.5 lb ai/100 gal	B	
LSD P=.05	10.57	8.25	4.98
Standard Deviation	6.86	5.35	3.23
CV	12.0	9.27	5.51
Levene's F^	0.14	0.387	4.112
Levene's Prob(F)	0.965	0.814	0.019*
Skewness^	0.9674	0.8587	-0.001
Kurtosis^	0.4133	1.1264	1.8098
Replicate F	3.350	2.730	0.553
Replicate Prob(F)	0.0556	0.0903	0.6555
Treatment F	189.586	326.164	964.254
Treatment Prob(F)	0.0001	0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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 Due to missing data, the effective replicates used for mean comparisons are: col. 6,7,11,12,15,16=3.8

* Adjusted means

Could not calculate LSD (% mean diff) for columns 1,2,3,4,5,9,10,14,18,22,23,27 because error mean square = 0.

^Calculated from residual.

North Dakota State University

Shieldex Visibility	
Trial ID: 20S-PROSPER-CORN-12	Location: Prosper, ND
Protocol ID: 20S-PROSPER-CORN-12	Investigator (Creator): Dr. Joe Ikley
Project ID:	Study Director: Dr. Joe Ikley
	Sponsor Contact: Jay Turner, Summit Agro
Trial Year: 2020	

<u>Pest Type</u> W, Weed = Weed or volunteer crop <u>Pest Code</u> AMBEL, Ambrosia artemisiifolia, Common ragweed = US XANST, Xanthium strumarium, Common cocklebur = US SETPU, Setaria helvola, yellow foxtail = US <u>Crop Type, Code</u> C = EPPO species (Bayer) codes ZEAMX, BCOR, Zea mays, Corn = US <u>Rating Type</u> CONTRO = control / burndown or knockdown <u>Rating Unit/Min/Max</u> %, 0, 100 = percent <u>Assessed By</u> DeSimini, S = Research Specialist <u>Plant-Eval Interval</u> 9 DP-1 = 1 ZEAMX May-27-2020 16 DP-1 = 1 ZEAMX May-27-2020 23 DP-1 = 1 ZEAMX May-27-2020 30 DP-1 = 1 ZEAMX May-27-2020 35 DP-1 = 1 ZEAMX May-27-2020 42 DP-1 = 1 ZEAMX May-27-2020 49 DP-1 = 1 ZEAMX May-27-2020 56 DP-1 = 1 ZEAMX May-27-2020 70 DP-1 = 1 ZEAMX May-27-2020
