Blue Section: Weed Control in Corn and Soybean **Page**

Winter rye cover crop seeding date and rate impact on soil, weeds and soybean, Carrington, 2021.
(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 on two fall dates and at 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 and weed management 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 on Heimdal-Emrick loam soil with 4.0% organic matter, 7.7 pH, 11 ppm P (med; Olsen test), 199 ppm K, 2.16 mmho/cm soluble salts (0- to 6-inch depth), and 0.4% carbonate (CCE). 'ND Dylan' rye (98% germ. and 16,670 seeds/lb) was direct seeded into glyphosate-terminated green fallow (annual grass) on September 17 and October 8, 2020 at seeding rates of 25, 50, and 75 lb/A (PLS/A: 25 lb=410,130; 50 lb=820,260; 75 lb=1,230,390). Early seeded rye was at 4-leaf stage and late-seeded was 1 leaf rye at close of growing season (NDAWN). 'AG03X7' soybean was direct-planted into living rye in 30-inch rows on May 18, 2021. Tillering rye was terminated on May 20 with glyphosate (Roundup PowerMax at 28.4 fl oz/A) plus AMS+NIS. Glyphosate plus AMS+NIS was applied on June 14 and July 9 (R2 soybean growth stage) across the trial for general weed control. NDAWN monthly rain (inches) in 2021: May=1.4; June=1.8; July=0.1; August=2.6; September (1-23) =1.7; and 5-month total=7.6. Seed was harvested with a plot combine on September 23.

Averaged across rye seeding rates, early seeded rye averaged 85,850 plants/A with ground cover at 4% and late seeded at 270,830 plants/A and 17% ground cover when evaluated on May 18 (stand) and 24 (ground cover), 2021. The stand and ground cover advantage with the late planting is contrary to results from the two previous years of the study in which the advantage with the factors was with early planting. Averaged across fall seeding dates, rye plant density and ground cover among the three seeding rates: 25 lb/A = 64,740 plants/A and 7%; 50 lb/A = 170,040 plants/A and 11%; and 75 lb/A = 300,230 plants/A and 14%. The poor stands and very minimal ground cover were due to dry topsoil conditions from minimal rain during September (0.13 inch) and October (0.41 inch), 2020 (NDAWN).

Table 1 indicates rye plant density and ground cover, and weed control with the interaction of seeding dates and rates. Plant stand ranged from 29,880 plants/A to 448,210 plants/A (10 plants/ft^2) with highest density obtained with late seeding at the high seedingrate. Ground cover was greater with late seeding versus early, and increased with increasing seeding rates. Primary weed in the trial was green foxtail. The mid-June weed control evaluation occurred 25 days after glyphosate was applied across the trial for terminating the rye cover crop and weeds, and 2 days following the first POST glyphosate application for general trial weed control. Green foxtail suppression was similar (54-67%) among rye treatments.

Table 1. Winter rye plant cover crop density, ground cover and weed suppression with winter rye cover crop seeding dates and rates, Carrington, 2021.

Rye seeding treatment		Rye		Weed control
		Plant density (18-May)	Ground cover Visual (24-May)	Green foxtail 16-Jun
Date	Rate lb/A	plt/A	%	%
	25	29,880	4	61
	50	75,410	3	54
17-Sep	75	152,250	6	64
	25	99,600	10	59
	50	264,660	19	67
8-Oct	75	448,210	23	64
CV (%)		36.6	24.3	22.0
LSD (0.10)		82,180	3	NS

Table 2 indicates soybean performance with the interaction of rye seeding dates and rates. Soybean plant stand and development including first flower date (data not shown), and canopy closure generally were similar among rye treatments. Soybean seed yield, test weight, seed count, and protein and oil percentage were similar among treatments. Soybean yield averaged 40.6 bu/A under this production system.

Table 2. Soybean response with winter rye cover crop seeding dates and rates, Carrington, 2021.

Rye seeding treatment		Plant				Seed				
				Canopy closure (17-Aug)	Physiological maturity (R8)					
	Rate	Stand	Emergence	Canopeo		Yield	TW	Count	Protein	Oil
Date	lb/A	plt/A	Day of year	%	Day of year	bu/A	lb/bu	no./lb	%	
	25	128,160	154	82	254	38.6	57.2	3,276	33.8	20.1
	50	142,100	155	85	254	39.9	57.3	3,346	33.8	20.3
17-Sep	75	136,790	155	88	255	40.7	57.0	3,237	34.0	20.2
	25	139,450	155	89	255	41.3	57.1	3,117	33.9	20.1
	50	153,390	154	86	255	41.8	57.2	3,197	33.9	19.9
8-Oct	75	130,150	155	87	255	41.0	57.4	3,102	34.1	19.9
CV (%)		9.2	0.3	3.5	0.4	9.1	0.4	3.7	1.1	1.3
LSD (0.10)		NS	1	4	NS	NS	NS	NS	NS	NS

Dicamba Volatility Reduction. Dr. Howatt and Mettler. ND17009GT soybean (glyphosate tolerant) was planted near Fargo, ND on May 12, 2021. Treatments were applied to V3/V4 soybeans on June 29 at 10:00AM at 75°F, 48% relative humidity, 0% cloud-cover, 4-7 mph wind velocity at 360°, and dry soil surface at 72°F. Herbicides were applied with a backpack sprayer delivering 17 gpa at 40 psi through 11001 TT nozzles to a 21-foot-wide area the length of 20 by 20-foot plots. The experiment was a randomized complete block design with three replicates.

	Treatment	Rate	7/21 Soy (South)	7/21 Soy (West)	7/21 Soy (North)	7/21 Soy (East)	8/10 Soy (South)	8/10 Soy (West)	8/10 Soy (North)	8/10 Soy (East)
		--OZ AI/A, %V--	----------Observed Injury Distance (ft)----------							
1:	Glyt-4.5 + dica-X + OnTarget + Sentris	12 + 14 + 0.5% + 20 fl oz/A	24	18	19	26	6	6	3	8
2:	Glyt-4.5 + dica-X + FullLoad Complete	12 + 14 + 0.5%	32	16	24	27	22	11	11	19
3:	Glyt-4.5 + dica-X + AQ2518	12 + 14 + 0.5%	33	16	16	23	27	12	9	22
4:	Glyt-4.5 + dica-X + AQ2517	12 + 14 + 0.25%	28	18	18	24	13	5	4	13
5:	Glyt-4.5 + dica-X + CadoMax	12 + 14 + 0.25%	18	13	16	15	10	6	5	9
	CV:		7	16	15	15	21	30	25	13
	LSD P=0.05		4	5	5	7	6	4	3	4

TRT 1: 4 mph at 345°, 3.5 mph at 315°, 3 mph at 350°
TRT 2: 3.5 mph at 350°, 4 mph at 345°, 4 mph at 345°
TRT 3: 3.5 mph at 350°, 6 mph at 315° 4 mph at 350°
TRT 4: 4 mph at 345°, 5 mph at 345°, 3.5 mph at 345°
TRT 5: 3.5 mph at 350°,5 mph at 345°, 4 mph at 345°

Adjuvant Support for Dica-Soybean. Dr. Howatt and Mettler. This experiment was established in a non-cropped area near Prosper, ND. Treatments were applied to V3 soybeans on June 24 at 7:55AM at 68°F, 64% relative humidity, 5% cloud-cover, 3-5 mph wind velocity at 0°, and dry soil surface at 70°F. Herbicides 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	6/29 Soy	6/29 Corw	6/29 Colq	6/29 Cocb	6/29 Pgwd	6/29 Wibw	6/29 Fxtls	7/8 Corw
		--OZ AI/A, %V--	-% Injury-	----------% Control----------						
1:	Glyt-4.5 + Dica-X + FullLoad	9+6+0.38	0	84	89	87	94	84	86	92
2:	Glyt-4.5 + Dica-X + FullLoad Comp	9+6+0.38	0	84	89	91	95	87	85	89
3:	Glyt-4.5 + Dica-X + OnTarget + Sentris	9+6+0.5+20	0	79	82	87	90	77	81	84
4:	Glyt-4.5 + Dica-X + FullLoad + OnTarget + Sentris	9+6+0.38+0.5+20	0	92	94	96	95	90	92	93
5:	Glyt-4.5+Dica-X +FullLoad Comp+On Target+ Sentris	9+6+0.38+0.5+20	0	82	84	85	89	79	85	91
6:	Glyt-4.5 + Dica-X + FullLoad + Drift-fiant	9+6+0.38+0.14	0	89	91	92	94	89	88	82
	CV:		0	5	3	3	2	4	3	3
	LSD P=0.05		.	6	4	5	3	5	5	5

(Tables continued below)

	Treatment	Rate	7/8 Colq	7/8 Cocb	7/8 Pgwd	7/8 Wibw	7/8 Fxtls	7/21 Corw	7/21 Colq	7/21 Cocb
		--OZ AI/A, %V--	----------% Control----------							
1:	Glyt-4.5 + Dica-X + FullLoad	9+6+0.38	99	99	98	99	99	92	99	99
2:	Glyt-4.5 + Dica-X + FullLoad Comp	9+6+0.38	99	99	99	99	99	89	99	99
3:	Glyt-4.5 + Dica-X + OnTarget + Sentris	9+6+0.5+20	99	99	97	99	99	84	99	99
4:	Glyt-4.5 + Dica-X + FullLoad + OnTarget + Sentris	9+6+0.38+0.5+20	99	99	99	99	99	93	99	99
5:	Glyt-4.5+Dica-X +FullLoad Comp+On Target+ Sentris	9+6+0.38+0.5+20	98	99	97	98	99	91	98	99
6:	Glyt-4.5 + Dica-X + FullLoad + Drift-fiant	9+6+0.38+0.14	97	99	93	99	99	82	97	99
	CV:		2	0	3	1	0	2	2	0
	LSD P=0.05		2	.	4	1	.	2	2	.

	Treatment	Rate	7/21 Pgwd	7/21 Wibw	7/21 Fxtls
		--OZ AI/A, %V--	----------% Control----------		
1:	Glyt-4.5 + Dica-X + FullLoad	9+6+0.38	98	99	99
2:	Glyt-4.5 + Dica-X + FullLoad Comp	9+6+0.38	99	99	99
3:	Glyt-4.5 + Dica-X + OnTarget + Sentris	9+6+0.5+20	97	99	99
4:	Glyt-4.5 + Dica-X + FullLoad + OnTarget + Sentris	9+6+0.38+0.5+20	99	99	99
5:	Glyt-4.5+Dica-X +FullLoad Comp+On Target+ Sentris	9+6+0.38+0.5+20	97	98	99
6:	Glyt-4.5 + Dica-X + FullLoad + Drift-fiant	9+6+0.38+0.14	93	99	99
	CV:		3	1	0
	LSD P=0.05		4	1	.

Pgwd: Pigweed, Colq: Common lambsquarters, Wibw: Wild buckwheat, Corw: Common ragweed, Fxtls: Foxtails, Cocb: Common Cocklebur

Weed Control with Glyphosate Formulations. Dr. Howatt, DeSimini, and Mettler. Experiment was established on non-cropped area on June 17, 2021. Treatments were applied to 3 to 6-inch redroot pigweed, 2 to 6-inch common lambsquarters, 3 inch common and venice mallow, and 2 to 5-inch common ragweed. Treatments were applied at 9:30AM at 82°F, 46% relative humidity, 15% cloud-cover, 2 mph wind velocity at 340°, and dry soil surface at 70°F. Herbicides were applied with a backpack sprayer delivering 8.5 gpa at 40 psi through 11001 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	6/21 Chlorosis	6/25 Rrpw	6/25 Colq	6/25 Vema	6/25 Coma	6/25 Corw
	----OZ AI/A, %V----	----------% Control----------					
Untreated Check		0	0	0	0	0	0
Glyt-GSE (Gly star Extra)	9	10	90	84	82	85	50
Glyt-GSO (Gly star Original)	9	10	89	86	85	86	42
Glyt-GSP (Gly star Plus)	9	10	90	86	84	84	45
Glyt-GSKP (Gly star K-Plus)	9	10	89	82	82	81	40
ALB 012	9	10	94	86	86	89	50
ALB 022	9	10	90	81	81	86	40
ALB 032	9	10	91	82	82	81	50
ALB 042	9	10	91	85	85	86	47
CV:		0	4	5	5	5	17
LSD P=0.05		-	4	5	5	5	10

Treatment	Rate	7/1 Rrpw	7/1 Colq	7/1 Vema	7/1 Coma	7/1 Corw	7/9 Colq	7/9 Vema	7/9 Coma	7/9 Corw
	--OZ AI/A, %V--	----------% Control----------								
Untreated Check		0	0	0	0	0	0	0	0	0
Glyt-GSE (Gly star Extra)	9	99	85	91	94	81	89	93	93	81
Glyt-GSO (Gly star Original)	9	99	87	92	86	76	94	96	95	84
Glyt-GSP (Gly star Plus)	9	99	94	95	98	89	94	92	93	82
Glyt-GSKP (Gly star K-Plus)	9	99	83	91	95	80	92	94	93	81
ALB 012	9	99	94	95	99	89	91	95	95	83
ALB 022	9	99	89	91	95	74	93	96	97	85
ALB 032	9	99	90	95	97	89	92	91	96	85
ALB 042	9	99	91	94	95	85	89	95	96	82
CV:		0	4	3	3	5	4	2	3	5
LSD P=0.05		-	4	4	4	5	4	2	3	5

Rrpw: Redroot pigweed, Colq: Common lambsquarters, Vema: Venice mallow, Coma: Common mallow, Corw: Common ragweed

Comments: The common ragweed on site has mixed resistance to glyphosate that is of low level response. Herbicide treatments resulted in consistent 10% chlorotic discoloration 4 DAT. Control across species generally was 80 to 90% by 7 DAT with common ragweed lagging at 40 to 50% control presumably because of resistance at the site. Control ratings after 2 weeks (July 1 evaluation) should provide ample separation between formulations for typical glyphosate symptom progression. The relationships between the “sister products” at this evaluation seemed generally consistent with evaluations at 1 and 3 weeks. The new formulation of each base product generally gave similar or slightly better weed control than the base formulation. The benefit of the new formulation was most evident for GlyStar Extra and K-Plus especially for control of common lambsquarters, which is often difficult to control with glyphosate. Control of common mallow was notably improved with the new formulation of GlyStar Original compared with the current. Control of lambsquarters with GlyStar Plus was actually slightly better than with the new formulation of that product whereas in other

comparisons they were similar. Overall, one could easily conclude that the new formulation of each product performed substantially similar to the current formulation. Where differences occurred, the new formulation provided slightly better control than the existing formulation in all but a couple comparisons.

Weed Control with Glufosinate Formulations. Dr. Howatt, DeSimini, and Mettler. Experiment was established on non-cropped area on June 17, 2021. Treatments were applied to 3 to 6-inch redroot pigweed, 3 to 6-inch waterhemp, 2 to 6-inch common lambsquarters, 2 to 4-inch wild buckwheat, 3-inch Venice mallow, and 2 to 5-inch common ragweed. Treatments were applied at 9:05AM at 82°F, 46% relative humidity, 15% cloud-cover, 2 mph wind velocity at 340°, and dry soil surface at 70°F. Herbicides 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	6/21 Rrpw	6/21 Wahe	6/21 Colq	6/21 Wibw	6/21 Vema	6/21 Corw	6/21 Yeft
	----OZ AI/A----	----------% Control----------						
Untreated Check		0	0	0	0	0	0	0
ALB-2051 + AMS	2.3 + 24	54	54	27	54	54	54	54
ALB-2051 + AMS	4.7 + 24	62	62	30	62	62	62	62
ALB-2051 + AMS	6.3 + 24	66	66	45	66	66	66	66
ALB-2052 + AMS	2.3 + 24	60	60	27	60	60	60	60
ALB-2052 + AMS	4.7 + 24	61	61	35	61	61	61	61
ALB-2052 + AMS	6.3 + 24	66	66	42	66	66	66	66
Glufosinate + AMS	4.7 + 24	65	65	52	65	65	65	65
Glufosinate + AMS	9.4 + 24	71	71	71	71	71	71	71
Glufosinate + AMS	12.6 + 24	75	75	75	75	75	75	75
CV:		7	7	14	7	7	7	7
LSD P=0.05		6	6	8	6	6	6	6

Treatment	Rate	6/25 Rrpw	6/25 Wahe	6/25 Colq	6/25 Wibw	6/25 Vema	6/25 Corw	6/25 Yeft
	--OZ AI/A--	----------% Control----------						
Untreated Check		0	0	0	0	0	0	0
ALB-2051 + AMS	2.3 + 24	82	77	17	87	76	77	70
ALB-2051 + AMS	4.7 + 24	89	85	17	90	86	87	72
ALB-2051 + AMS	6.3 + 24	91	90	20	94	90	91	76
ALB-2052 + AMS	2.3 + 24	86	79	10	85	73	80	66
ALB-2052 + AMS	4.7 + 24	89	87	15	90	87	87	74
ALB-2052 + AMS	6.3 + 24	92	87	25	91	90	92	80
Glufosinate + AMS	4.7 + 24	92	86	45	95	87	87	74
Glufosinate + AMS	9.4 + 24	95	95	75	95	94	91	82
Glufosinate + AMS	12.6 + 24	96	96	85	95	94	95	86
CV:		4	5	19	3	5	5	5
LSD P=0.05		4	5	8	4	5	5	5

Treatment	Rate	7/9 Rrpw	7/9 Wahe	7/9 Colq	7/9 Vema	7/9 Corw	7/9 Yeft
	--OZ AI/A--	----------% Control----------					
Untreated Check		0	0	0	0	0	0
ALB-2051 + AMS	2.3 + 24	62	32	10	35	45	40
ALB-2051 + AMS	4.7 + 24	79	55	12	74	74	61
ALB-2051 + AMS	6.3 + 24	85	75	22	86	93	76
ALB-2052 + AMS	2.3 + 24	79	47	12	57	50	27
ALB-2052 + AMS	4.7 + 24	84	55	10	71	76	69
ALB-2052 + AMS	6.3 + 24	91	70	30	94	84	81
Glufosinate + AMS	4.7 + 24	89	57	40	94	82	65
Glufosinate + AMS	9.4 + 24	98	87	85	97	94	91
Glufosinate + AMS	12.6 + 24	98	91	91	98	94	98
CV:		5	7	12	4	6	6
LSD P=0.05		6	6	5	5	6	5

Rrpw: Redroot pigweed, Wahe: Waterhemp, Colq: Common lambsquarters, Wibw: Wild buckwheat, Vema: Venice mallow, Corw: Common ragweed, Yeft: Yellow Foxtail

Comments: The formulation of glufosinate was Liberty® from BASF. Symptom development timeline was essentially similar across the three products in the initial days after application. There was an increase in control from low to high rate of each product as expected. Overall activity of glufosinate was better than either of the numbered formulations with equivalent amounts of active isomer at 4 DAT. Common lambsquarters demonstrated this disparity the most.

There was more difference in comparative response of lambsquarters by 8 DAT. There was more recovery and new growth on plants treated with 2051 or 2052 than with glufosinate. At this evaluation, the numbered products again gave similar control, but glufosinate control was greater. Control with the low rate of glufosinate was most consistent with the medium rate of either of the numbered products.

At 3 WAT, the medium rate of glufosinate provided 85% control or better for each weed while the medium rate of 2051 or 2052 gave less than 85% control of each weed and only 12 and 10% control of lambsquarters, respectively.

Initial impression during evaluations was that a slight difference might separate the two formulations. However, this impression was not consistent in direction or magnitude among species across replicates to be corroborated in the data analysis until 3 WAT. ALB-2052 generally gave better control than ALB-2051 with exception of a couple specific rate by weed specie combinations. The difference was not enough to cover a rate step though.

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Directions:
46.932385433705605, -96.85215084066635

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 9
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Silty Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A	B
Application Date	May-10-2021	Jun-7-2021
Appl. Start Time	5:40 PM	9:00 AM
Appl. Stop Time	6:05 PM	9:25 AM
Interval to Prev. Appl.		28 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POST
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Haugrud, N
Appl. Entry Date	May-20-2021	Aug-16-2021
Air Temperature Start, Stop	69, 69 F	68, 68 F
% Relative Humidity Start, Stop	21, 21	35, 35
Wind Velocity+Dir. Start	6.5 MPH, NE	6 MPH, SE
Wind Velocity+Dir. Stop	6.5 MPH, NE	6 MPH, SE
Wind Velocity+Dir. Max	10 MPH, NE	7 MPH, SE
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	72 F
Soil Moisture	DRY	DRY
Soil Surface Condition	SMOTRA	SMOTRA
% Cloud Cover	5	10

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment

	A	B
Appl. Equipment	Walter	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	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
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Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed	W, Weed		W, Weed
	Pest Code					HIBTR	AMATA		HIBTR
	Pest Scientific Name					Hibiscus trionum	Amaranthus x tamariscinus		Hibiscus trionum
	Pest Name					venice mallow	common water hemp		venice mallow
	Crop Type, Code				C, ZEAMX			C, ZEAMX	
	BBCH Scale				BCOR			BCOR	
	Crop Scientific Name				Zea mays			Zea mays	
	Crop Name				Corn			Corn	
	Rating Date				May-17-2021	May-24-2021	May-24-2021	Jun-7-2021	Jun-7-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	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-16-2021	Aug-16-2021	Aug-16-2021	Aug-16-2021	Aug-18-2021
	Days After First/Last Applic.				7, 7	14, 14	14, 14	28, 28	28, 28
	Trt-Eval Interval				7 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A
	Days After Emergence				-9 DE-1	-2 DE-1	-2 DE-1	12 DE-1	12 DE-1
1	Untreated				0.0 -	0.0 b	0.0 b	0.0 -	0.0 c
2	BALANCE FLEXX	5.5	fl oz/a	A	0.0 -	99.0 a	99.0 a	0.0 -	98.3 a
	HARNESS	2.5	pt/a	A					
	AATREX	1	pt/a	A					
3	BALANCE FLEXX	4	fl oz/a	A	0.0 -	98.5 a	97.8 a	0.0 -	94.3 b
	CAPRENO	3	fl oz/a	B					
	HARNESS	2	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	AATREX	1	pt/a	B					
	SUPERB HC HSPOC	0.25	% v/v	B					
	N-PAK AMS	8.5	lb ai/100 gal	B					
4	BALANCE FLEXX	4	fl oz/a	A	0.0 -	98.0 a	98.5 a	0.0 -	97.8 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					
5	CAPRENO	3	fl oz/a	B	0.0 -	0.0 b	0.0 b	0.0 -	0.0 c
	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					
6	LAUDIS	3	fl oz/a	B	0.0 -	0.0 b	0.0 b	0.0 -	0.0 c
	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					
7	CAPRENO	3	fl oz/a	B	0.0 -	0.0 b	0.0 b	0.0 -	0.0 c
	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	1	% v/v	B					
8	LAUDIS	3	fl oz/a	B	0.0 -	0.0 b	0.0 b	0.0 -	0.0 c
	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	1	% v/v	B					

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

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type				W, Weed	W, Weed		W, Weed
Pest Code				HIBTR	AMATA		HIBTR
Pest Scientific Name				Hibiscus trionum	Amaranthus x tamariscinus		Hibiscus trionum
Pest Name				venice mallow	common water hemp		venice mallow
Crop Type, Code			C, ZEAMX			C, ZEAMX	
BBCH Scale			BCOR			BCOR	
Crop Scientific Name			Zea mays			Zea mays	
Crop Name			Corn			Corn	
Rating Date			May-17-2021	May-24-2021	May-24-2021	Jun-7-2021	Jun-7-2021
Rating Type			PHYGEN	CONTRO	CONTRO	PHYGEN	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-16-2021	Aug-16-2021	Aug-16-2021	Aug-16-2021	Aug-18-2021
Days After First/Last Applic.			7, 7	14, 14	14, 14	28, 28	28, 28
Trt-Eval Interval			7 DA-A	14 DA-A	14 DA-A	28 DA-A	28 DA-A
Days After Emergence			-9 DE-1	-2 DE-1	-2 DE-1	12 DE-1	12 DE-1
Trt No.	Treatment Name	Rate / Rate Unit	Appl Code	1*	2*	3*	4*	5*
9	ACURON FLEXI	56 fl oz/a	A	0.0 -	98.5 a	98.5 a	0.0 -	97.5 a
	AATREX	12 fl oz/a	A					
LSD P=.05				.	1.13	1.35	.	2.08
Standard Deviation				0.00	0.78	0.92	0.00	1.43
CV				0.0	1.77	2.11	0.0	3.31
Levene's F^				.	1.708	1.63	.	1.009
Levene's Prob(F)				.	0.142	0.163	.	0.452
Skewness^				.	-1.2298*	-1.4569*	.	-1.0305*
Kurtosis^				.	3.7731*	4.4546*	.	5.2657*
Replicate F				0.000	0.862	0.902	0.000	0.377
Replicate Prob(F)				1.0000	0.4745	0.4546	1.0000	0.7705
Treatment F				0.000	17912.263	12639.523	0.000	5122.186
Treatment Prob(F)				1.0000	0.0001	0.0001	1.0000	0.0001

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North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*	9*
	Pest Type				W, Weed			W, Weed
	Pest Code				AMATA			HIBTR
	Pest Scientific Name				Amaranthus x tamariscinus			Hibiscus trionum
	Pest Name				common water hemp			venice mallow
	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-7-2021	Jun-14-2021	Jun-21-2021	Jun-21-2021
	Rating Type				CONTRO	PHYGEN	PHYGEN	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-16-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				28, 28	35, 7	42, 14	42, 14
	Trt-Eval Interval				28 DA-A	35 DA-A	42 DA-A	42 DA-A
	Days After Emergence				12 DE-1	19 DE-1	26 DE-1	26 DE-1
1	Untreated				0.0 c	0.0 -	0.0 -	0.0 c
2	BALANCE FLEXX	5.5	fl oz/a	A	99.3 a	0.0 -	0.0 -	99.0 a
	HARNESS	2.5	pt/a	A				
	AATREX	1	pt/a	A				
3	BALANCE FLEXX	4	fl oz/a	A	95.0 b	0.0 -	0.0 -	99.0 a
	CAPRENO	3	fl oz/a	B				
	HARNESS	2	pt/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	AATREX	1	pt/a	B				
	SUPERB HC HSPOC	0.25	% v/v	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
4	BALANCE FLEXX	4	fl oz/a	A	97.8 a	0.0 -	0.0 -	99.0 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				
5	CAPRENO	3	fl oz/a	B	0.0 c	0.0 -	0.0 -	98.8 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				
6	LAUDIS	3	fl oz/a	B	0.0 c	0.0 -	0.0 -	99.0 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				
7	CAPRENO	3	fl oz/a	B	0.0 c	0.0 -	0.0 -	99.0 a
	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	1	% v/v	B				
8	LAUDIS	3	fl oz/a	B	0.0 c	0.0 -	0.0 -	98.8 a
	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	1	% v/v	B				

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North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type			W, Weed			W, Weed
Pest Code			AMATA			HIBTR
Pest Scientific Name			Amaranthus x tamariscinus			Hibiscus trionum
Pest Name			common water hemp			venice mallow
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-7-2021	Jun-14-2021	Jun-21-2021	Jun-21-2021
Rating Type			CONTRO	PHYGEN	PHYGEN	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-16-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
Days After First/Last Applic.			28, 28	35, 7	42, 14	42, 14
Trt-Eval Interval			28 DA-A	35 DA-A	42 DA-A	42 DA-A
Days After Emergence			12 DE-1	19 DE-1	26 DE-1	26 DE-1
Trt No.	Treatment Name	Rate Rate Unit / Appl Code	6*	7*	8*	9*
9	ACURON FLEXI	56 fl oz/a A	98.3 a	0.0 -	0.0 -	95.8 b
	AATREX	12 fl oz/a A				
LSD P=.05			1.71	.	.	1.93
Standard Deviation			1.17	0.00	0.00	1.33
CV			2.7	0.0	0.0	1.51
Levene's F^			1.31	.	.	1.201
Levene's Prob(F)			0.28	.	.	0.335
Skewness^			-1.3007*	.	.	-2.7188*
Kurtosis^			3.9128*	.	.	14.3172*
Replicate F			0.345	0.000	0.000	0.775
Replicate Prob(F)			0.7929	1.0000	1.0000	0.5196
Treatment F			7734.341	0.000	0.000	2458.423
Treatment Prob(F)			0.0001	1.0000	1.0000	0.0001

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North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	10*	11*	12*	13*
	Pest Type				W, Weed		W, Weed	W, Weed
	Pest Code				AMATA		HIBTR	AMATA
	Pest Scientific Name				Amaranthus x tamariscinus		Hibiscus trionum	Amaranthus x tamariscinus
	Pest Name				common water hemp		venice mallow	common water hemp
	Crop Type, Code					C, ZEAMX		
	BBCH Scale					BCOR		
	Crop Scientific Name					Zea mays		
	Crop Name					Corn		
	Rating Date				Jun-21-2021	Jul-5-2021	Jul-5-2021	Jul-5-2021
	Rating Type				CONTRO	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				42, 14	56, 28	56, 28	56, 28
	Trt-Eval Interval				42 DA-A	56 DA-A	56 DA-A	56 DA-A
	Days After Emergence				26 DE-1	40 DE-1	40 DE-1	40 DE-1
1	Untreated				0.0 b	0.0 -	0.0 b	0.0 -
2	BALANCE FLEXX	5.5	fl oz/a	A	99.0 a	0.0 -	98.5 a	99.0 -
	HARNESS	2.5	pt/a	A				
	AATREX	1	pt/a	A				
3	BALANCE FLEXX	4	fl oz/a	A	99.0 a	0.0 -	98.8 a	99.0 -
	CAPRENO	3	fl oz/a	B				
	HARNESS	2	pt/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	AATREX	1	pt/a	B				
	SUPERB HC HSPOC	0.25	% v/v	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
4	BALANCE FLEXX	4	fl oz/a	A	99.0 a	0.0 -	98.5 a	99.0 -
	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				
5	CAPRENO	3	fl oz/a	B	98.8 a	0.0 -	98.5 a	99.0 -
	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				
6	LAUDIS	3	fl oz/a	B	99.0 a	0.0 -	98.0 a	99.0 -
	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				
7	CAPRENO	3	fl oz/a	B	99.0 a	0.0 -	98.5 a	99.0 -
	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	1	% v/v	B				
8	LAUDIS	3	fl oz/a	B	99.0 a	0.0 -	98.5 a	99.0 -
	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	1	% v/v	B				

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^Calculated from residual.

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type			W, Weed		W, Weed	W, Weed
Pest Code			AMATA		HIBTR	AMATA
Pest Scientific Name			Amaranthus x tamariscinus		Hibiscus trionum	Amaranthus x tamariscinus
Pest Name			common water hemp		venice mallow	common water hemp
Crop Type, Code				C, ZEAMX		
BBCH Scale				BCOR		
Crop Scientific Name				Zea mays		
Crop Name				Corn		
Rating Date			Jun-21-2021	Jul-5-2021	Jul-5-2021	Jul-5-2021
Rating Type			CONTRO	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
Days After First/Last Applic.			42, 14	56, 28	56, 28	56, 28
Trt-Eval Interval			42 DA-A	56 DA-A	56 DA-A	56 DA-A
Days After Emergence			26 DE-1	40 DE-1	40 DE-1	40 DE-1
Trt No.	Treatment Name	Rate Rate Unit / Appl Code	10*	11*	12*	13*
9	ACURON FLEXI	56 fl oz/a A	97.5 a	0.0 -	82.5 a	99.0 -
	AATREX	12 fl oz/a A				
LSD P=.05			1.20	.	13.88	.
Standard Deviation			0.82	0.00	9.51	0.00
CV			0.93	0.0	11.1	0.0
Levene's F^			1.65	.	0.742	.
Levene's Prob(F)			0.157	.	0.654	.
Skewness^			-2.5051*	.	-2.959*	.
Kurtosis^			13.499*	.	15.7665*	.
Replicate F			0.814	0.000	0.907	0.000
Replicate Prob(F)			0.4988	1.0000	0.4523	1.0000
Treatment F			6461.732	0.000	46.927	0.000
Treatment Prob(F)			0.0001	1.0000	0.0001	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,7,8,11,13,15,17 because error mean square = 0.
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North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	14*	15*	16*	17*	18*
	Pest Type				W, Weed		W, Weed	W, Weed	W, Weed
	Pest Code				SETPU		HIBTR	AMATA	SETPU
	Pest Scientific Name				Setaria helvola		Hibiscus trionum	Amaranthus x tamariscinus	Setaria helvola
	Pest Name				Yellow foxtail		venice mallow	common water hemp	yellow foxtail
	Crop Type, Code					C, ZEAMX			
	BBCH Scale					BCOR			
	Crop Scientific Name					Zea mays			
	Crop Name					Corn			
	Rating Date				Jul-5-2021	Aug-2-2021	Aug-2-2021	Aug-2-2021	Aug-2-2021
	Rating Type				CONTRO	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				56, 28	84, 56	84, 56	84, 56	84, 56
	Trt-Eval Interval				56 DA-A	84 DA-A	84 DA-A	84 DA-A	84 DA-A
	Days After Emergence				40 DE-1	68 DE-1	68 DE-1	68 DE-1	68 DE-1
1	Untreated				0.0 b	0.0 -	0.0 c	0.0 -	0.0 b
2	BALANCE FLEXX	5.5	fl oz/a	A	99.0 a	0.0 -	98.3 a	99.0 -	99.0 a
	HARNESS	2.5	pt/a	A					
	AATREX	1	pt/a	A					
3	BALANCE FLEXX	4	fl oz/a	A	99.0 a	0.0 -	98.3 a	99.0 -	99.0 a
	CAPRENO	3	fl oz/a	B					
	HARNESS	2	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	AATREX	1	pt/a	B					
	SUPERB HC HSPOC	0.25	% v/v	B					
	N-PAK AMS	8.5	lb ai/100 gal	B					
4	BALANCE FLEXX	4	fl oz/a	A	99.0 a	0.0 -	98.5 a	99.0 -	99.0 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					
5	CAPRENO	3	fl oz/a	B	99.0 a	0.0 -	98.0 a	99.0 -	99.0 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					
6	LAUDIS	3	fl oz/a	B	98.8 a	0.0 -	98.0 a	99.0 -	98.8 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					
7	CAPRENO	3	fl oz/a	B	99.0 a	0.0 -	98.5 a	99.0 -	99.0 a
	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	1	% v/v	B					
8	LAUDIS	3	fl oz/a	B	98.5 a	0.0 -	98.5 a	99.0 -	98.5 a
	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	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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,7,8,11,13,15,17 because error mean square = 0.
^Calculated from residual.

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type			W, Weed		W, Weed	W, Weed	W, Weed
Pest Code			SETPU		HIBTR	AMATA	SETPU
Pest Scientific Name			Setaria helvola		Hibiscus trionum	Amaranthus x tamariscinus	Setaria helvola
Pest Name			Yellow foxtail		venice mallow	common water hemp	yellow foxtail
Crop Type, Code				C, ZEAMX			
BBCH Scale				BCOR			
Crop Scientific Name				Zea mays			
Crop Name				Corn			
Rating Date			Jul-5-2021	Aug-2-2021	Aug-2-2021	Aug-2-2021	Aug-2-2021
Rating Type			CONTRO	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
Days After First/Last Applic.			56, 28	84, 56	84, 56	84, 56	84, 56
Trt-Eval Interval			56 DA-A	84 DA-A	84 DA-A	84 DA-A	84 DA-A
Days After Emergence			40 DE-1	68 DE-1	68 DE-1	68 DE-1	68 DE-1
Trt No.	Treatment Name	Rate / Rate Unit	Appl Code	14*	15*	16*	17*	18*
9	ACURON FLEXI	56 fl oz/a	A	99.0 a	0.0 -	66.0 b	99.0 -	99.0 a
	AATREX	12 fl oz/a	A					
LSD P=.05				0.55	.	17.59	.	0.55
Standard Deviation				0.38	0.00	12.05	0.00	0.38
CV				0.43	0.0	14.39	0.0	0.43
Levene's F^				0.71	.	105.195	.	0.71
Levene's Prob(F)				0.681	.	0.00*	.	0.681
Skewness^				-2.477*	.	-0.0921	.	-2.477*
Kurtosis^				10.2776*	.	5.3247*	.	10.2776*
Replicate F				0.710	0.000	0.964	0.000	0.710
Replicate Prob(F)				0.5557	1.0000	0.4257	1.0000	0.5557
Treatment F				30294.874	0.000	30.319	0.000	30294.874
Treatment Prob(F)				0.0001	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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,7,8,11,13,15,17 because error mean square = 0.
^Calculated from residual.

North Dakota State University

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

Trial ID: 21S-NW22-CORN-01 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-01 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAEOOUKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
HIBTR, Hibiscus trionum, venice mallow = US
AMATA, Amaranthus x tamariscinus, common water hemp = US
SETPU, Setaria helvola, Yellow foxtail = US
Crop Type, Code
C = EPPO species (Bayer) codes
ZEAMX, BCOR, Zea mays, Corn = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Desimini, S = Research Specialist

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Ryan Humann, Corteva

Site and Design
Treated Plot Width: 6.67 FT
Treated Plot Length: 30 FT
Treated Plot Area: 200.1 FT2 **Treatments:** 8
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Silty Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A	B	C	D
Application Date	May-10-2021	May-28-2021	Jun-7-2021	Jun-14-2021
Appl. Start Time	3:30 PM	12:40 PM	9:30 AM	11:50 PM
Appl. Stop Time	4:00 PM	12:45 PM	10:00 AM	11:55 AM
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	PREEM	V1 CORN	V4 CORN	V6 CORN
Application Placement	BROSOI	BROFOL	BROFOL	BANFOL
Applied By	Haugrud, N	Stith, J.	Haugrud, N	Stith, J
Appl. Entry Date	Aug-18-2021	Jun-16-2021	Aug-18-2021	Jun-16-2021
Air Temperature Start, Stop	56, 56 F	65, 65 F	68, 69 F	87, 87 F
% Relative Humidity Start, Stop	26, 26	24, 24	35, 35	23, 23
Wind Velocity+Dir. Start	6 MPH, NE	8.5 MPH, SE	6 MPH, SE	3.4 MPH, N
Wind Velocity+Dir. Stop	6 MPH, NE	8.5 MPH, SE	6 MPH, SE	2.6 MPH, N
Wind Velocity+Dir. Max	7 MPH, NE	10 MPH, SE	7 MPH, SE	3.6 MPH, N
Wet Leaves (Y/N)	N, no	N, no	N, no	N, no
Soil Temperature	53 F	65 F	72 F	80 F
Soil Moisture	DRY	DRY	DRY	NORMAL
Soil Surface Condition	SMOTRA	SMOTRA	SMOTRA	SMOTRA
% Cloud Cover	20	0	5	5

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Application Equipment

	A	B	C	D
Appl. Equipment	Walter	Walter	Narsil	Mjolnir
Equipment Type	BACCAI	BACCAI	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI	28 PSI	28 PSI
Nozzle Model	8002	8002	8002	11002
Nozzle Type	FLAFAN	FLAFAN	FLAFAN	TEEJTU
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN
Boom Length				6.67 FT
Boom Height	18 IN	18 IN	18 IN	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jun-16-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed	W, Weed	W, Weed	
	Pest Code					AMATA	HIBTR	AMBEL	
	Pest Name					common water hemp	Venice mallow	Common ragweed	
	Crop Type, Code				C, ZEAMX				C, ZEAMX
	Crop Name				Corn				Corn
	Rating Date				May-24-2021	May-24-2021	May-24-2021	May-24-2021	Jun-7-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN
	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				14, 14	14, 14	14, 14	14, 14	28, 10
	Days After Emergence				0 DE-1	0 DE-1	0 DE-1	0 DE-1	14 DE-1
1	Untreated				0.0 -	0.0 c	0.0 c	0.0 c	0.0 -
2	GF-4556	3	qt/a	A	0.0 -	98.3 a	97.8 a	98.0 a	0.0 -
	AATREX	1	pt/a	A					
3	GF-4556	3	qt/a	B	0.0 -	89.5 b	89.5 b	88.8 b	0.0 -
	AATREX	1	pt/a	B					
	DURANGO DMA	1	qt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
4	SURESTART II	2	pt/a	A	0.0 -	96.8 a	96.8 a	97.0 a	0.0 -
	GF-4556	1.5	qt/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
5	SURESTART II	2	pt/a	A	0.0 -	95.5 a	95.5 a	95.3 a	0.0 -
	GF-4556	1.5	qt/a	D					
	AATREX	1	pt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
6	ACURON FLEXI	2.25	qt/a	A	0.0 -	96.0 a	95.5 a	96.0 a	0.0 -
	AATREX	1	pt/a	A					
7	TRIPLEFLEX II	2	pt/a	A	0.0 -	95.5 a	94.8 a	95.5 a	0.0 -
	HARNESS MAX	40	fl oz/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
8	DUAL II MAGNUM	2	pt/a	A	0.0 -	95.0 a	93.5 a	94.5 a	0.0 -
	AATREX	1	pt/a	A					
	ACURON FLEXI	1.5	qt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
	LSD P=.05				.	3.39	3.90	3.04	.
	Standard Deviation				0.00	2.31	2.65	2.07	0.00
	CV				0.0	2.77	3.2	2.49	0.0
	Levene's F^				.	0.341	0.639	0.523	.
	Levene's Prob(F)				.	0.927	0.719	0.808	.
	Skewness^				.	-0.1167	-0.0591	-0.4112	.
	Kurtosis^				.	-0.2103	-0.8699	0.2021	.
	Replicate F				0.000	1.791	2.099	2.476	0.000
	Replicate Prob(F)				1.0000	0.1797	0.1309	0.0895	1.0000
	Treatment F				0.000	855.697	640.834	1063.020	0.000
	Treatment Prob(F)				1.0000	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*	9*	10*
	Pest Type				W, Weed	W, Weed	W, Weed		W, Weed
	Pest Code				AMATA	HIBTR	AMBEL		AMATA
	Pest Name				common water hemp	Venice mallow	Common ragweed		common water hemp
	Crop Type, Code							C, ZEAMX	
	Crop Name							Corn	
	Rating Date				Jun-7-2021	Jun-7-2021	Jun-7-2021	Jun-11-2021	Jun-11-2021
	Rating Type				CONTRO	CONTRO	CONTRO	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				28, 10	28, 10	28, 10	32, 4	32, 4
	Days After Emergence				14 DE-1	14 DE-1	14 DE-1	18 DE-1	18 DE-1
1	Untreated				0.0 d	0.0 c	0.0 c	0.0 -	0.0 c
2	GF-4556	3	qt/a	A	98.5 ab	98.3 a	98.2 a	0.0 -	97.5 a
	AATREX	1	pt/a	A					
3	GF-4556	3	qt/a	B	98.8 a	98.3 a	98.9 a	0.0 -	99.0 a
	AATREX	1	pt/a	B					
	DURANGO DMA	1	qt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
4	SURESTART II	2	pt/a	A	98.0 ab	97.5 a	97.8 a	0.0 -	99.0 a
	GF-4556	1.5	qt/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
5	SURESTART II	2	pt/a	A	96.8 b	96.5 a	96.8 a	0.0 -	96.8 a
	GF-4556	1.5	qt/a	D					
	AATREX	1	pt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
6	ACURON FLEXI	2.25	qt/a	A	98.0 ab	97.8 a	98.0 a	0.0 -	99.0 a
	AATREX	1	pt/a	A					
7	TRIPLEFLEX II	2	pt/a	A	98.8 a	98.3 a	98.8 a	0.0 -	99.0 a
	HARNESS MAX	40	fl oz/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
8	DUAL II MAGNUM	2	pt/a	A	94.8 c	94.8 b	94.8 b	0.0 -	93.0 b
	AATREX	1	pt/a	A					
	ACURON FLEXI	1.5	qt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
	LSD P=.05				1.31	1.34	1.32	.	2.62
	Standard Deviation				0.89	0.91	0.88	0.00	1.78
	CV				1.04	1.07	1.06	0.0	2.09
	Levene's F^				2.46	2.111	1.249	.	1.184
	Levene's Prob(F)				0.047*	0.082	0.324	.	0.349
	Skewness^				0.1232	0.599	0.1666	.	-1.7775*
	Kurtosis^				-0.2665	0.9518	-0.3893	.	6.9133*
	Replicate F				1.421	0.943	1.824	0.000	0.325
	Replicate Prob(F)				0.2647	0.4378	0.1811	1.0000	0.8073
	Treatment F				6030.655	5720.440	5958.816	0.000	1506.114
	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	11*	12*	13*	14*	15*	16*
	Pest Type				W, Weed	W, Weed	W, Weed		W, Weed	W, Weed
	Pest Code				SETPU	HIBTR	AMBEL		AMATA	SETPU
	Pest Name				Yellow foxtail	venice mallow	Common ragweed		common water hemp	yellow foxtail
	Crop Type, Code									
	Crop Name									
	Rating Date				Jun-11-2021	Jun-11-2021	Jun-11-2021	Jun-14-2021	Jun-14-2021	Jul-14-2021
	Rating Type				CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				32, 4	32, 4	32, 4	35, 7	35, 7	65, 30
	Days After Emergence				18 DE-1	18 DE-1	18 DE-1	21 DE-1	21 DE-1	51 DE-1
1	Untreated				0.0 b	0.0 c	0.0 c	0.0 -	0.0 c	0.0 b
2	GF-4556	3	qt/a	A	98.0 a	97.5 a	97.8 a	0.0 -	97.5 a	98.0 a
	AATREX	1	pt/a	A						
3	GF-4556	3	qt/a	B	99.0 a	99.0 a	99.0 a	0.0 -	99.0 a	99.0 a
	AATREX	1	pt/a	B						
	DURANGO DMA	1	qt/a	B						
	N-PAK AMS	2.5	% v/v	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
4	SURESTART II	2	pt/a	A	99.0 a	99.0 a	99.0 a	0.0 -	99.0 a	99.0 a
	GF-4556	1.5	qt/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
5	SURESTART II	2	pt/a	A	96.8 a	96.3 a	95.3 ab	0.0 -	96.8 a	96.8 a
	GF-4556	1.5	qt/a	D						
	AATREX	1	pt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
6	ACURON FLEXI	2.25	qt/a	A	98.8 a	98.5 a	98.8 a	0.0 -	99.0 a	98.8 a
	AATREX	1	pt/a	A						
7	TRIPLEFLEX II	2	pt/a	A	99.0 a	99.0 a	99.0 a	0.0 -	99.0 a	99.0 a
	HARNESS MAX	40	fl oz/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
8	DUAL II MAGNUM	2	pt/a	A	94.8 a	92.3 b	93.0 b	0.0 -	93.0 b	94.8 a
	AATREX	1	pt/a	A						
	ACURON FLEXI	1.5	qt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
	LSD P=.05				3.26	2.71	2.60	.	2.62	3.26
	Standard Deviation				2.22	1.84	1.76	0.00	1.78	2.22
	CV				2.59	2.16	2.07	0.0	2.09	2.59
	Levene's F^				1.809	1.72	1.844	.	1.184	1.809
	Levene's Prob(F)				0.132	0.152	0.125	.	0.349	0.132
	Skewness^				-1.7422*	-1.3739*	-1.3074*	.	-1.7775*	-1.7422*
	Kurtosis^				7.6829*	3.8653*	6.9185*	.	6.9133*	7.6829*
	Replicate F				0.481	0.208	0.732	0.000	0.325	0.481
	Replicate Prob(F)				0.6987	0.8894	0.5442	1.0000	0.8073	0.6987
	Treatment F				977.245	1400.548	1528.901	0.000	1506.114	977.245
	Treatment Prob(F)				0.0001	0.0001	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	17*	18*	19*	20*	21*	22*
	Pest Type				W, Weed	W, Weed		W, Weed	W, Weed	W, Weed
	Pest Code				HIBTR	AMBEL		SETPU	HIBTR	AMBEL
	Pest Name				venice mallow	Common ragweed		Yellow Foxtail	Venice Mallow	Common ragweed
	Crop Type, Code						C, ZEAMX			
	Crop Name						Corn			
	Rating Date				Jun-14-2021	Jun-14-2021	Jun-21-2021	Jun-21-2021	Jun-21-2021	Jun-21-2021
	Rating Type				CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-18-2021	Aug-18-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021
	Days After First/Last Applic.				35, 7	35, 7	42, 7	42, 7	42, 7	42, 7
	Days After Emergence				21 DE-1	21 DE-1	28 DE-1	28 DE-1	28 DE-1	28 DE-1
1	Untreated				0.0 c	0.0 c	0.0 -	0.0 c	0.0 c	0.0 c
2	GF-4556	3	qt/a	A	97.5 a	97.8 a	0.0 -	91.5 b	88.0 b	92.0 b
	AATREX	1	pt/a	A						
3	GF-4556	3	qt/a	B	99.0 a	99.0 a	0.0 -	99.0 a	99.0 a	99.0 a
	AATREX	1	pt/a	B						
	DURANGO DMA	1	qt/a	B						
	N-PAK AMS	2.5	% v/v	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
4	SURESTART II	2	pt/a	A	99.0 a	99.0 a	0.0 -	98.8 a	99.0 a	99.0 a
	GF-4556	1.5	qt/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
5	SURESTART II	2	pt/a	A	96.3 a	95.3 ab	0.0 -	99.0 a	99.0 a	98.8 a
	GF-4556	1.5	qt/a	D						
	AATREX	1	pt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
6	ACURON FLEXI	2.25	qt/a	A	98.5 a	98.8 a	0.0 -	98.8 a	95.3 a	98.3 a
	AATREX	1	pt/a	A						
7	TRIPLEFLEX II	2	pt/a	A	99.0 a	99.0 a	0.0 -	99.0 a	99.0 a	99.0 a
	HARNESS MAX	40	fl oz/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
8	DUAL II MAGNUM	2	pt/a	A	92.3 b	93.0 b	0.0 -	98.0 a	97.5 a	97.3 a
	AATREX	1	pt/a	A						
	ACURON FLEXI	1.5	qt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
	LSD P=.05				2.71	2.60	.	4.48	5.04	3.75
	Standard Deviation				1.84	1.76	0.00	3.05	3.43	2.55
	CV				2.16	2.07	0.0	3.56	4.06	2.99
	Levene's F^				1.72	1.844	.	4.488	53.13	35.598
	Levene's Prob(F)				0.152	0.125	.	0.003*	0.00*	0.00*
	Skewness^				-1.3739*	-1.3074*	.	-1.332*	0.0568	-0.0298
	Kurtosis^				3.8653*	6.9185*	.	8.8835*	3.4749*	3.3271*
	Replicate F				0.208	0.732	0.000	1.141	0.697	1.209
	Replicate Prob(F)				0.8894	0.5442	1.0000	0.3554	0.5645	0.3311
	Treatment F				1400.548	1528.901	0.000	517.610	401.915	735.454
	Treatment Prob(F)				0.0001	0.0001	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	23*	24*	25*	26*	27*	28*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed	
	Pest Code					SETPU	HIBTR	AMBEL	AMATA	
	Pest Name					Yellow Foxtail	Venice mallow	Common ragweed	common water hemp	
	Crop Type, Code				C, ZEAMX					C, ZEAMX
	Crop Name				Corn					Corn
	Rating Date				Jun-25-2021	Jun-25-2021	Jun-25-2021	Jun-25-2021	Jun-25-2021	Jun-28-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021
	Days After First/Last Applic.				46, 11	46, 11	46, 11	46, 11	46, 11	49, 14
	Days After Emergence				32 DE-1	32 DE-1	32 DE-1	32 DE-1	32 DE-1	35 DE-1
1	Untreated				0.0 -	0.0 c	0.0 c	0.0 c	0.0 c	0.0 -
2	GF-4556	3	qt/a	A	0.0 -	91.3 b	84.3 b	91.0 b	93.8 b	0.0 -
	AATREX	1	pt/a	A						
3	GF-4556	3	qt/a	B	0.0 -	98.5 a	98.0 a	99.0 a	99.0 a	0.0 -
	AATREX	1	pt/a	B						
	DURANGO DMA	1	qt/a	B						
	N-PAK AMS	2.5	% v/v	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
4	SURESTART II	2	pt/a	A	0.0 -	99.0 a	99.0 a	99.0 a	99.0 a	0.0 -
	GF-4556	1.5	qt/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
5	SURESTART II	2	pt/a	A	0.0 -	99.0 a	99.0 a	99.0 a	99.0 a	0.0 -
	GF-4556	1.5	qt/a	D						
	AATREX	1	pt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
6	ACURON FLEXI	2.25	qt/a	A	0.0 -	98.5 a	92.3 a	97.8 a	98.7 a	0.0 -
	AATREX	1	pt/a	A						
7	TRIPLEFLEX II	2	pt/a	A	0.0 -	99.0 a	99.0 a	99.0 a	99.0 a	0.0 -
	HARNESS MAX	40	fl oz/a	C						
	AATREX	1	pt/a	C						
	DURANGO DMA	1	qt/a	C						
	N-PAK AMS	2.5	% v/v	C						
	ACTIVATOR 90 - NIS	0.25	% v/v	C						
8	DUAL II MAGNUM	2	pt/a	A	0.0 -	98.8 a	98.3 a	98.8 a	98.8 a	0.0 -
	AATREX	1	pt/a	A						
	ACURON FLEXI	1.5	qt/a	D						
	DURANGO DMA	1	qt/a	D						
	N-PAK AMS	2.5	% v/v	D						
	ACTIVATOR 90 - NIS	0.25	% v/v	D						
	LSD P=.05				.	4.21	4.83	3.86	3.28	.
	Standard Deviation				0.00	2.86	3.28	2.62	2.23	0.00
	CV				0.0	3.35	3.92	3.07	2.6	0.0
	Levene's F^				.	1.42	1.071	14.794	21.089	.
	Levene's Prob(F)				.	0.243	0.412	0.00*	0.00*	.
	Skewness^				.	-1.7209*	2.1309*	0.1688	-0.2549	.
	Kurtosis^				.	11.3115*	9.133*	4.0175*	4.5233*	.
	Replicate F				0.000	1.038	1.117	0.927	1.102	0.000
	Replicate Prob(F)				1.0000	0.3963	0.3645	0.4449	0.3716	1.0000
	Treatment F				0.000	586.299	434.968	697.774	970.788	0.000
	Treatment Prob(F)				1.0000	0.0001	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	29*	30*	31*	32*	33*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed	
	Pest Code				SETPU	HIBTR	AMBEL	AMATA	
	Pest Name				Yellow Foxtail	Venice Mallow	Common ragweed	common water hemp	
	Crop Type, Code								C, ZEAMX
	Crop Name								Corn
	Rating Date				Jun-28-2021	Jun-28-2021	Jun-28-2021	Jun-28-2021	Jul-5-2021
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	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-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021
	Days After First/Last Applic.				49, 14	49, 14	49, 14	49, 14	56, 21
	Days After Emergence				35 DE-1	35 DE-1	35 DE-1	35 DE-1	42 DE-1
1	Untreated				0.0 c	0.0 c	0.0 c	0.0 c	0.0 -
2	GF-4556	3	qt/a	A	90.8 b	84.3 b	90.3 b	93.5 b	0.0 -
	AATREX	1	pt/a	A					
3	GF-4556	3	qt/a	B	97.5 a	97.5 a	99.0 a	98.5 a	0.0 -
	AATREX	1	pt/a	B					
	DURANGO DMA	1	qt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
4	SURESTART II	2	pt/a	A	98.5 a	98.3 a	98.3 a	99.0 a	0.0 -
	GF-4556	1.5	qt/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
5	SURESTART II	2	pt/a	A	99.0 a	98.5 a	98.5 a	99.0 a	0.0 -
	GF-4556	1.5	qt/a	D					
	AATREX	1	pt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
6	ACURON FLEXI	2.25	qt/a	A	98.3 a	91.5 a	97.5 a	98.7 a	0.0 -
	AATREX	1	pt/a	A					
7	TRIPLEFLEX II	2	pt/a	A	98.5 a	98.8 a	98.5 a	98.5 a	0.0 -
	HARNESS MAX	40	fl oz/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
8	DUAL II MAGNUM	2	pt/a	A	98.8 a	98.0 a	98.8 a	98.8 a	0.0 -
	AATREX	1	pt/a	A					
	ACURON FLEXI	1.5	qt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
	LSD P=.05				4.82	5.05	3.86	3.24	.
	Standard Deviation				3.27	3.43	2.63	2.20	0.00
	CV				3.85	4.12	3.09	2.58	0.0
	Levene's F^				1.308	0.941	13.791	17.064	.
	Levene's Prob(F)				0.289	0.494	0.00*	0.00*	.
	Skewness^				-1.8465*	1.7925*	0.1682	-0.2487	.
	Kurtosis^				11.1686*	7.3804*	3.9816*	4.0174*	.
	Replicate F				0.749	0.950	0.500	0.898	0.000
	Replicate Prob(F)				0.5350	0.4347	0.6865	0.4597	1.0000
	Treatment F				444.451	393.351	690.146	991.173	0.000
	Treatment Prob(F)				0.0001	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	34*	35*	36*	37*	38*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed	
	Pest Code				AMATA	AMBEL	HIBTR	SETPU	
	Pest Name				common water hemp	Common ragweed	Venice Mallow	Yellow Foxtail	
	Crop Type, Code								C, ZEAMX
	Crop Name								Corn
	Rating Date				Jul-5-2021	Jul-5-2021	Jul-5-2021	Jul-5-2021	Jul-12-2021
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	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-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021	Aug-10-2021
	Days After First/Last Applic.				56, 21	56, 21	56, 21	56, 21	63, 28
	Days After Emergence				42 DE-1	42 DE-1	42 DE-1	42 DE-1	49 DE-1
1	Untreated				0.0 b	0.0 b	0.0 c	0.0 c	0.0 -
2	GF-4556	3	qt/a	A	99.0 a	88.8 a	75.8 b	85.8 b	0.0 -
	AATREX	1	pt/a	A					
3	GF-4556	3	qt/a	B	98.8 a	98.8 a	98.0 a	99.0 a	0.0 -
	AATREX	1	pt/a	B					
	DURANGO DMA	1	qt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
4	SURESTART II	2	pt/a	A	99.0 a	99.0 a	98.5 a	98.8 a	0.0 -
	GF-4556	1.5	qt/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
5	SURESTART II	2	pt/a	A	99.0 a	99.0 a	99.0 a	98.8 a	0.0 -
	GF-4556	1.5	qt/a	D					
	AATREX	1	pt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
6	ACURON FLEXI	2.25	qt/a	A	99.0 a	98.8 a	95.8 a	98.3 a	0.0 -
	AATREX	1	pt/a	A					
7	TRIPLEFLEX II	2	pt/a	A	99.0 a	99.0 a	98.5 a	98.8 a	0.0 -
	HARNESS MAX	40	fl oz/a	C					
	AATREX	1	pt/a	C					
	DURANGO DMA	1	qt/a	C					
	N-PAK AMS	2.5	% v/v	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
8	DUAL II MAGNUM	2	pt/a	A	98.8 a	98.8 a	98.5 a	98.8 a	0.0 -
	AATREX	1	pt/a	A					
	ACURON FLEXI	1.5	qt/a	D					
	DURANGO DMA	1	qt/a	D					
	N-PAK AMS	2.5	% v/v	D					
	ACTIVATOR 90 - NIS	0.25	% v/v	D					
	LSD P=.05				0.38	9.92	12.94	8.03	.
	Standard Deviation				0.26	6.75	8.80	5.46	0.00
	CV				0.3	7.92	10.6	6.44	0.0
	Levene's F^				0.681	0.775	1.725	69.197	.
	Levene's Prob(F)				0.687	0.614	0.15	0.00*	.
	Skewness^				-2.0719*	-2.7227*	-1.8443*	-0.1088	.
	Kurtosis^				6.064*	13.4364*	11.2755*	4.2531*	.
	Replicate F				0.636	1.104	1.298	1.060	0.000
	Replicate Prob(F)				0.5999	0.3698	0.3011	0.3871	1.0000
	Treatment F				74736.826	105.333	61.270	160.183	0.000
	Treatment Prob(F)				0.0001	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	39*	40*	41*	42*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMATA	AMBEL	HIBTR	SETPU
	Pest Name				common water hemp	Common ragweed	Venice Mallow	Yellow Foxtail
	Crop Type, Code							
	Crop Name							
	Rating Date				Jul-12-2021	Jul-12-2021	Jul-12-2021	Jul-12-2021
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit/Min/Max							
	Number of Subsamples				1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				63, 28	63, 28	63, 28	63, 28
	Days After Emergence				49 DE-1	49 DE-1	49 DE-1	49 DE-1
1	Untreated				0.0 b	0.0 b	0.0 c	0.0 c
2	GF-4556	3	qt/a	A	99.0 a	88.8 a	73.0 b	83.3 b
	AATREX	1	pt/a	A				
3	GF-4556	3	qt/a	B	98.5 a	98.8 a	98.0 a	99.0 a
	AATREX	1	pt/a	B				
	DURANGO DMA	1	qt/a	B				
	N-PAK AMS	2.5	% v/v	B				
	ACTIVATOR 90 - NIS	0.25	% v/v	B				
4	SURESTART II	2	pt/a	A	99.0 a	98.8 a	98.0 a	98.8 a
	GF-4556	1.5	qt/a	C				
	AATREX	1	pt/a	C				
	DURANGO DMA	1	qt/a	C				
	N-PAK AMS	2.5	% v/v	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
5	SURESTART II	2	pt/a	A	99.0 a	98.8 a	98.8 a	98.8 a
	GF-4556	1.5	qt/a	D				
	AATREX	1	pt/a	D				
	DURANGO DMA	1	qt/a	D				
	N-PAK AMS	2.5	% v/v	D				
	ACTIVATOR 90 - NIS	0.25	% v/v	D				
6	ACURON FLEXI	2.25	qt/a	A	99.0 a	98.8 a	95.8 a	98.0 a
	AATREX	1	pt/a	A				
7	TRIPLEFLEX II	2	pt/a	A	99.0 a	98.8 a	98.0 a	98.3 a
	HARNESS MAX	40	fl oz/a	C				
	AATREX	1	pt/a	C				
	DURANGO DMA	1	qt/a	C				
	N-PAK AMS	2.5	% v/v	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
8	DUAL II MAGNUM	2	pt/a	A	98.5 a	98.5 a	99.0 a	98.5 a
	AATREX	1	pt/a	A				
	ACURON FLEXI	1.5	qt/a	D				
	DURANGO DMA	1	qt/a	D				
	N-PAK AMS	2.5	% v/v	D				
	ACTIVATOR 90 - NIS	0.25	% v/v	D				
	LSD P=.05				0.45	9.94	12.43	9.50
	Standard Deviation				0.31	6.76	8.46	6.46
	CV				0.36	7.94	10.24	7.66
	Levene's F^				261074097353084000000000000.00	0.774	2.171	72.42
	Levene's Prob(F)				0.00*	0.615	0.074	0.00*
	Skewness^				0.0	-2.7129*	-1.3187*	-0.0784
	Kurtosis^				1.3897	13.3513*	10.6396*	4.101*
	Replicate F				0.000	1.101	1.241	1.113
	Replicate Prob(F)				1.0000	0.3709	0.3200	0.3662
	Treatment F				51309.005	104.718	66.572	113.963
	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. 8=3.3; 27,32=3.8
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,14,19,23,28,33,38 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Evaluation of GF-4556 in 2-Pass Corn Programs

Trial ID: 21S-NW22-CORN-06 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-CORN-06 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21T3J003H-RYH027 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMATA, Amaranthus x tamariscinus, common water hemp = US
HIBTR, Hibiscus trionum, Venice mallow = US
AMBEL, Ambrosia artemisiifolia, Common ragweed = US
SETPU, Setaria helvola, Yellow foxtail = US
Crop Type, Code
C = EPPO species (Bayer) codes
ZEAMX, BCOR, Zea mays, Corn = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Desimini, S = Research Specialist

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Directions:
46.93140000621213, -96.85179153286657

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 13
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Silty Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A	B
Application Date	May-11-2021	Jun-22-2021
Appl. Start Time	9:00 AM	2:20 PM
Appl. Stop Time	9:30 AM	3:00 PM
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POEMCR
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Stith, J
Appl. Entry Date	May-20-2021	Jun-28-2021
Air Temperature Start, Stop	58.8, 58.8 F	83, 81 F
% Relative Humidity Start, Stop	29.1, 29.1	26, 26
Wind Velocity+Dir. Start	1 MPH, S	4 MPH, SW
Wind Velocity+Dir. Stop	1 MPH, S	6 MPH, SW
Wind Velocity+Dir. Max	5.2 MPH, S	9 MPH, SW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	72 F
Soil Moisture	DRY	NORMAL
Soil Surface Condition	SMOTRA	SMOTRA
% Cloud Cover	0	0

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment

	A	B
Appl. Equipment	Walter	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	TT
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1* dAL	2*	3*	4*	5*
	Pest Type						W, Weed	W, Weed	W, Weed
	Pest Code						HIBTR	AMATA	AMBEL
	Pest Name						Venice mallow	common water hemp	Common ragweed
	Crop Type, Code				C, GLXMA	C, GLXMA			
	Crop Name				Soybean	Soybean			
	Rating Date				May-25-2021	Jul-6-2021	Aug-1-2021	Aug-1-2021	Aug-1-2021
	Rating Type				PHYGEN	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				14, 14	56, 14	82, 40	82, 40	82, 40
	Days After Emergence				-1 DE-1	41 DE-1	67 DE-1	67 DE-1	67 DE-1
	ARM Action Codes				AL				
	Number of Decimals								
1	Untreated				0.6 -	0.0 -	0.0 b	0.0 b	0.0 -
2	XTENDIMAX	22	fl oz/a	A	0.6 -	1.3 -	98.0 a	99.0 a	99.0 -
	MON 51817	20	fl oz/a	A					
	MON 301668	30	fl oz/a	A					
	MAULER	8	fl oz/a	A					
	XTENDIMAX	22	fl oz/a	B					
	MON 51817	20	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	INTACT	0.5	% v/v	B					
3	XTENDIMAX	22	fl oz/a	A	0.6 -	3.8 -	97.5 a	99.0 a	99.0 -
	MON 51817	20	fl oz/a	A					
	MON 301668	30	fl oz/a	A					
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
4	XTENDIMAX	22	fl oz/a	A	0.8 -	2.5 -	96.5 a	98.5 a	99.0 -
	MON 51817	20	fl oz/a	A					
	MON 301668	30	fl oz/a	A					
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
5	XTENDIMAX	22	fl oz/a	A	5.3 -	5.0 -	88.5 a	99.0 a	99.0 -
	MON 51817	20	fl oz/a	A					
	MON 301668	30	fl oz/a	A					
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	SELECT MAX	12	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
6	XTENDIMAX	22	fl oz/a	A	0.8 -	2.5 -	96.3 a	99.0 a	99.0 -
	MON 51817	20	fl oz/a	A					
	FIERCE EZ	6	fl oz/a	A					
	INTACT	0.5	% v/v	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	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).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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Due to missing data, the effective replicates used for mean comparisons are: col. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1* dAL	2*	3*	4*	5*
	Pest Type						W, Weed	W, Weed	W, Weed
	Pest Code						HIBTR	AMATA	AMBEL
	Pest Name						Venice mallow	common water hemp	Common ragweed
	Crop Type, Code				C, GLXMA	C, GLXMA			
	Crop Name				Soybean	Soybean			
	Rating Date				May-25-2021	Jul-6-2021	Aug-1-2021	Aug-1-2021	Aug-1-2021
	Rating Type				PHYGEN	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
	Days After First/Last Applic.				14, 14	56, 14	82, 40	82, 40	82, 40
	Days After Emergence				-1 DE-1	41 DE-1	67 DE-1	67 DE-1	67 DE-1
	ARM Action Codes				AL				
	Number of Decimals								
7	XTENDIMAX	22	fl oz/a	A	0.8 -	2.5 -	97.8 a	99.0 a	99.0 -
	MON 51817	20	fl oz/a	A					
	FIERCE EZ	6	fl oz/a	A					
	INTACT	0.5	% v/v	A					
	XTENDIMAX	22	fl oz/a	B					
	MON 51817	20	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	INTACT	0.5	% v/v	B					
8	MON 301668	30	fl oz/a	A	2.1 -	6.3 -	92.8 a	99.0 a	99.0 -
	MAULER	8	fl oz/a	A					
	XTENDIMAX	22	fl oz/a	B					
	MON 51817	20	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	INTACT	0.5	% v/v	B					
9	MON 301668	30	fl oz/a	A	0.6 -	5.0 -	70.5 a	99.0 a	99.0 -
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
10	MON 301668	30	fl oz/a	A	1.4 -	3.8 -	76.3 a	98.3 a	99.0 -
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX 3	30	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
11	MON 301668	30	fl oz/a	A	2.3 -	3.8 -	76.0 a	98.5 a	99.0 -
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	SELECT MAX	12	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
12	MON 301668	30	fl oz/a	A	4.7 -	6.3 -	97.0 a	99.0 a	99.0 -
	MAULER	8	fl oz/a	A					
	LIBERTY 280 SL	32	fl oz/a	B					
	MON 301668	30	fl oz/a	B					
	XTENDIMAX	22	fl oz/a	B					
	MON 51817	20	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	INTACT	0.5	% v/v	B					

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type				W, Weed	W, Weed	W, Weed
Pest Code				HIBTR	AMATA	AMBEL
Pest Name				Venice mallow	common water hemp	Common ragweed
Crop Type, Code		C, GLXMA	C, GLXMA			
Crop Name		Soybean	Soybean			
Rating Date		May-25-2021	Jul-6-2021	Aug-1-2021	Aug-1-2021	Aug-1-2021
Rating Type		PHYGEN	PHYGEN	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-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021	Aug-18-2021
Days After First/Last Applic.		14, 14	56, 14	82, 40	82, 40	82, 40
Days After Emergence		-1 DE-1	41 DE-1	67 DE-1	67 DE-1	67 DE-1
ARM Action Codes		AL				
Number of Decimals						
Trt No.	Treatment Name	Rate Rate Unit	Appl Code	1* dAL	2*	3*	4*	5*
13	MON 301668	30 fl oz/a	A	10.0 -	8.8 -	97.8 a	99.0 a	99.0 -
	MAULER	8 fl oz/a	A					
	LIBERTY 280 SL	32 fl oz/a	B					
	ROUNDUP POWERMAX 3	30 fl oz/a	B					
	MON 301668	30 fl oz/a	B					
	XTENDIMAX	22 fl oz/a	B					
	MON 51817	20 fl oz/a	B					
	CLASS ACT RIDION	1 % v/v	B					
	INTACT	0.5 % v/v	B					
LSD P=.05				6.01 - 8.73	5.67	21.48	0.52	.
Standard Deviation				0.48t	3.95	14.98	0.36	0.00
CV				111.72t	100.27	17.95	0.4	0.0
Levene's F^				0.356	0.852	1.432	12.742	.
Levene's Prob(F)				0.971	0.599	0.193	0.00*	.
Skewness^				0.3644	0.6207	-1.0509*	-0.7977*	.
Kurtosis^				-0.5676	0.025	2.3226*	5.65*	.
Replicate F				0.915	2.000	2.654	0.148	0.000
Replicate Prob(F)				0.4433	0.1314	0.0632	0.9306	1.0000
Treatment F				1.368	1.390	12.910	23070.740	0.000
Treatment Prob(F)				0.2258	0.2156	0.0001	0.0001	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*
	Pest Type						
	Pest Code						
	Pest Name						
	Crop Type, Code				C, GLXMA	C, GLXMA	C, GLXMA
	Crop Name				Soybean	Soybean	Soybean
	Rating Date				Nov-1-2021	Nov-1-2021	Nov-1-2021
	Rating Type				YIELD	MOICON	YIELD
	Rating Unit/Min/Max				g, -, -	%, 0, 100	BU, -, -
	Number of Subsamples				1	1	1
	Assessed By						
	Data Entry Date				Nov-5-2021	Nov-5-2021	
	Days After First/Last Applic.				174, 132	174, 132	174, 132
	Days After Emergence				159 DE-1	159 DE-1	159 DE-1
	ARM Action Codes						TY1
	Number of Decimals						1
1	Untreated				103.0 b	13.73 -	1.3 b
2	XTENDIMAX	22	fl oz/a	A	1498.5 a	13.42 -	19.1 a
	MON 51817	20	fl oz/a	A			
	MON 301668	30	fl oz/a	A			
	MAULER	8	fl oz/a	A			
	XTENDIMAX	22	fl oz/a	B			
	MON 51817	20	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	CLASS ACT RIDION	1	% v/v	B			
	INTACT	0.5	% v/v	B			
3	XTENDIMAX	22	fl oz/a	A	1819.5 a	13.00 -	23.3 a
	MON 51817	20	fl oz/a	A			
	MON 301668	30	fl oz/a	A			
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
4	XTENDIMAX	22	fl oz/a	A	1714.3 a	12.95 -	22.0 a
	MON 51817	20	fl oz/a	A			
	MON 301668	30	fl oz/a	A			
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
5	XTENDIMAX	22	fl oz/a	A	1800.5 a	12.75 -	23.1 a
	MON 51817	20	fl oz/a	A			
	MON 301668	30	fl oz/a	A			
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	SELECT MAX	12	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
6	XTENDIMAX	22	fl oz/a	A	1382.9 a	13.45 -	17.7 a
	MON 51817	20	fl oz/a	A			
	FIERCE EZ	6	fl oz/a	A			
	INTACT	0.5	% v/v	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	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).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*
	Pest Type						
	Pest Code						
	Pest Name						
	Crop Type, Code				C, GLXMA	C, GLXMA	C, GLXMA
	Crop Name				Soybean	Soybean	Soybean
	Rating Date				Nov-1-2021	Nov-1-2021	Nov-1-2021
	Rating Type				YIELD	MOICON	YIELD
	Rating Unit/Min/Max				g, -, -	%, 0, 100	BU, -, -
	Number of Subsamples				1	1	1
	Assessed By						
	Data Entry Date				Nov-5-2021	Nov-5-2021	
	Days After First/Last Applic.				174, 132	174, 132	174, 132
	Days After Emergence				159 DE-1	159 DE-1	159 DE-1
	ARM Action Codes						TY1
	Number of Decimals						1
7	XTENDIMAX	22	fl oz/a	A	1680.3 a	14.45 -	21.1 a
	MON 51817	20	fl oz/a	A			
	FIERCE EZ	6	fl oz/a	A			
	INTACT	0.5	% v/v	A			
	XTENDIMAX	22	fl oz/a	B			
	MON 51817	20	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	CLASS ACT RIDION	1	% v/v	B			
	INTACT	0.5	% v/v	B			
8	MON 301668	30	fl oz/a	A	1677.6 a	12.81 -	21.5 a
	MAULER	8	fl oz/a	A			
	XTENDIMAX	22	fl oz/a	B			
	MON 51817	20	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	CLASS ACT RIDION	1	% v/v	B			
	INTACT	0.5	% v/v	B			
9	MON 301668	30	fl oz/a	A	1959.3 a	13.43 -	25.0 a
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
10	MON 301668	30	fl oz/a	A	1743.5 a	14.08 -	22.0 a
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
11	MON 301668	30	fl oz/a	A	1681.3 a	12.80 -	21.6 a
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	SELECT MAX	12	fl oz/a	B			
	N-PAK AMS	2.5	% v/v	B			
12	MON 301668	30	fl oz/a	A	1685.8 a	12.33 -	21.7 a
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	XTENDIMAX	22	fl oz/a	B			
	MON 51817	20	fl oz/a	B			
	CLASS ACT RIDION	1	% v/v	B			
	INTACT	0.5	% v/v	B			

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*
	Pest Type						
	Pest Code						
	Pest Name						
	Crop Type, Code				C, GLXMA	C, GLXMA	C, GLXMA
	Crop Name				Soybean	Soybean	Soybean
	Rating Date				Nov-1-2021	Nov-1-2021	Nov-1-2021
	Rating Type				YIELD	MOICON	YIELD
	Rating Unit/Min/Max				g, -, -	%, 0, 100	BU, -, -
	Number of Subsamples				1	1	1
	Assessed By						
	Data Entry Date				Nov-5-2021	Nov-5-2021	
	Days After First/Last Applic.				174, 132	174, 132	174, 132
	Days After Emergence				159 DE-1	159 DE-1	159 DE-1
	ARM Action Codes						TY1
	Number of Decimals						1
13	MON 301668	30	fl oz/a	A	1637.3 a	13.35 -	20.9 a
	MAULER	8	fl oz/a	A			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX 3	30	fl oz/a	B			
	MON 301668	30	fl oz/a	B			
	XTENDIMAX	22	fl oz/a	B			
	MON 51817	20	fl oz/a	B			
	CLASS ACT RIDION	1	% v/v	B			
	INTACT	0.5	% v/v	B			
	LSD P=.05				402.53	1.824	5.10
	Standard Deviation				279.47	1.266	3.54
	CV				17.75	9.54	17.62
	Levene's F^				0.801	0.424	0.796
	Levene's Prob(F)				0.647	0.943	0.651
	Skewness^				0.3496	0.3126	0.4104
	Kurtosis^				-0.0096	-0.2507	0.0639
	Replicate F				1.288	0.858	1.422
	Replicate Prob(F)				0.2952	0.4729	0.2544
	Treatment F				10.879	0.869	11.060
	Treatment Prob(F)				0.0001	0.5847	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
t=Mean descriptions are reported in transformed data units, and are not de-transformed.
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. 6-8=3.5
* Adjusted means
Could not calculate LSD (% mean diff) for columns 5 because error mean square = 0.
^Calculated from residual.
d=Means are reported in de-transformed data units

North Dakota State University

Xtendimax Programs in Xtendflex Soybean

Trial ID: 21S-NW22-SOY-02 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-02 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USAMG1TKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
HIBTR, Hibiscus trionum, Venice mallow = US
AMATA, Amaranthus x tamariscinus, common water hemp = US
AMBEL, Ambrosia artemisiifolia, Common ragweed = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
YIELD = yield
MOICON = moisture content
Rating Unit/Min/Max
%, 0, 100 = percent
g, , = gram
BU, , = bushel
Assessed By
Desimini, S = Research Specialist
ARM Action Codes
AL = Automatic log transformation of X+1
TY1 = 0.01280445*[6]*(100-@MVAVGREP([7]))/87

North Dakota State University

Xtendimax and Soil Residual Products applied Preemergence in Conventional Tillage System

Trial ID: 21S-NW22-SOY-03 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-03 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHATKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information

Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Latitude of LL Corner °: 46.9299778 N
Longitude of LL Corner °: -96.8514917 W

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: 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:** RACOBL Randomized Complete Block (RCB)

Soil Description

Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Silty Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A
Application Date	May-11-2021
Appl. Start Time	10:40 AM
Appl. Stop Time	11:05 AM
Application Method	SPRAY
Application Timing	PREEM
Application Placement	BROSOI
Applied By	Stith, J
Appl. Entry Date	May-20-2021
Air Temperature Start, Stop	63.1, 63.1 F
% Relative Humidity Start, Stop	23.7, 23.7
Wind Velocity+Dir. Start	5.5 MPH, SW
Wind Velocity+Dir. Stop	5.5 MPH, SW
Wind Velocity+Dir. Max	6.7 MPH, SW
Wet Leaves (Y/N)	N, no
Soil Temperature	51 F
Soil Moisture	DRY
Soil Surface Condition	CLODDY
% Cloud Cover	0

North Dakota State University

Xtendimax and Soil Residual Products applied Preemergence in Conventional Tillage System

Trial ID: 21S-NW22-SOY-03 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-03 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHATKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment

	A
Appl. Equipment	Walter
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	11002
Nozzle Type	TEEJAI
Nozzle Spacing	20 IN
Boom Length	6.67 FT
Boom Height	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Xtendimax and Soil Residual Products applied Preemergence in Conventional Tillage System

Trial ID: 21S-NW22-SOY-03 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-03 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHATKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed		W, Weed	
	Pest Code					AMATA		AMATA	
	Pest Name					common water hemp		common water hemp	
	Crop Type, Code				C, GLXMA		C, GLXMA		C, GLXMA
	Crop Name				Soybean		Soybean		Soybean
	Rating Date				May-26-2021	May-26-2021	Jun-1-2021	Jun-1-2021	Jun-15-2021
	Rating Type				PHYGEN	CONTRO	PHYGEN	CONTRO	PHYGEN
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				15, 15	15, 15	21, 21	21, 21	35, 35
	Trt-Eval Interval				15 DA-A	15 DA-A	21 DA-A	21 DA-A	35 DA-A
	Days After Emergence				0 DE-1	0 DE-1	6 DE-1	6 DE-1	20 DE-1
1	Untreated				0.0 -	0.0 -	0.0 c	0.0 d	0.0 -
2	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 c	90.0 bc	0.0 -
	MAULER	8	fl oz/a	A					
3	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 c	88.8 c	0.0 -
4	FIERCE EZ	6	fl oz/a	A	0.0 -	99.0 -	0.0 c	90.0 bc	0.0 -
5	VALOR EZ	2	fl oz/a	A	0.0 -	99.0 -	0.0 c	91.3 bc	0.0 -
6	AUTHORITY MTZ	10	oz/a	A	0.0 -	99.0 -	0.0 c	92.5 b	0.0 -
7	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 c	97.0 a	0.0 -
	MAULER	8	fl oz/a	A					
	XTENDIMAX	22	fl oz/a	A					
	MON 51817	20	fl oz/a	A					
8	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	2.5 bc	99.0 a	0.0 -
	XTENDIMAX	22	fl oz/a	A					
	MON 51817	20	fl oz/a	A					
9	FIERCE EZ	6	fl oz/a	A	0.0 -	99.0 -	5.0 a	99.0 a	0.0 -
	XTENDIMAX	22	fl oz/a	A					
	MON 51817	20	fl oz/a	A					
	INTACT	0.5	% v/v	A					
10	VALOR EZ	2	fl oz/a	A	0.0 -	99.0 -	3.8 ab	99.0 a	0.0 -
	XTENDIMAX	22	fl oz/a	A					
	MON 51817	20	fl oz/a	A					
11	AUTHORITY MTZ	10	oz/a	A	0.0 -	99.0 -	5.0 a	99.0 a	0.0 -
	XTENDIMAX	22	fl oz/a	A					
	MON 51817	20	fl oz/a	A					
	LSD P=.05				.	.	1.61	2.15	.
	Standard Deviation				0.00	0.00	1.12	1.49	0.00
	CV				0.0	0.0	75.68	1.73	0.0
	Levene's F^				.	.	3.286	1.95	.
	Levene's Prob(F)				.	.	0.005*	0.073	.
	Skewness^				.	.	-0.8344*	0.2468	.
	Kurtosis^				.	.	3.7515*	1.2351	.
	Replicate F				0.000	0.000	1.667	1.788	0.000
	Replicate Prob(F)				1.0000	1.0000	0.1952	0.1706	1.0000
	Treatment F				0.000	0.000	14.818	1496.124	0.000
	Treatment Prob(F)				1.0000	1.0000	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. 1=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,5 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Xtendimax and Soil Residual Products applied Preemergence in Conventional Tillage System

Trial ID: 21S-NW22-SOY-03 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-03 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHATKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*
	Pest Type				W, Weed	W, Weed
	Pest Code				AMATA	AMATA
	Pest Name				common water hemp	common water hemp
	Crop Type, Code					
	Crop Name					
	Rating Date				Jun-15-2021	Jun-29-2021
	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-12-2021	Aug-12-2021
	Days After First/Last Applic.				35, 35	49, 49
	Trt-Eval Interval				35 DA-A	49 DA-A
	Days After Emergence				20 DE-1	34 DE-1
1	Untreated				0.0 d	0.0 d
2	MON 301668	30	fl oz/a	A	67.5 b	85.0 ab
	MAULER	8	fl oz/a	A		
3	MON 301668	30	fl oz/a	A	87.5 a	86.3 ab
4	FIERCE EZ	6	fl oz/a	A	85.0 a	82.5 ab
5	VALOR EZ	2	fl oz/a	A	41.3 c	27.5 c
6	AUTHORITY MTZ	10	oz/a	A	87.5 a	68.8 b
7	MON 301668	30	fl oz/a	A	97.0 a	98.8 a
	MAULER	8	fl oz/a	A		
	XTENDIMAX	22	fl oz/a	A		
	MON 51817	20	fl oz/a	A		
8	MON 301668	30	fl oz/a	A	98.0 a	98.0 a
	XTENDIMAX	22	fl oz/a	A		
	MON 51817	20	fl oz/a	A		
9	FIERCE EZ	6	fl oz/a	A	97.0 a	93.3 ab
	XTENDIMAX	22	fl oz/a	A		
	MON 51817	20	fl oz/a	A		
	INTACT	0.5	% v/v	A		
10	VALOR EZ	2	fl oz/a	A	94.8 a	88.8 ab
	XTENDIMAX	22	fl oz/a	A		
	MON 51817	20	fl oz/a	A		
11	AUTHORITY MTZ	10	oz/a	A	99.0 a	95.8 a
	XTENDIMAX	22	fl oz/a	A		
	MON 51817	20	fl oz/a	A		
	LSD P=.05				11.78	16.97
	Standard Deviation				8.16	11.75
	CV				10.5	15.68
	Levene's F^				2.978	0.817
	Levene's Prob(F)				0.009*	0.615
	Skewness^				-0.7963*	-1.1311*
	Kurtosis^				4.3309*	5.0947*
	Replicate F				1.913	3.201
	Replicate Prob(F)				0.1488	0.0373
	Treatment F				57.799	29.679
	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=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,5 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Xtendimax and Soil Residual Products applied Preemergence in Conventional Tillage System

Trial ID: 21S-NW22-SOY-03 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-03 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHATKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMATA, Amaranthus x tamariscinus, common water hemp = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

General Trial Information

Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Latitude of LL Corner °: 46.9322472 N
Longitude of LL Corner °: -96.8515333 W

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: 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:** RACOBL Randomized Complete Block (RCB)

Soil Description

Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Silty Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A
Application Date	May-11-2021
Appl. Start Time	8:30 AM
Appl. Stop Time	8:55 AM
Application Method	SPRAY
Application Timing	PREEM
Application Placement	BROSOI
Applied By	Stith, J
Appl. Entry Date	May-20-2021
Air Temperature Start, Stop	56.2, 56.2 F
% Relative Humidity Start, Stop	30.2, 30.2
Wind Velocity+Dir. Start	1.2 MPH, S
Wind Velocity+Dir. Stop	1.2 MPH, S
Wind Velocity+Dir. Max	3.6 MPH, S
Wet Leaves (Y/N)	N, no
Soil Temperature	51 F
Soil Moisture	DRY
Soil Surface Condition	SMOTRA
% Cloud Cover	0

North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Application Equipment

	A
Appl. Equipment	Walter
Equipment Type	BACCAI
Operation Pressure	28 PSI
Nozzle Model	11002
Nozzle Type	TEEJAI
Nozzle Spacing	20 IN
Boom Length	6.67 FT
Boom Height	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed		W, Weed	W, Weed
	Pest Code					AMATA		AMATA	AMATA
	Pest Name					common water hemp		common water hemp	common water hemp
	Crop Type, Code				C, GLXMA		C, GLXMA		
	Crop Name				Soybean		Soybean		
	Rating Date				May-26-2021	May-26-2021	Jul-1-2021	Jun-1-2021	Jun-15-2021
	Rating Type				PHYGEN	CONTRO	PHYGEN	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				15, 15	15, 15	51, 51	21, 21	35, 35
	Trt-Eval Interval				15 DA-A	15 DA-A	51 DA-A	21 DA-A	35 DA-A
	Days After Emergence				0 DE-1	0 DE-1	36 DE-1	6 DE-1	20 DE-1
1	ROUNDUP POWERMAX 3	30	fl oz/a	A	0.0 -	0.0 -	0.0 -	0.0 b	0.0 d
	CLASS ACT RIDION	1	% v/v	A					
2	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 -	96.8 a	83.8 abc
	MAULER	8	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
3	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 -	94.8 a	73.8 c
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
4	FIERCE EZ	6	fl oz/a	A	0.0 -	99.0 -	0.0 -	97.0 a	88.8 ab
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
5	VALOR EZ	2	fl oz/a	A	0.0 -	99.0 -	0.0 -	98.0 a	77.5 bc
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
6	AUTHORITY MTZ	10	oz/a	A	0.0 -	99.0 -	0.0 -	98.0 a	88.8 ab
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
7	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 -	99.0 a	96.0 a
	MAULER	8	fl oz/a	A					
	XTENDIMAX	22	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
	INTACT	0.5	% v/v	A					
	MON 51817	20	fl oz/a	A					
8	MON 301668	30	fl oz/a	A	0.0 -	99.0 -	0.0 -	99.0 a	96.0 a
	XTENDIMAX	22	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
	INTACT	0.5	% v/v	A					
	MON 51817	20	fl oz/a	A					
9	FIERCE EZ	6	fl oz/a	A	0.0 -	99.0 -	0.0 -	99.0 a	96.8 a
	XTENDIMAX	22	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
	INTACT	0.5	% v/v	A					
	MON 51817	20	fl oz/a	A					
10	VALOR EZ	2	fl oz/a	A	0.0 -	99.0 -	0.0 -	99.0 a	94.8 a
	XTENDIMAX	22	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
	INTACT	0.5	% v/v	A					
	MON 51817	20	fl oz/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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,3 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed		W, Weed	W, Weed
	Pest Code					AMATA		AMATA	AMATA
	Pest Name					common water hemp		common water hemp	common water hemp
	Crop Type, Code				C, GLXMA		C, GLXMA		
	Crop Name				Soybean		Soybean		
	Rating Date				May-26-2021	May-26-2021	Jul-1-2021	Jun-1-2021	Jun-15-2021
	Rating Type				PHYGEN	CONTRO	PHYGEN	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				15, 15	15, 15	51, 51	21, 21	35, 35
	Trt-Eval Interval				15 DA-A	15 DA-A	51 DA-A	21 DA-A	35 DA-A
	Days After Emergence				0 DE-1	0 DE-1	36 DE-1	6 DE-1	20 DE-1
11	AUTHORITY MTZ	10	oz/a	A	0.0 -	99.0 -	0.0 -	99.0 a	94.8 a
	XTENDIMAX	22	fl oz/a	A					
	ROUNDUP POWERMAX 3	30	fl oz/a	A					
	CLASS ACT RIDION	1	% v/v	A					
	INTACT	0.5	% v/v	A					
	MON 51817	20	fl oz/a	A					
	LSD P=.05				.	.	.	3.04	8.95
	Standard Deviation				0.00	0.00	0.00	2.10	6.20
	CV				0.0	0.0	0.0	2.36	7.65
	Levene's F^				.	.	.	1.18	2.219
	Levene's Prob(F)				.	.	.	0.338	0.042*
	Skewness^				.	.	.	-1.2936*	-0.6912
	Kurtosis^				.	.	.	3.4183*	1.5806*
	Replicate F				0.000	0.000	0.000	0.665	0.561
	Replicate Prob(F)				1.0000	1.0000	1.0000	0.5803	0.6449
	Treatment F				0.000	0.000	0.000	790.472	81.585
	Treatment Prob(F)				1.0000	1.0000	1.0000	0.0001	0.0001

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North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type	W, Weed
Pest Code	AMATA
Pest Name	common water hemp
Crop Type, Code	
Crop Name	
Rating Date	Jun-29-2021
Rating Type	CONTRO
Rating Unit/Min/Max	%, 0, 100
Number of Subsamples	1
Assessed By	Ikley, J
Data Entry Date	Aug-12-2021
Days After First/Last Applic.	49, 49
Trt-Eval Interval	49 DA-A
Days After Emergence	34 DE-1

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*
1	ROUNDUP POWERMAX 3	30	fl oz/a	A	0.0 d
	CLASS ACT RIDION	1	% v/v	A	
2	MON 301668	30	fl oz/a	A	87.5 ab
	MAULER	8	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
3	MON 301668	30	fl oz/a	A	73.8 c
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
4	FIERCE EZ	6	fl oz/a	A	97.0 a
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
5	VALOR EZ	2	fl oz/a	A	82.5 b
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
6	AUTHORITY MTZ	10	oz/a	A	91.3 a
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
7	MON 301668	30	fl oz/a	A	97.0 a
	MAULER	8	fl oz/a	A	
	XTENDIMAX	22	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
	INTACT	0.5	% v/v	A	
	MON 51817	20	fl oz/a	A	
8	MON 301668	30	fl oz/a	A	95.3 a
	XTENDIMAX	22	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
	INTACT	0.5	% v/v	A	
	MON 51817	20	fl oz/a	A	
9	FIERCE EZ	6	fl oz/a	A	97.5 a
	XTENDIMAX	22	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
	INTACT	0.5	% v/v	A	
	MON 51817	20	fl oz/a	A	
10	VALOR EZ	2	fl oz/a	A	95.0 a
	XTENDIMAX	22	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
	INTACT	0.5	% v/v	A	
	MON 51817	20	fl oz/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.
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North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type				W, Weed
Pest Code				AMATA
Pest Name				common water hemp
Crop Type, Code				
Crop Name				
Rating Date				Jun-29-2021
Rating Type				CONTRO
Rating Unit/Min/Max				%, 0, 100
Number of Subsamples				1
Assessed By				Ikley, J
Data Entry Date				Aug-12-2021
Days After First/Last Applic.				49, 49
Trt-Eval Interval				49 DA-A
Days After Emergence				34 DE-1
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*
11	AUTHORITY MTZ	10	oz/a	A	96.5 a
	XTENDIMAX	22	fl oz/a	A	
	ROUNDUP POWERMAX 3	30	fl oz/a	A	
	CLASS ACT RIDION	1	% v/v	A	
	INTACT	0.5	% v/v	A	
	MON 51817	20	fl oz/a	A	
LSD P=.05					6.72
Standard Deviation					4.65
CV					5.6
Levene's F^					2.804
Levene's Prob(F)					0.012*
Skewness^					-0.3004
Kurtosis^					0.9536
Replicate F					3.523
Replicate Prob(F)					0.0268
Treatment F					150.434
Treatment Prob(F)					0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2,3 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Xtendimax and Soil Residual Products Applied Preemergence in No Tillage System

Trial ID: 21S-NW22-SOY-04 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-04 Investigator (Creator): Dr. Joe Ikley
Project ID: HP21USADHBTKT1 Study Director: Dr. Joe Ikley
Sponsor Contact: Kevin Thorsness, Bayer

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMATA, Amaranthus x tamariscinus, common water hemp = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Ryan Humann, Corteva

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:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: NW22
% Sand: 3 **% OM:** 5.3 **Texture:** SIC silty clay
% Silt: 48 **pH:** 8.0 **Soil Name:** Fargo Slity Clay
% Clay: 49 **CEC:** 36.3

Application Description

	A	B
Application Date	May-11-2021	Jun-24-2021
Appl. Start Time	9:50 AM	12:50 PM
Appl. Stop Time	10:10 AM	1:15 PM
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POEMCR
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Desimini, S
Appl. Entry Date	May-20-2021	Jun-30-2021
Air Temperature Start, Stop	62.9, 62.9 F	91, 92 F
% Relative Humidity Start, Stop	27.1, 27.1	30, 30
Wind Velocity+Dir. Start	1.7 MPH, SW	4 MPH, W
Wind Velocity+Dir. Stop	1.7 MPH, SW	3 MPH, W
Wind Velocity+Dir. Max	5.2 MPH, SW	5 MPH, W
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	80 F
Soil Moisture	DRY	NORMAL
Soil Surface Condition	SMOTRA	SMOTRA
% Cloud Cover	0	15

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Application Equipment

	A	B
Appl. Equipment	Walter	Mjolnir
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 Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
	Pest Type					W, Weed	W, Weed		W, Weed	W, Weed
	Pest Code					SETPU	AMATA		SETPU	AMATA
	Pest Name					yellow foxtail	common water hemp		yellow foxtail	common water hemp
	Crop Type, Code				C, GLXMA			C, GLXMA		
	Crop Name				Soybean			Soybean		
	Rating Date				May-25-2021	May-25-2021	May-25-2021	Jun-8-2021	Jun-8-2021	Jun-8-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
	Days After First/Last Applic.				14, 14	14, 14	14, 14	28, 28	28, 28	28, 28
	Days After Emergence				1 DE-1	1 DE-1	1 DE-1	15 DE-1	15 DE-1	15 DE-1
1	Untreated				0.0 -	0.0 d	0.0 d	0.0 -	0.0 c	0.0 d
2	SONIC	5	oz/a	A	0.0 -	99.0 a	99.0 a	0.0 -	98.8 a	98.8 a
	ENLIST ONE	2	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
3	SONIC	5	oz/a	A	0.0 -	98.3 ab	98.3 ab	0.0 -	96.3 a	96.3 ab
	ENLIST ONE	2	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
4	SONIC	5	oz/a	A	0.0 -	98.0 ab	98.0 ab	0.0 -	96.8 a	96.8 ab
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
5	KYBER	1	pt/a	A	0.0 -	98.0 ab	98.0 ab	0.0 -	97.8 a	97.8 a
	ENLIST ONE	2	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
6	KYBER	1	pt/a	A	0.0 -	95.8 bc	95.8 bc	0.0 -	66.8 b	92.5 c
	ENLIST ONE	2	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
7	KYBER	1	pt/a	A	0.0 -	94.5 c	94.5 c	0.0 -	91.5 a	91.5 c
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
8	KYBER	1	pt/a	A	0.0 -	95.3 bc	95.3 bc	0.0 -	93.8 a	93.8 bc
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
9	SONIC	5	oz/a	A	0.0 -	96.3 abc	96.3 abc	0.0 -	93.8 a	93.8 bc
	ENLIST ONE	1	qt/a	B						
	DURANGO DMA	1	qt/a	B						
	LIBERTY 280 SL	1	qt/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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,12,13 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
	Pest Type					W, Weed	W, Weed		W, Weed	W, Weed
	Pest Code					SETPU	AMATA		SETPU	AMATA
	Pest Name					yellow foxtail	common water hemp		yellow foxtail	common water hemp
	Crop Type, Code				C, GLXMA			C, GLXMA		
	Crop Name				Soybean			Soybean		
	Rating Date				May-25-2021	May-25-2021	May-25-2021	Jun-8-2021	Jun-8-2021	Jun-8-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
	Days After First/Last Applic.				14, 14	14, 14	14, 14	28, 28	28, 28	28, 28
	Days After Emergence				1 DE-1	1 DE-1	1 DE-1	15 DE-1	15 DE-1	15 DE-1
10	KYBER	1	pt/a	A	0.0 -	97.0 abc	97.0 abc	0.0 -	94.3 a	94.3 bc
	ENLIST ONE	1	qt/a	B						
	DURANGO DMA	1	qt/a	B						
	LIBERTY 280 SL	1	qt/a	B						
	N-PAK AMS	2.5	% v/v	B						
	LSD P=.05				.	2.07	2.07	.	14.48	2.57
	Standard Deviation				0.00	1.43	1.43	0.00	9.98	1.77
	CV				0.0	1.64	1.64	0.0	12.03	2.07
	Levene's F^				.	0.54	0.54	.	125.163	1.00
	Levene's Prob(F)				.	0.833	0.833	.	0.00*	0.462
	Skewness^				.	-0.4037	-0.4037	.	0.0011	0.1512
	Kurtosis^				.	-0.5517	-0.5517	.	5.5366*	0.9342
	Replicate F				0.000	2.127	2.127	0.000	0.850	0.475
	Replicate Prob(F)				1.0000	0.1201	0.1201	1.0000	0.4785	0.7022
	Treatment F				0.000	1847.477	1847.477	0.000	37.546	1157.277
	Treatment Prob(F)				1.0000	0.0001	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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,12,13 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7*	8*	9*	10*	11*	12*
	Pest Type					W, Weed	W, Weed	W, Weed		W, Weed
	Pest Code					SETPU	AMATA	AMBEL		SETPU
	Pest Name					yellow foxtail	common water hemp	Common ragweed		yellow foxtail
	Crop Type, Code				C, GLXMA				C, GLXMA	
	Crop Name				Soybean				Soybean	
	Rating Date				Jun-25-2021	Jun-25-2021	Jun-25-2021	Jun-25-2021	Jul-8-2021	Jul-8-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By					Desimini, S	Desimini, S	Desimini, S	Desimini, S	Desimini, S
	Data Entry Date				Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
	Days After First/Last Applic.				45, 1	45, 1	45, 1	45, 1	58, 14	58, 14
	Days After Emergence				32 DE-1	32 DE-1	32 DE-1	32 DE-1	45 DE-1	45 DE-1
1	Untreated				0.0 b	0.0 c	0.0 b	0.0 b	0.0 b	0.0 -
2	SONIC	5	oz/a	A	6.3 ab	99.0 a	99.0 a	98.5 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
3	SONIC	5	oz/a	A	7.5 a	98.3 a	98.3 a	99.0 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
4	SONIC	5	oz/a	A	5.0 ab	98.5 a	98.5 a	96.5 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
5	KYBER	1	pt/a	A	5.0 ab	94.8 ab	95.8 a	95.5 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
6	KYBER	1	pt/a	A	5.0 ab	81.3 b	96.5 a	95.5 a	3.8 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
7	KYBER	1	pt/a	A	5.0 ab	89.5 ab	96.8 a	99.0 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	DURANGO DMA	2	pt/a	B						
	N-PAK AMS	2.5	% v/v	B						
8	KYBER	1	pt/a	A	8.8 a	83.0 ab	97.8 a	99.0 a	5.0 a	99.0 -
	ENLIST ONE	2	pt/a	B						
	EVERPREX	1	pt/a	B						
	LIBERTY 280 SL	32	fl oz/a	B						
	N-PAK AMS	2.5	% v/v	B						
9	SONIC	5	oz/a	A	7.5 a	97.0 a	98.0 a	91.8 a	3.8 a	99.0 -
	ENLIST ONE	1	qt/a	B						
	DURANGO DMA	1	qt/a	B						
	LIBERTY 280 SL	1	qt/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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,4,12,13 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Enlist Programs in E3 Soybean

Trial ID: 21S-NW22-SOY-05 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type			W, Weed	W, Weed	W, Weed		W, Weed
Pest Code			SETPU	AMATA	AMBEL		SETPU
Pest Name			yellow foxtail	common water hemp	Common ragweed		yellow foxtail
Crop Type, Code			C, GLXMA			C, GLXMA	
Crop Name			Soybean			Soybean	
Rating Date			Jun-25-2021	Jun-25-2021	Jun-25-2021	Jul-8-2021	Jul-8-2021
Rating Type			PHYGEN	CONTRO	CONTRO	PHYGEN	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
Data Entry Date			Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
Days After First/Last Applic.			45, 1	45, 1	45, 1	58, 14	58, 14
Days After Emergence			32 DE-1	32 DE-1	32 DE-1	45 DE-1	45 DE-1
Trt No.	Treatment Name	Rate Unit	Appl Code	7*	8*	9*	10*	11*	12*
10	KYBER	1 pt/a	A	6.3 ab	96.0 a	93.3 a	99.0 a	2.5 a	99.0 -
	ENLIST ONE	1 qt/a	B						
	DURANGO DMA	1 qt/a	B						
	LIBERTY 280 SL	1 qt/a	B						
	N-PAK AMS	2.5 % v/v	B						
LSD P=.05				4.41	10.30	4.40	8.49	2.02	.
Standard Deviation				3.04	7.10	3.03	5.85	1.39	0.00
CV				54.03	8.48	3.47	6.69	34.86	0.0
Levene's F^				1.728	3.85	1.543	0.722	1.535	.
Levene's Prob(F)				0.126	0.002*	0.178	0.685	0.181	.
Skewness^				0.6604	-0.3892	-0.544	-2.1823*	-0.9721*	.
Kurtosis^				1.8205*	0.2645	0.3749	7.7567*	1.853*	.
Replicate F				0.248	1.996	3.388	0.597	1.714	0.000
Replicate Prob(F)				0.8619	0.1384	0.0324	0.6223	0.1877	1.0000
Treatment F				2.444	71.978	411.217	110.883	5.571	0.000
Treatment Prob(F)				0.0351	0.0001	0.0001	0.0001	0.0002	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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Protocol ID: 21S-NW22-SOY-05 Investigator (Creator): Dr. Joe Ikley
Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	13*	14*	15*	16*	17*
	Pest Type				W, Weed	W, Weed		W, Weed	W, Weed
	Pest Code				AMATA	AMBEL		SETPU	AMATA
	Pest Name				common water hemp	Common ragweed		yellow foxtail	common water hemp
	Crop Type, Code						C, GLXMA		
	Crop Name						Soybean		
	Rating Date				Jul-8-2021	Jul-8-2021	Jul-22-2021	Jul-22-2021	Jul-22-2021
	Rating Type				CONTRO	CONTRO	PHYGEN	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-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
	Days After First/Last Applic.				58, 14	58, 14	72, 28	72, 28	72, 28
	Days After Emergence				45 DE-1	45 DE-1	59 DE-1	59 DE-1	59 DE-1
1	Untreated				0.0 -	0.0 b	0.0 -	0.0 b	0.0 b
2	SONIC	5	oz/a	A	99.0 -	99.0 a	3.8 -	98.0 a	99.0 a
	ENLIST ONE	2	pt/a	B					
	DURANGO DMA	2	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
3	SONIC	5	oz/a	A	99.0 -	99.0 a	5.0 -	99.0 a	98.8 a
	ENLIST ONE	2	pt/a	B					
	LIBERTY 280 SL	32	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
4	SONIC	5	oz/a	A	99.0 -	98.8 a	3.8 -	99.0 a	99.0 a
	ENLIST ONE	2	pt/a	B					
	EVERPREX	1	pt/a	B					
	DURANGO DMA	2	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
5	KYBER	1	pt/a	A	99.0 -	98.8 a	3.8 -	97.5 a	98.3 a
	ENLIST ONE	2	pt/a	B					
	DURANGO DMA	2	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
6	KYBER	1	pt/a	A	99.0 -	99.0 a	2.5 -	99.0 a	98.8 a
	ENLIST ONE	2	pt/a	B					
	LIBERTY 280 SL	32	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
7	KYBER	1	pt/a	A	99.0 -	98.0 a	5.0 -	99.0 a	98.3 a
	ENLIST ONE	2	pt/a	B					
	EVERPREX	1	pt/a	B					
	DURANGO DMA	2	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
8	KYBER	1	pt/a	A	99.0 -	99.0 a	3.8 -	98.8 a	99.0 a
	ENLIST ONE	2	pt/a	B					
	EVERPREX	1	pt/a	B					
	LIBERTY 280 SL	32	fl oz/a	B					
	N-PAK AMS	2.5	% v/v	B					
9	SONIC	5	oz/a	A	99.0 -	99.0 a	3.8 -	99.0 a	99.0 a
	ENLIST ONE	1	qt/a	B					
	DURANGO DMA	1	qt/a	B					
	LIBERTY 280 SL	1	qt/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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Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type		W, Weed	W, Weed		W, Weed	W, Weed
Pest Code		AMATA	AMBEL		SETPU	AMATA
Pest Name		common water hemp	Common ragweed		yellow foxtail	common water hemp
Crop Type, Code				C, GLXMA		
Crop Name				Soybean		
Rating Date		Jul-8-2021	Jul-8-2021	Jul-22-2021	Jul-22-2021	Jul-22-2021
Rating Type		CONTRO	CONTRO	PHYGEN	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-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021	Aug-20-2021
Days After First/Last Applic.		58, 14	58, 14	72, 28	72, 28	72, 28
Days After Emergence		45 DE-1	45 DE-1	59 DE-1	59 DE-1	59 DE-1
Trt No.	Treatment Name	Rate Rate Unit	Appl Code	13*	14*	15*	16*	17*
10	KYBER	1 pt/a	A	99.0 -	99.0 a	2.5 -	98.5 a	98.3 a
	ENLIST ONE	1 qt/a	B					
	DURANGO DMA	1 qt/a	B					
	LIBERTY 280 SL	1 qt/a	B					
	N-PAK AMS	2.5 % v/v	B					
LSD P=.05				.	0.98	3.21	1.34	0.84
Standard Deviation				0.00	0.68	2.21	0.92	0.58
CV				0.0	0.76	65.48	1.04	0.65
Levene's F^				.	0.718	0.817	1.137	3.252
Levene's Prob(F)				.	0.689	0.605	0.369	0.007*
Skewness^				.	-2.8273*	-0.9116*	-1.2528*	-0.7935*
Kurtosis^				.	14.5329*	-0.0332	2.889*	1.4382
Replicate F				0.000	0.798	0.810	1.525	0.669
Replicate Prob(F)				1.0000	0.5056	0.4992	0.2307	0.5782
Treatment F				0.000	8508.485	1.720	4594.915	11593.398
Treatment Prob(F)				1.0000	0.0001	0.1327	0.0001	0.0001

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Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type	W, Weed
Pest Code	AMBEL
Pest Name	Common ragweed
Crop Type, Code	
Crop Name	
Rating Date	Jul-22-2021
Rating Type	CONTRO
Rating Unit/Min/Max	%, 0, 100
Number of Subsamples	1
Assessed By	Desimini, S
Data Entry Date	Aug-20-2021
Days After First/Last Applic.	72, 28
Days After Emergence	59 DE-1

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	18*
1	Untreated				0.0 b
2	SONIC	5	oz/a	A	97.5 a
	ENLIST ONE	2	pt/a	B	
	DURANGO DMA	2	pt/a	B	
	N-PAK AMS	2.5	% v/v	B	
3	SONIC	5	oz/a	A	98.5 a
	ENLIST ONE	2	pt/a	B	
	LIBERTY 280 SL	32	fl oz/a	B	
	N-PAK AMS	2.5	% v/v	B	
4	SONIC	5	oz/a	A	98.3 a
	ENLIST ONE	2	pt/a	B	
	EVERPREX	1	pt/a	B	
	DURANGO DMA	2	pt/a	B	
	N-PAK AMS	2.5	% v/v	B	
5	KYBER	1	pt/a	A	98.8 a
	ENLIST ONE	2	pt/a	B	
	DURANGO DMA	2	pt/a	B	
	N-PAK AMS	2.5	% v/v	B	
6	KYBER	1	pt/a	A	98.8 a
	ENLIST ONE	2	pt/a	B	
	LIBERTY 280 SL	32	fl oz/a	B	
	N-PAK AMS	2.5	% v/v	B	
7	KYBER	1	pt/a	A	98.8 a
	ENLIST ONE	2	pt/a	B	
	EVERPREX	1	pt/a	B	
	DURANGO DMA	2	pt/a	B	
	N-PAK AMS	2.5	% v/v	B	
8	KYBER	1	pt/a	A	98.8 a
	ENLIST ONE	2	pt/a	B	
	EVERPREX	1	pt/a	B	
	LIBERTY 280 SL	32	fl oz/a	B	
	N-PAK AMS	2.5	% v/v	B	
9	SONIC	5	oz/a	A	99.0 a
	ENLIST ONE	1	qt/a	B	
	DURANGO DMA	1	qt/a	B	
	LIBERTY 280 SL	1	qt/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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Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type	W, Weed
Pest Code	AMBEL
Pest Name	Common ragweed
Crop Type, Code	
Crop Name	
Rating Date	Jul-22-2021
Rating Type	CONTRO
Rating Unit/Min/Max	%, 0, 100
Number of Subsamples	1
Assessed By	Desimini, S
Data Entry Date	Aug-20-2021
Days After First/Last Applic.	72, 28
Days After Emergence	59 DE-1

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	18*
10	KYBER	1	pt/a	A	98.5 a
	ENLIST ONE	1	qt/a	B	
	DURANGO DMA	1	qt/a	B	
	LIBERTY 280 SL	1	qt/a	B	
	N-PAK AMS	2.5	% v/v	B	

LSD P=.05	1.21
Standard Deviation	0.83
CV	0.94
Levene's F^	2.179
Levene's Prob(F)	0.053
Skewness^	-0.6353
Kurtosis^	1.0928
Replicate F	1.000
Replicate Prob(F)	0.4079
Treatment F	5615.105
Treatment Prob(F)	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).
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Project ID: NA21P2E002H-RYH063 Study Director: Dr. Joe Ikley
Sponsor Contact: Ryan Humann, Corteva

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
SETPU, Setaria helvola, yellow foxtail = US
AMATA, Amaranthus x tamariscinus, common water hemp = US
AMBEL, Ambrosia artemisiifolia, Common ragweed = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Desimini, S = Research Specialist

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-14-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: United Soybean Board

Site and Design
Treated Plot Width: 10 FT
Treated Plot Length: 30 FT
Treated Plot Area: 300.0 FT2 **Treatments:** 14
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Application Description

	A	B	C	D	E	F
Application Date	May-10-2021	May-19-2021	May-19-2021	Jun-1-2021	Jun-24-2021	Jun-14-2021
Appl. Start Time	5:05 PM	1:15 PM	1:15 PM	12:10 PM	1:40 PM	1:30 PM
Appl. Stop Time	5:40 PM	1:45 PM	1:45 PM	12:30 PM	1:55 PM	1:32 PM
Interval to Prev. Appl.		9 DAYS	9 DAYS	13 DAYS	7 DAYS	13 DAYS
Application Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	14 DPP	14DPP	PREMEA	PREMLA	POST	POST
Application Placement	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Applied By	Stith, J	Stith, J	Stith, J	Stith, J	Desimini, S	Stith, J
Appl. Entry Date	May-20-2021	May-20-2021	May-20-2021	Jun-16-2021	Jun-30-2021	Jun-30-2021
Air Temperature Start, Stop	69, 69 F	85.1, 85.1 F	85.1, 85.1 F	80, 79 F	90, 91 F	83, 83 F
% Relative Humidity Start, Stop	21, 21	46.5, 46.5	46.5, 46.5	39, 39	30, 30	28, 28
Wind Velocity+Dir. Start	7.5 MPH, NE	8.2 MPH, S	8.2 MPH, S	6.6 MPH, S	4 MPH, NW	6.7 MPH, N
Wind Velocity+Dir. Stop	7.5 MPH, NE	8.2 MPH, S	8.2 MPH, S	3.6 MPH, S	3 MPH, NW	6.7 MPH, N
Wind Velocity+Dir. Max	9 MPH, NE	13.5 MPH, S	13.5 MPH, S	9.5 MPH, S	5 MPH, NW	6.7 MPH, N
Wet Leaves (Y/N)	N, no	N, no	N, no	N, no	N, no	N, no
Soil Temperature	51 F	70 F	70 F	66 F	79 F	79 F
Soil Moisture	DRY	DRY	DRY	DRY	NORMAL	NORMAL
Soil Surface Condition	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH
% Cloud Cover	5	50	50	95	0	0

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

	G	H	I	J	K	L
Application Date	Jun-24-2021	Jun-30-2021	Jun-17-2021	Jun-30-2021	Jun-24-2021	Jul-7-2021
Appl. Start Time	1:40 PM	8:55 AM	11:35 AM	8:55 AM	1:40 PM	8:28 AM
Appl. Stop Time	1:55 PM	9:10 AM	11:40 AM	9:10 AM	1:55 PM	8:29 AM
Interval to Prev. Appl.	7 DAYS	6 DAYS	3 DAYS	6 DAYS	7 DAYS	7 DAYS
Application Method	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	POST	POEMCR	POEMCR	POEMCR	POEMCR	POEMCR
Application Placement	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Applied By	Desimini, S	Stith, J	Stith, J	Stith, J	Desimini, S	Stith, J
Appl. Entry Date	Jun-30-2021	Jun-30-2021	Jun-28-2021	Jun-30-2021	Jun-30-2021	Jul-15-2021
Air Temperature Start, Stop	90, 91 F	81, 82 F	91, 91 F	81, 82 F	90, 91 F	61, 61 F
% Relative Humidity Start, Stop	30, 30	48, 48	24, 24	48, 48	30, 30	76, 76
Wind Velocity+Dir. Start	4 MPH, NW	1 MPH, W	2 MPH, NE	1 MPH, W	4 MPH, NW	3 MPH, NW
Wind Velocity+Dir. Stop	3 MPH, NW	1 MPH, W	3 MPH, NE	1 MPH, W	3 MPH, NW	3 MPH, NW
Wind Velocity+Dir. Max	5 MPH, NW	1 MPH, W	3 MPH, NE	1 MPH, W	5 MPH, NW	3.5 MPH, NW
Wet Leaves (Y/N)	N, no	N, no	N, no	N, no	N, no	Y, yes
Soil Temperature	80 F	70 F	80 F	70 F	80 F	64 F
Soil Moisture	NORMAL	NORMAL	DRY	DRY	NORMAL	NORMAL
Soil Surface Condition	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH	SMOOTH
% Cloud Cover	5	10	0	10	5	100

	M	N	O	P
Application Date	Jun-17-2021	Jun-30-2021	Jun-30-2021	Jul-7-2021
Appl. Start Time	11:35 AM	8:55 AM	8:55 AM	5:00 PM
Appl. Stop Time	11:40 AM	9:10 AM	9:10 AM	5:05 PM
Interval to Prev. Appl.	3 DAYS	6 DAYS	6 DAYS	8 HOURS
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	POEMCR	PEOMCR	POEMCR	POEMCR
Application Placement	BROFOL	BROFOL	BROFOL	BROFOL
Applied By	Stith, J	Stith, J	Stith, J	Stith, J
Appl. Entry Date	Aug-16-2021	Jun-30-2021	Jun-30-2021	Jul-15-2021
Air Temperature Start, Stop	91, 91 F	81, 82 F	81, 82 F	73, 74 F
% Relative Humidity Start, Stop	24, 24	48, 48	48, 48	43, 44
Wind Velocity+Dir. Start	2 MPH, NE	1 MPH, W	1 MPH, W	1 MPH, NW
Wind Velocity+Dir. Stop	3 MPH, NE	1 MPH, W	1 MPH, W	2 MPH, NW
Wind Velocity+Dir. Max	3 MPH, NE	1 MPH, W	1 MPH, W	2 MPH, NW
Wet Leaves (Y/N)	N, no	N, no	N, no	N, no
Soil Temperature	80 F	70 F	70 F	79 F
Soil Moisture	DRY	NORMAL	NORMAL	NORMAL
Soil Surface Condition	SMOOTH	SMOOTH	SMOOTH	SMOOTH
% Cloud Cover	0	10	10	90

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Application Equipment

	A	B	C	D	E	F
Appl. Equipment	Stormbreaker	Stormbreaker	Stormbreaker	Stormbreaker	Stormbreaker	Stormbreaker
Equipment Type	BACCAI	BACCAI	BACCAI	BACCAI	BACCAI	BACCAI
Operation Pressure	29 PSI	29 PSI	29 PSI	29 PSI	29 PSI	29 PSI
Nozzle Model	11002	11002	11002	11002	11002	11002
Nozzle Type	TEEJTU	AIXR	AIXR	AIXR	AIXR	AIXR
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN	20 IN	20 IN
Boom Length	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT
Boom Height	20 IN	20 IN	20 IN	20 IN	20 IN	20 IN
Ground Speed	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH
Carrier	WATER	WATER	WATER	WATER	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC
Mix Size	1800 mL	1800 mL	1800 mL	1800 mL	1800 mL	1800 mL
Propellant	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2

	G	H	I	J	K	L	M	N
Appl. Equipment	Stormbreaker	Stormbreaker	Walter	Stormbreaker	Stormbreaker	Stormbreaker		Stormbreaker
Equipment Type	BACCAI	BACCAI	BACCAI	BACCAI	BACCAI	BACCAI		BACCAI
Operation Pressure	29 PSI	29 PSI	28 PSI	29 PSI	29 PSI	29 PSI		29 PSI
Nozzle Model	11002	11002	11002	11002	11002	11002		11002
Nozzle Type	AIXR	AIXR	AIXR	AIXR	AIXR	AIXR		AIXR
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN	20 IN	20 IN		20 IN
Boom Length	10 FT	10 FT	6.67 FT	10 FT	10 FT	10 FT		10 FT
Boom Height	20 IN	20 IN	20 IN	20 IN	20 IN	20 IN		20 IN
Ground Speed	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH		3 MPH
Carrier	WATER	WATER	WATER	WATER	WATER	WATER		WATER
Application Amount	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC	15 GAL/AC		15 GAL/AC
Mix Size	1800 mL	1800 mL	1119 mL	1800 mL	1800 mL	1800 mL		1800 mL
Propellant	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2		COMCO2

	O	P
Appl. Equipment	Stormbreaker	Stormbreaker
Equipment Type	BACCAI	BACCAI
Operation Pressure	29 PSI	29 PSI
Nozzle Model	11002	11002
Nozzle Type	AIXR	AIXR
Nozzle Spacing	20 IN	20 IN
Boom Length	10 FT	10 FT
Boom Height	20 IN	20 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	1800 mL	1800 mL
Propellant	COMCO2	COMCO2

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Notes

Context	Date	By	Notes
STATUS	Apr-14-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				SECCE	SECCE	SECCE	SECCE
	Pest Scientific Name				Secale cereale	Secale cereale	Secale cereale	Secale cereale
	Pest Name				Rye	Rye	Rye	Rye
	Crop Type, Code							
	Crop Name							
	Rating Date				May-27-2021	Jul-1-2021	May-19-2021	May-19-2021
	Rating Type				BIOMAS	BIOMAS	HEIGHT	GROSTA
	Rating Unit/Min/Max				g, -, -	G, -, -	INCH, -, -	ZADOK, -, -
	Number of Subsamples				1	1	5	5
	Data Entry Date				Jun-16-2021	Aug-11-2021	Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				17, 8	52, 1	9, 9	9, 9
	Plant-Eval Interval				8 DP-1	43 DP-1	0 DP-1	0 DP-1
	Days After Emergence				0 DE-1	35 DE-1	-8 DE-1	-8 DE-1
1	NO COVER CROP							
	STANDARD PLANTING							
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	E				
	LIBERTY 280 SL	32	fl oz/a	E				
	SELECT MAX	12	fl oz/a	E				
	WARRANT	48	fl oz/a	E				
	N-PAK AMS	8.5	lb ai/100 gal	E				
2	NO COVER CROP							
	STANDARD PLANTING							
	FIERCE EZ	6	oz/a	B				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	F				
	LIBERTY 280 SL	32	fl oz/a	F				
	SELECT MAX	12	fl oz/a	F				
	WARRANT	48	fl oz/a	F				
	N-PAK AMS	8.5	lb ai/100 gal	F				
3	NO COVER CROP							
	LATE PLANTING							
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	G				
	LIBERTY 280 SL	32	fl oz/a	G				
	SELECT MAX	12	fl oz/a	G				
	WARRANT	48	fl oz/a	G				
	N-PAK AMS	8.5	lb ai/100 gal	G				
4	NO COVER CROP							
	LATE PLANTING							
	FIERCE EZ	6	oz/a	D				
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	H				
	LIBERTY 280 SL	32	fl oz/a	H				
	SELECT MAX	12	fl oz/a	H				
	WARRANT	48	fl oz/a	H				
	N-PAK AMS	8.5	lb ai/100 gal	H				

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
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^Calculated from residual.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				SECCE	SECCE	SECCE	SECCE
	Pest Scientific Name				Secale cereale	Secale cereale	Secale cereale	Secale cereale
	Pest Name				Rye	Rye	Rye	Rye
	Crop Type, Code							
	Crop Name							
	Rating Date				May-27-2021	Jul-1-2021	May-19-2021	May-19-2021
	Rating Type				BIOMAS	BIOMAS	HEIGHT	GROSTA
	Rating Unit/Min/Max				g, -, -	G, -, -	INCH, -, -	ZADOK, -, -
	Number of Subsamples				1	1	5	5
	Data Entry Date				Jun-16-2021	Aug-11-2021	Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				17, 8	52, 1	9, 9	9, 9
	Plant-Eval Interval				8 DP-1	43 DP-1	0 DP-1	0 DP-1
	Days After Emergence				0 DE-1	35 DE-1	-8 DE-1	-8 DE-1
5	COVER CROP - EARLY TERMINATION				32.8 c	25.8 c		
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	8.5	lb ai/100 gal	A				
	STANDARD PLANTING							
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	I				
	LIBERTY 280 SL	32	fl oz/a	I				
	SELECT MAX	12	fl oz/a	I				
	WARRANT	48	fl oz/a	I				
	N-PAK AMS	8.5	lb ai/100 gal	I				
6	COVER CROP - EARLY TERMINATION				27.0 c	18.8 c		
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	8.5	lb ai/100 gal	A				
	STANDARD PLANTING							
	FIERCE EZ	6	oz/a	B				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	J				
	LIBERTY 280 SL	32	fl oz/a	J				
	SELECT MAX	12	fl oz/a	J				
	WARRANT	48	fl oz/a	J				
	N-PAK AMS	8.5	lb ai/100 gal	J				
7	Mistake_see trt 13							
8	Mistake_see trt 14							
9	COVER CROP - LATE TERMINATION				88.8 b	77.3 a	22.4 c	52.0 b
	STANDARD PLANTING							
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	M				
	LIBERTY 280 SL	32	fl oz/a	M				
	SELECT MAX	12	fl oz/a	M				
	WARRANT	48	fl oz/a	M				
	N-PAK AMS	8.5	lb ai/100 gal	M				

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Impact of Planting Green on Soybean Weed Management

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Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				SECCE	SECCE	SECCE	SECCE
	Pest Scientific Name				Secale cereale	Secale cereale	Secale cereale	Secale cereale
	Pest Name				Rye	Rye	Rye	Rye
	Crop Type, Code							
	Crop Name							
	Rating Date				May-27-2021	Jul-1-2021	May-19-2021	May-19-2021
	Rating Type				BIOMAS	BIOMAS	HEIGHT	GROSTA
	Rating Unit/Min/Max				g, -, -	G, -, -	INCH, -, -	ZADOK, -, -
	Number of Subsamples				1	1	5	5
	Data Entry Date				Jun-16-2021	Aug-11-2021	Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				17, 8	52, 1	9, 9	9, 9
	Plant-Eval Interval				8 DP-1	43 DP-1	0 DP-1	0 DP-1
	Days After Emergence				0 DE-1	35 DE-1	-8 DE-1	-8 DE-1
10	COVER CROP - LATE TERMINATION				77.3 b	46.8 b	21.3 c	52.0 b
	STANDARD PLANTING							
	FIERCE EZ	6	oz/a	B				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
	ENLIST ONE	2	pt/a	N				
	LIBERTY 280 SL	32	fl oz/a	N				
	SELECT MAX	12	fl oz/a	N				
	WARRANT	48	fl oz/a	N				
	N-PAK AMS	8.5	lb ai/100 gal	N				
11	COVER CROP - LATE TERMINATION				132.3 a	78.5 a	40.0 a	61.2 a
	LATE PLANTING							
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	O				
	LIBERTY 280 SL	32	fl oz/a	O				
	SELECT MAX	12	fl oz/a	O				
	WARRANT	48	fl oz/a	O				
	N-PAK AMS	8.5	lb ai/100 gal	O				
12	COVER CROP - LATE TERMINATION				146.8 a	61.5 ab	36.4 b	61.0 a
	LATE PLANTING							
	FIERCE EZ	6	oz/a	D				
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	P				
	LIBERTY 280 SL	32	fl oz/a	P				
	SELECT MAX	12	fl oz/a	P				
	WARRANT	48	fl oz/a	P				
	N-PAK AMS	8.5	lb ai/100 gal	P				
13	COVER CROP - EARLY TERMINATION				82.8 b	52.5 ab	23.0 c	53.0 b
	ROUNDUP POWERMAX	32	fl oz/a	C				
	N-PAK AMS	8.5	lb ai/100 gal	C				
	LATE PLANTING							
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	K				
	LIBERTY 280 SL	32	fl oz/a	K				
	SELECT MAX	12	fl oz/a	K				
	WARRANT	48	fl oz/a	K				
	N-PAK AMS	8.5	lb ai/100 gal	K				

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North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				SECCE	SECCE	SECCE	SECCE
	Pest Scientific Name				Secale cereale	Secale cereale	Secale cereale	Secale cereale
	Pest Name				Rye	Rye	Rye	Rye
	Crop Type, Code							
	Crop Name							
	Rating Date				May-27-2021	Jul-1-2021	May-19-2021	May-19-2021
	Rating Type				BIOMAS	BIOMAS	HEIGHT	GROSTA
	Rating Unit/Min/Max				g, -, -	G, -, -	INCH, -, -	ZADOK, -, -
	Number of Subsamples				1	1	5	5
	Data Entry Date				Jun-16-2021	Aug-11-2021	Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				17, 8	52, 1	9, 9	9, 9
	Plant-Eval Interval				8 DP-1	43 DP-1	0 DP-1	0 DP-1
	Days After Emergence				0 DE-1	35 DE-1	-8 DE-1	-8 DE-1
14	COVER CROP - EARLY TERMINATION				73.3 b	66.8 ab	23.2 c	53.0 b
	ROUNDUP POWERMAX	32	fl oz/a	C				
	N-PAK AMS	8.5	lb ai/100 gal	C				
	LATE PLANTING							
	FIERCE EZ	6	oz/a	D				
	LIBERTY 280 SL	32	fl oz/a	D				
	ROUNDUP POWERMAX	32	fl oz/a	D				
	N-PAK AMS	8.5	lb ai/100 gal	D				
	ENLIST ONE	2	pt/a	L				
	LIBERTY 280 SL	32	fl oz/a	L				
	SELECT MAX	12	fl oz/a	L				
	WARRANT	48	fl oz/a	L				
	N-PAK AMS	8.5	lb ai/100 gal	L				
	LSD P=.05				21.88	20.53	2.72	3.18
	Standard Deviation				14.88	13.96	1.80	2.11
	CV				18.01	26.12	6.51	3.81
	Levene's F^				3.326	0.549	0.789	0.224
	Levene's Prob(F)				0.013*	0.789	0.571	0.947
	Skewness^				0.4879	0.3255	0.7746	0.4811
	Kurtosis^				0.7638	-0.0576	-1.1919	-1.2009
	Replicate F				0.577	0.383	0.717	1.240
	Replicate Prob(F)				0.6368	0.7666	0.5571	0.3303
	Treatment F				31.780	10.118	83.441	17.898
	Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001

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Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	5*	6*
	Pest Type				W, Weed	W, Weed
	Pest Code				AMATA	AMATA
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus
	Pest Name				common water hemp	common water hemp
	Crop Type, Code					
	Crop Name					
	Rating Date				Jun-14-2021	Jun-14-2021
	Rating Type				COUNT	HEIGHT
	Rating Unit/Min/Max				/m2, -, -	INCH, -, -
	Number of Subsamples				2	5
	Data Entry Date				Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				35, 13	35, 13
	Plant-Eval Interval				26 DP-1	26 DP-1
	Days After Emergence				18 DE-1	18 DE-1
1	NO COVER CROP				392.5 b	2.850 ab
	STANDARD PLANTING					
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	E		
	LIBERTY 280 SL	32	fl oz/a	E		
	SELECT MAX	12	fl oz/a	E		
	WARRANT	48	fl oz/a	E		
	N-PAK AMS	8.5	lb ai/100 gal	E		
2	NO COVER CROP				16.0 d	3.400 a
	STANDARD PLANTING					
	FIERCE EZ	6	oz/a	B		
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	F		
	LIBERTY 280 SL	32	fl oz/a	F		
	SELECT MAX	12	fl oz/a	F		
	WARRANT	48	fl oz/a	F		
	N-PAK AMS	8.5	lb ai/100 gal	F		
3	NO COVER CROP				189.0 c	3.650 a
	LATE PLANTING					
	LIBERTY 280 SL	32	fl oz/a	D		
	ROUNDUP POWERMAX	32	fl oz/a	D		
	N-PAK AMS	8.5	lb ai/100 gal	D		
	ENLIST ONE	2	pt/a	G		
	LIBERTY 280 SL	32	fl oz/a	G		
	SELECT MAX	12	fl oz/a	G		
	WARRANT	48	fl oz/a	G		
	N-PAK AMS	8.5	lb ai/100 gal	G		
4	NO COVER CROP				6.1 d	2.600 ab
	LATE PLANTING					
	FIERCE EZ	6	oz/a	D		
	LIBERTY 280 SL	32	fl oz/a	D		
	ROUNDUP POWERMAX	32	fl oz/a	D		
	N-PAK AMS	8.5	lb ai/100 gal	D		
	ENLIST ONE	2	pt/a	H		
	LIBERTY 280 SL	32	fl oz/a	H		
	SELECT MAX	12	fl oz/a	H		
	WARRANT	48	fl oz/a	H		
	N-PAK AMS	8.5	lb ai/100 gal	H		

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 9 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	5*	6*
	Pest Type				W, Weed	W, Weed
	Pest Code				AMATA	AMATA
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus
	Pest Name				common water hemp	common water hemp
	Crop Type, Code					
	Crop Name					
	Rating Date				Jun-14-2021	Jun-14-2021
	Rating Type				COUNT	HEIGHT
	Rating Unit/Min/Max				/m2, -, -	INCH, -, -
	Number of Subsamples				2	5
	Data Entry Date				Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				35, 13	35, 13
	Plant-Eval Interval				26 DP-1	26 DP-1
	Days After Emergence				18 DE-1	18 DE-1
5	COVER CROP - EARLY TERMINATION				467.0 ab	2.913 ab
	ROUNDUP POWERMAX	32	fl oz/a	A		
	N-PAK AMS	8.5	lb ai/100 gal	A		
	STANDARD PLANTING					
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	I		
	LIBERTY 280 SL	32	fl oz/a	I		
	SELECT MAX	12	fl oz/a	I		
	WARRANT	48	fl oz/a	I		
	N-PAK AMS	8.5	lb ai/100 gal	I		
6	COVER CROP - EARLY TERMINATION				3.6 d	3.450 a
	ROUNDUP POWERMAX	32	fl oz/a	A		
	N-PAK AMS	8.5	lb ai/100 gal	A		
	STANDARD PLANTING					
	FIERCE EZ	6	oz/a	B		
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	J		
	LIBERTY 280 SL	32	fl oz/a	J		
	SELECT MAX	12	fl oz/a	J		
	WARRANT	48	fl oz/a	J		
	N-PAK AMS	8.5	lb ai/100 gal	J		
7	Mistake_see trt 13					
8	Mistake_see trt 14					
9	COVER CROP - LATE TERMINATION				528.3 a	2.850 ab
	STANDARD PLANTING					
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	M		
	LIBERTY 280 SL	32	fl oz/a	M		
	SELECT MAX	12	fl oz/a	M		
	WARRANT	48	fl oz/a	M		
	N-PAK AMS	8.5	lb ai/100 gal	M		

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 9 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	5*	6*
	Pest Type				W, Weed	W, Weed
	Pest Code				AMATA	AMATA
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus
	Pest Name				common water hemp	common water hemp
	Crop Type, Code					
	Crop Name					
	Rating Date				Jun-14-2021	Jun-14-2021
	Rating Type				COUNT	HEIGHT
	Rating Unit/Min/Max				/m2, -, -	INCH, -, -
	Number of Subsamples				2	5
	Data Entry Date				Aug-11-2021	Aug-11-2021
	Days After First/Last Applic.				35, 13	35, 13
	Plant-Eval Interval				26 DP-1	26 DP-1
	Days After Emergence				18 DE-1	18 DE-1
10	COVER CROP - LATE TERMINATION				4.0 d	3.400 a
	STANDARD PLANTING					
	FIERCE EZ	6	oz/a	B		
	LIBERTY 280 SL	32	fl oz/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
	ENLIST ONE	2	pt/a	N		
	LIBERTY 280 SL	32	fl oz/a	N		
	SELECT MAX	12	fl oz/a	N		
	WARRANT	48	fl oz/a	N		
	N-PAK AMS	8.5	lb ai/100 gal	N		
11	COVER CROP - LATE TERMINATION				16.8 d	2.200 ab
	LATE PLANTING					
	LIBERTY 280 SL	32	fl oz/a	D		
	ROUNDUP POWERMAX	32	fl oz/a	D		
	N-PAK AMS	8.5	lb ai/100 gal	D		
	ENLIST ONE	2	pt/a	O		
	LIBERTY 280 SL	32	fl oz/a	O		
	SELECT MAX	12	fl oz/a	O		
	WARRANT	48	fl oz/a	O		
	N-PAK AMS	8.5	lb ai/100 gal	O		
12	COVER CROP - LATE TERMINATION				0.0 d	1.125 b
	LATE PLANTING					
	FIERCE EZ	6	oz/a	D		
	LIBERTY 280 SL	32	fl oz/a	D		
	ROUNDUP POWERMAX	32	fl oz/a	D		
	N-PAK AMS	8.5	lb ai/100 gal	D		
	ENLIST ONE	2	pt/a	P		
	LIBERTY 280 SL	32	fl oz/a	P		
	SELECT MAX	12	fl oz/a	P		
	WARRANT	48	fl oz/a	P		
	N-PAK AMS	8.5	lb ai/100 gal	P		
13	COVER CROP - EARLY TERMINATION				199.0 c	2.975 ab
	ROUNDUP POWERMAX	32	fl oz/a	C		
	N-PAK AMS	8.5	lb ai/100 gal	C		
	LATE PLANTING					
	LIBERTY 280 SL	32	fl oz/a	D		
	ROUNDUP POWERMAX	32	fl oz/a	D		
	N-PAK AMS	8.5	lb ai/100 gal	D		
	ENLIST ONE	2	pt/a	K		
	LIBERTY 280 SL	32	fl oz/a	K		
	SELECT MAX	12	fl oz/a	K		
	WARRANT	48	fl oz/a	K		
	N-PAK AMS	8.5	lb ai/100 gal	K		

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
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^Calculated from residual.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Pest Type				W, Weed	W, Weed
Pest Code				AMATA	AMATA
Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus
Pest Name				common water hemp	common water hemp
Crop Type, Code					
Crop Name					
Rating Date				Jun-14-2021	Jun-14-2021
Rating Type				COUNT	HEIGHT
Rating Unit/Min/Max				/m2, -, -	INCH, -, -
Number of Subsamples				2	5
Data Entry Date				Aug-11-2021	Aug-11-2021
Days After First/Last Applic.				35, 13	35, 13
Plant-Eval Interval				26 DP-1	26 DP-1
Days After Emergence				18 DE-1	18 DE-1
Trt No.	Treatment Name	Rate	Rate Unit / Appl Code	5*	6*
14	COVER CROP - EARLY TERMINATION			0.5 d	3.600 a
	ROUNDUP POWERMAX	32	fl oz/a C		
	N-PAK AMS	8.5	lb ai/100 gal C		
	LATE PLANTING				
	FIERCE EZ	6	oz/a D		
	LIBERTY 280 SL	32	fl oz/a D		
	ROUNDUP POWERMAX	32	fl oz/a D		
	N-PAK AMS	8.5	lb ai/100 gal D		
	ENLIST ONE	2	pt/a L		
	LIBERTY 280 SL	32	fl oz/a L		
	SELECT MAX	12	fl oz/a L		
	WARRANT	48	fl oz/a L		
	N-PAK AMS	8.5	lb ai/100 gal L		
LSD P=.05				102.83	1.2397
Standard Deviation				71.48	0.8618
CV				47.06	29.54
Levene's F^				3.003	0.723
Levene's Prob(F)				0.006*	0.709
Skewness^				1.0547*	1.4355*
Kurtosis^				3.6529*	4.1468*
Replicate F				0.715	3.326
Replicate Prob(F)				0.5503	0.0314
Treatment F				32.048	2.739
Treatment Prob(F)				0.0001	0.0124

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^Calculated from residual.

North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7*	8*	9
	Pest Type				W, Weed	W, Weed	
	Pest Code				AMATA	AMATA	
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus	
	Pest Name				common water hemp	common water hemp	
	Crop Type, Code						C, GLXMA
	Crop Name						Soybean
	Rating Date				Oct-4-2021	Oct-1-2021	Oct-1-2021
	Rating Type				CONTRO	DENSIT	STAOBJ
	Rating Unit/Min/Max				%, 0, 100	m2, -, -	m, 1, -
	Number of Subsamples				1	2	1
	Data Entry Date				Oct-12-2021	Oct-12-2021	
	Days After First/Last Applic.				147, 89	144, 86	144, 86
	Plant-Eval Interval				138 DP-1	135 DP-1	135 DP-1
	Days After Emergence				130 DE-1	127 DE-1	127 DE-1
1	NO COVER CROP				91.0 a	6.6 a	
	STANDARD PLANTING						
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	E			
	LIBERTY 280 SL	32	fl oz/a	E			
	SELECT MAX	12	fl oz/a	E			
	WARRANT	48	fl oz/a	E			
	N-PAK AMS	8.5	lb ai/100 gal	E			
2	NO COVER CROP				98.0 a	0.0 b	
	STANDARD PLANTING						
	FIERCE EZ	6	oz/a	B			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	F			
	LIBERTY 280 SL	32	fl oz/a	F			
	SELECT MAX	12	fl oz/a	F			
	WARRANT	48	fl oz/a	F			
	N-PAK AMS	8.5	lb ai/100 gal	F			
3	NO COVER CROP				94.3 a	2.3 b	
	LATE PLANTING						
	LIBERTY 280 SL	32	fl oz/a	D			
	ROUNDUP POWERMAX	32	fl oz/a	D			
	N-PAK AMS	8.5	lb ai/100 gal	D			
	ENLIST ONE	2	pt/a	G			
	LIBERTY 280 SL	32	fl oz/a	G			
	SELECT MAX	12	fl oz/a	G			
	WARRANT	48	fl oz/a	G			
	N-PAK AMS	8.5	lb ai/100 gal	G			
4	NO COVER CROP				99.0 a	0.0 b	
	LATE PLANTING						
	FIERCE EZ	6	oz/a	D			
	LIBERTY 280 SL	32	fl oz/a	D			
	ROUNDUP POWERMAX	32	fl oz/a	D			
	N-PAK AMS	8.5	lb ai/100 gal	D			
	ENLIST ONE	2	pt/a	H			
	LIBERTY 280 SL	32	fl oz/a	H			
	SELECT MAX	12	fl oz/a	H			
	WARRANT	48	fl oz/a	H			
	N-PAK AMS	8.5	lb ai/100 gal	H			

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
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North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7*	8*	9
	Pest Type				W, Weed	W, Weed	
	Pest Code				AMATA	AMATA	
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus	
	Pest Name				common water hemp	common water hemp	
	Crop Type, Code						C, GLXMA
	Crop Name						Soybean
	Rating Date				Oct-4-2021	Oct-1-2021	Oct-1-2021
	Rating Type				CONTRO	DENSIT	STAOBJ
	Rating Unit/Min/Max				%, 0, 100	m2, -, -	m, 1, -
	Number of Subsamples				1	2	1
	Data Entry Date				Oct-12-2021	Oct-12-2021	
	Days After First/Last Applic.				147, 89	144, 86	144, 86
	Plant-Eval Interval				138 DP-1	135 DP-1	135 DP-1
	Days After Emergence				130 DE-1	127 DE-1	127 DE-1
5	COVER CROP - EARLY TERMINATION				99.3 a	0.3 b	
	ROUNDUP POWERMAX	32	fl oz/a	A			
	N-PAK AMS	8.5	lb ai/100 gal	A			
	STANDARD PLANTING						
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	I			
	LIBERTY 280 SL	32	fl oz/a	I			
	SELECT MAX	12	fl oz/a	I			
	WARRANT	48	fl oz/a	I			
	N-PAK AMS	8.5	lb ai/100 gal	I			
6	COVER CROP - EARLY TERMINATION				99.0 a	0.0 b	
	ROUNDUP POWERMAX	32	fl oz/a	A			
	N-PAK AMS	8.5	lb ai/100 gal	A			
	STANDARD PLANTING						
	FIERCE EZ	6	oz/a	B			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	J			
	LIBERTY 280 SL	32	fl oz/a	J			
	SELECT MAX	12	fl oz/a	J			
	WARRANT	48	fl oz/a	J			
	N-PAK AMS	8.5	lb ai/100 gal	J			
7	Mistake_see trt 13				10.0 c		
8	Mistake_see trt 14				63.8 b		
9	COVER CROP - LATE TERMINATION				99.0 a	0.9 b	
	STANDARD PLANTING						
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	M			
	LIBERTY 280 SL	32	fl oz/a	M			
	SELECT MAX	12	fl oz/a	M			
	WARRANT	48	fl oz/a	M			
	N-PAK AMS	8.5	lb ai/100 gal	M			

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

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7*	8*	9
	Pest Type				W, Weed	W, Weed	
	Pest Code				AMATA	AMATA	
	Pest Scientific Name				Amaranthus x tamariscinus	Amaranthus x tamariscinus	
	Pest Name				common water hemp	common water hemp	
	Crop Type, Code						C, GLXMA
	Crop Name						Soybean
	Rating Date				Oct-4-2021	Oct-1-2021	Oct-1-2021
	Rating Type				CONTRO	DENSIT	STAOBJ
	Rating Unit/Min/Max				%, 0, 100	m2, -, -	m, 1, -
	Number of Subsamples				1	2	1
	Data Entry Date				Oct-12-2021	Oct-12-2021	
	Days After First/Last Applic.				147, 89	144, 86	144, 86
	Plant-Eval Interval				138 DP-1	135 DP-1	135 DP-1
	Days After Emergence				130 DE-1	127 DE-1	127 DE-1
10	COVER CROP - LATE TERMINATION				99.0 a	0.0 b	
	STANDARD PLANTING						
	FIERCE EZ	6	oz/a	B			
	LIBERTY 280 SL	32	fl oz/a	B			
	ROUNDUP POWERMAX	32	fl oz/a	B			
	N-PAK AMS	8.5	lb ai/100 gal	B			
	ENLIST ONE	2	pt/a	N			
	LIBERTY 280 SL	32	fl oz/a	N			
	SELECT MAX	12	fl oz/a	N			
	WARRANT	48	fl oz/a	N			
	N-PAK AMS	8.5	lb ai/100 gal	N			
11	COVER CROP - LATE TERMINATION				99.0 a	0.0 b	
	LATE PLANTING						
	LIBERTY 280 SL	32	fl oz/a	D			
	ROUNDUP POWERMAX	32	fl oz/a	D			
	N-PAK AMS	8.5	lb ai/100 gal	D			
	ENLIST ONE	2	pt/a	O			
	LIBERTY 280 SL	32	fl oz/a	O			
	SELECT MAX	12	fl oz/a	O			
	WARRANT	48	fl oz/a	O			
	N-PAK AMS	8.5	lb ai/100 gal	O			
12	COVER CROP - LATE TERMINATION				99.0 a	0.0 b	
	LATE PLANTING						
	FIERCE EZ	6	oz/a	D			
	LIBERTY 280 SL	32	fl oz/a	D			
	ROUNDUP POWERMAX	32	fl oz/a	D			
	N-PAK AMS	8.5	lb ai/100 gal	D			
	ENLIST ONE	2	pt/a	P			
	LIBERTY 280 SL	32	fl oz/a	P			
	SELECT MAX	12	fl oz/a	P			
	WARRANT	48	fl oz/a	P			
	N-PAK AMS	8.5	lb ai/100 gal	P			
13	COVER CROP - EARLY TERMINATION				98.5 a	0.8 b	
	ROUNDUP POWERMAX	32	fl oz/a	C			
	N-PAK AMS	8.5	lb ai/100 gal	C			
	LATE PLANTING						
	LIBERTY 280 SL	32	fl oz/a	D			
	ROUNDUP POWERMAX	32	fl oz/a	D			
	N-PAK AMS	8.5	lb ai/100 gal	D			
	ENLIST ONE	2	pt/a	K			
	LIBERTY 280 SL	32	fl oz/a	K			
	SELECT MAX	12	fl oz/a	K			
	WARRANT	48	fl oz/a	K			
	N-PAK AMS	8.5	lb ai/100 gal	K			

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
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North Dakota State University

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Pest Type			W, Weed	W, Weed	
Pest Code			AMATA	AMATA	
Pest Scientific Name			Amaranthus x tamariscinus	Amaranthus x tamariscinus	
Pest Name			common water hemp	common water hemp	
Crop Type, Code					C, GLXMA
Crop Name					Soybean
Rating Date			Oct-4-2021	Oct-1-2021	Oct-1-2021
Rating Type			CONTRO	DENSIT	STAOBJ
Rating Unit/Min/Max			%, 0, 100	m2, -, -	m, 1, -
Number of Subsamples			1	2	1
Data Entry Date			Oct-12-2021	Oct-12-2021	
Days After First/Last Applic.			147, 89	144, 86	144, 86
Plant-Eval Interval			138 DP-1	135 DP-1	135 DP-1
Days After Emergence			130 DE-1	127 DE-1	127 DE-1
Trt No.	Treatment Name	Rate Rate Unit	Appl Code	7*	8*	9
14	COVER CROP - EARLY TERMINATION			99.0 a	0.0 b	
	ROUNDUP POWERMAX	32 fl oz/a	C			
	N-PAK AMS	8.5 lb ai/100 gal	C			
	LATE PLANTING					
	FIERCE EZ	6 oz/a	D			
	LIBERTY 280 SL	32 fl oz/a	D			
	ROUNDUP POWERMAX	32 fl oz/a	D			
	N-PAK AMS	8.5 lb ai/100 gal	D			
	ENLIST ONE	2 pt/a	L			
	LIBERTY 280 SL	32 fl oz/a	L			
	SELECT MAX	12 fl oz/a	L			
	WARRANT	48 fl oz/a	L			
	N-PAK AMS	8.5 lb ai/100 gal	L			
LSD P=.05				12.47	3.56	.
Standard Deviation				8.72	2.48	.
CV				9.78	276.54	.
Levene's F^				6.554	8.308	.
Levene's Prob(F)				0.00*	0.00*	.
Skewness^				-0.1347	0.5287	.
Kurtosis^				5.9996*	5.9726*	.
Replicate F				1.227	0.712	
Replicate Prob(F)				0.3128	0.5519	
Treatment F				31.914	2.412	
Treatment Prob(F)				0.0001	0.0250	

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

Impact of Planting Green on Soybean Weed Management

Trial ID: 21S-NW22-SOY-11 Location: NW22, Reed Township, Fargo, ND Trial Year: 2021
Protocol ID: 21S-NW22-SOY-11 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: United Soybean Board

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
SECCE, Secale cereale, Rye = US
AMATA, Amaranthus x tamariscinus, common water hemp = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
BIOMAS = biomas
HEIGHT = height
GROSTA = growth stage
COUNT = count
CONTRO = control / burndown or knockdown
DENSIT = density
STAOBJ = stand - objective (based on counts)
Rating Unit/Min/Max
g, , = gram
/m2, , = per square meter
%, 0, 100 = percent
m2, , = square meter
m, 1, = meter
Plant-Eval Interval
8 DP-1 = 1 GLXMA May-19-2021
43 DP-1 = 1 GLXMA May-19-2021
0 DP-1 = 1 GLXMA May-19-2021
26 DP-1 = 1 GLXMA May-19-2021
138 DP-1 = 1 GLXMA May-19-2021
135 DP-1 = 1 GLXMA May-19-2021

North Dakota State University

Corn PRE fb POST Showcase Showdown

Trial ID: 21S-PALM-CORN-14 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-14 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-6-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley

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:** RACOBL Randomized Complete Block (RCB)

Application Description

	A	B
Application Date	May-12-2021	Jun-15-2021
Appl. Start Time	11:15 AM	12:00 PM
Appl. Stop Time	11:50 AM	12:20 PM
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POEMCR
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Stith, J
Appl. Entry Date	May-20-2021	Jun-16-2021
Air Temperature Start, Stop	71, 71 F	83, 84 F
% Relative Humidity Start, Stop	25, 25	40, 40
Wind Velocity+Dir. Start	8 MPH, NE	6.7 MPH, E
Wind Velocity+Dir. Stop	8 MPH, NE	9.2 MPH, E
Wind Velocity+Dir. Max	10.5 MPH, NE	10.5 MPH, E
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	80 F
Soil Moisture	DRY	DRY
Soil Surface Condition	CLODDY	CLODDY
% Cloud Cover	0	20

North Dakota State University

Corn PRE fb POST Showcase Showdown

Trial ID: 21S-PALM-CORN-14 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-14 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Application Equipment

	A	B
Appl. Equipment	Walter	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	XR
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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	May-6-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Corn PRE fb POST Showcase Showdown

Trial ID: 21S-PALM-CORN-14 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-14 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-9-2021	Jun-15-2021	Jun-28-2021	Jul-12-2021
	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				Sep-3-2021	Sep-3-2021	Sep-3-2021	Sep-3-2021
	Days After First/Last Applic.				28, 28	34, 34	47, 13	61, 27
1	Untreated Check				0.0 -	0.0 -	0.0 b	0.0 b
2	ACURON	2.5	qt/a	A	99.0 -	99.0 -	97.0 a	95.8 a
3	LUMAX EZ	1.5	qt/a	A	99.0 -	99.0 -	99.0 a	99.0 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				
4	ACURON	1.25	qt/a	A	99.0 -	99.0 -	99.0 a	99.0 a
	ACURON	1.25	qt/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
5	ACURON FLEXI	1.125	qt/a	A	99.0 -	99.0 -	98.0 a	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				
6	SURESTART II	2	pt/a	A	99.0 -	99.0 -	99.0 a	99.0 a
	RESICORE	1.25	pt/a	B				
	AATREX	1	pt/a	B				
	DURANGO DMA	24	fl oz/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
7	KEYSTONE LA NXT	1.5	pt/a	A	99.0 -	99.0 -	99.0 a	99.0 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				
8	BALANCE FLEXX	4	fl oz/a	A	99.0 -	99.0 -	99.0 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				
9	HARNESS MAX	40	fl oz/a	A	99.0 -	99.0 -	99.0 a	99.0 a
	HARNESS MAX	40	fl oz/a	B				
	ACTIVATOR 90 - NIS	0.25	% v/v	B				
	N-PAK AMS	2.5	% v/v	B				
10	HARNESS XTRA	3.2	pt/a	A	99.0 -	99.0 -	98.0 a	99.0 a
	SINATE	28	fl oz/a	B				
	AATREX	1	pt/a	B				
	MSO ULTRA	0.5	% v/v	B				
	N-PAK AMS	2.5	% v/v	B				
11	VERDICT	1	pt/a	A	99.0 -	99.0 -	99.0 a	99.0 a
	STATUS	5	oz/a	B				
	AATREX	16	fl oz/a	B				
	ROUNDUP POWERMAX	1	qt/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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,2 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn PRE fb POST Showcase Showdown

Trial ID: 21S-PALM-CORN-14 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-14 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-9-2021	Jun-15-2021	Jun-28-2021	Jul-12-2021
	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				Sep-3-2021	Sep-3-2021	Sep-3-2021	Sep-3-2021
	Days After First/Last Applic.				28, 28	34, 34	47, 13	61, 27
12	VERDICT	10	fl oz/a	A	99.0 -	99.0 -	99.0 a	99.0 a
	ARMEZON PRO	18	fl oz/a	B				
	AATREX	12	fl oz/a	B				
	ROUNDUP POWERMAX	1	qt/a	B				
	N-PAK AMS	2.5	% v/v	B				
	LSD P=.05				.	.	1.47	2.64
	Standard Deviation				0.00	0.00	1.02	1.83
	CV				0.0	0.0	1.13	2.03
	Levene's F^				.	.	1.797	2.107
	Levene's Prob(F)				.	.	0.091	0.046*
	Skewness^				.	.	-1.1215*	-2.0575*
	Kurtosis^				.	.	2.9999*	9.5078*
	Replicate F				0.000	0.000	1.692	0.472
	Replicate Prob(F)				1.0000	1.0000	0.1877	0.7040
	Treatment F				0.000	0.000	3088.702	965.050
	Treatment Prob(F)				1.0000	1.0000	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

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

Corn Early POST Showcase Showdown

Trial ID: 21S-PALM-CORN-15 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-15 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-6-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley

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:** RACOBL Randomized Complete Block (RCB)

Application Description

	A
Application Date	Jun-10-2021
Appl. Start Time	11:00 AM
Appl. Stop Time	11:25 AM
Application Method	SPRAY
Application Timing	POEMCR
Application Placement	BROFOL
Applied By	Stith, J
Appl. Entry Date	Jun-16-2021
Air Temperature Start, Stop	77, 78 F
% Relative Humidity Start, Stop	63, 63
Wind Velocity+Dir. Start	8.9 MPH, NE
Wind Velocity+Dir. Stop	7.3 MPH, NE
Wind Velocity+Dir. Max	10.3 MPH, NE
Wet Leaves (Y/N)	N, no
Soil Temperature	78 F
Soil Moisture	DRY
Soil Surface Condition	CLOTRA
% Cloud Cover	0

North Dakota State University

Corn Early POST Showcase Showdown

Trial ID: 21S-PALM-CORN-15 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-15 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Application Equipment

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

Notes

Context	Date	By	Notes
STATUS	May-6-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jun-16-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Corn Early POST Showcase Showdown

Trial ID: 21S-PALM-CORN-15 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-15 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*
	Pest Type				W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-22-2021	Jul-7-2021	Jul-20-2021
	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				Sep-3-2021	Sep-3-2021	Sep-3-2021
	Days After First/Last Applic.				12, 12	27, 27	40, 40
	Trt-Eval Interval				12 DA-A	27 DA-A	40 DA-A
1	Untreated Check				0.0 -	0.0 b	0.0 b
2	ACURON GT	3.75	pt/a	A	99.0 -	97.0 a	97.0 a
	ACTIVATOR 90 - NIS	0.25	% v/v	A			
	N-PAK AMS	2.5	qt/a	A			
3	ACURON GT	3.75	pt/a	A	99.0 -	98.0 a	98.0 a
	AATREX	1	pt/a	A			
	ACTIVATOR 90 - NIS	0.25	% v/v	A			
	N-PAK AMS	2.5	qt/a	A			
4	RESICORE	1.25	qt/a	A	99.0 -	98.0 a	97.0 a
	ROUNDUP POWERMAX	26.6	fl oz/a	A			
	N-PAK AMS	2.5	qt/a	A			
5	RESICORE	1.25	qt/a	A	99.0 -	95.8 a	95.8 a
	AATREX	1	pt/a	A			
	ROUNDUP POWERMAX	26.6	fl oz/a	A			
	N-PAK AMS	2.5	qt/a	A			
6	REALM Q @ 4 OZ/A				99.0 -	97.0 a	97.0 a
	MATRIX	1.2	oz/a	A			
	DRY 50% MESOTRIONE	2.5	oz/a	A			
	ISOXADIFEN	0.6	oz/a	A			
	AATREX	1	pt/a	A			
	DURANGO DMA	24	fl oz/a	A			
	N-PAK AMS	8.5	lb ai/100 gal	A			
7	CAPRENO	3	fl oz/a	A	99.0 -	98.0 a	98.0 a
	HARNESS	2	pt/a	A			
	ROUNDUP POWERMAX	32	fl oz/a	A			
	AATREX	16	fl oz/a	A			
	SUPERB HC HSPOC	0.25	% v/v	A			
	N-PAK AMS	8.5	lb ai/100 gal	A			
8	ANTHEM MAXX	4	fl oz/a	A	99.0 -	97.0 a	96.0 a
	CALLISTO	3	fl oz/a	A			
	AATREX	1	pt/a	A			
	ROUNDUP WEATHERMAX	22	fl oz/a	A			
	PRIME OIL	1	% v/v	A			
	N-PAK AMS	2.5	% v/v	A			
9	HARNESS	1.75	pt/a	A	99.0 -	99.0 a	99.0 a
	IMPACT	1	fl oz/a	A			
	AATREX	1	pt/a	A			
	MSO ULTRA	0.5	% v/v	A			
	N-PAK AMS	2.5	% v/v	A			
10	HARNESS	1.75	pt/a	A	99.0 -	98.0 a	98.0 a
	SINATE	28	fl oz/a	A			
	AATREX	1	pt/a	A			
	MSO ULTRA	0.5	% v/v	A			
	N-PAK AMS	2.5	% v/v	A			
11	ARMEZON PRO	18	fl oz/a	A	99.0 -	97.0 a	98.0 a
	AATREX	16	fl oz/a	A			
	ROUNDUP POWERMAX	1	qt/a	A			
	N-PAK AMS	2.5	% v/v	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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Early POST Showcase Showdown

Trial ID: 21S-PALM-CORN-15 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-CORN-15 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*
	Pest Type				W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-22-2021	Jul-7-2021	Jul-20-2021
	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				Sep-3-2021	Sep-3-2021	Sep-3-2021
	Days After First/Last Applic.				12, 12	27, 27	40, 40
	Trt-Eval Interval				12 DA-A	27 DA-A	40 DA-A
12	STATUS	5	oz/a	A	99.0 -	96.8 a	96.8 a
	OUTLOOK	1	pt/a	A			
	AATREX	16	fl oz/a	A			
	ROUNDUP POWERMAX	1	qt/a	A			
	N-PAK AMS	2.5	% v/v	A			
	LSD P=.05				.	3.75	3.49
	Standard Deviation				0.00	2.61	2.43
	CV				0.0	2.92	2.72
	Levene's F^				.	0.929	0.919
	Levene's Prob(F)				.	0.524	0.533
	Skewness^				.	-1.0437*	-0.9628*
	Kurtosis^				.	1.101	1.7405*
	Replicate F				0.000	0.168	1.624
	Replicate Prob(F)				1.0000	0.9174	0.2026
	Treatment F				0.000	466.198	535.524
	Treatment Prob(F)				1.0000	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

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

Syngenta Soybean Herbicide Shootout

Trial ID: 21S-PALM-SOY-07 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-07 Investigator (Creator): Dr. Joe Ikley
Project ID: H072SMAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-3-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 6
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Palmerville, ND
% OM: 6.6
pH: 7.4 **Soil Name:** Barnes-Svea Loam

Application Description

	A	B
Application Date	May-12-2021	Jun-22-2021
Appl. Start Time	1:45 PM	9:20 AM
Appl. Stop Time	2:15 AM	9:40 AM
Application Method	SPRAY	SPRAY
Application Timing	PREEM	POEMCR
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Stith, J
Appl. Entry Date	May-20-2021	Jun-30-2021
Air Temperature Start, Stop	74, 74 F	63, 65 F
% Relative Humidity Start, Stop	16, 16	60, 60
Wind Velocity+Dir. Start	8 MPH, SW	5 MPH, SW
Wind Velocity+Dir. Stop	8 MPH, SW	4 MPH, SW
Wind Velocity+Dir. Max	10 MPH, SW	8 MPH, SW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	58 F
Soil Moisture	DRY	NORMAL
Soil Surface Condition	CLODDY	CLODDY
% Cloud Cover	5	20

North Dakota State University

Syngenta Soybean Herbicide Shootout

Trial ID: 21S-PALM-SOY-07 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-07 Investigator (Creator): Dr. Joe Ikley
Project ID: H072SMAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Application Equipment

	A	B
Appl. Equipment	Walter	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	TTI/TT
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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	May-3-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Syngenta Soybean Herbicide Shootout

Trial ID: 21S-PALM-SOY-07 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-07 Investigator (Creator): Dr. Joe Ikley
Project ID: H072SMAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type						W, Weed	W, Weed	W, Weed
	Pest Code						AMAPA	AMAPA	AMAPA
	Pest Name						Palmer amaranth	Palmer amaranth	Palmer amaranth
	Crop Type, Code				C, GLXMA	C, GLXMA			
	Crop Name				Soybean	Soybean			
	Rating Date				Jun-2-2021	Jun-9-2021	Jun-9-2021	Jun-22-2021	Jun-28-2021
	Rating Type				PHYGEN	PHYGEN	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				21, 21	28, 28	28, 28	41, 41	47, 6
	Days After Emergence				7 DE-1	14 DE-1	14 DE-1	27 DE-1	33 DE-1
1	BOUNDARY	1.67	pt/a	A	0.0 -	0.0 -	80.0 -	73.8 -	82.5 -
	FLEXSTAR GT 3.5	2.7	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	PRIME OIL	1	% v/v	B					
2	BROADAXE XC	25	fl oz/a	A	0.0 -	0.0 -	87.5 -	85.0 -	90.0 -
	FLEXSTAR GT 3.5	2.7	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	PRIME OIL	1	% v/v	B					
3	PREFIX	1.5	pt/a	A	0.0 -	0.0 -	82.5 -	73.8 -	88.8 -
	FLEXSTAR GT 3.5	2.7	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	PRIME OIL	1	% v/v	B					
4	BOUNDARY	1.67	pt/a	A	0.0 -	0.0 -	85.0 -	77.5 -	88.8 -
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	ON-TARGET	0.5	% v/v	B					
5	BROADAXE XC	25	fl oz/a	A	0.0 -	0.0 -	97.0 -	91.0 -	94.8 -
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	ON-TARGET	0.5	% v/v	B					
6	PREFIX	1.5	pt/a	A	0.0 -	0.0 -	91.3 -	83.8 -	87.5 -
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	ON-TARGET	0.5	% v/v	B					
	LSD P=.05				.	.	12.06	13.24	10.74
	Standard Deviation				0.00	0.00	8.00	8.79	7.12
	CV				0.0	0.0	9.18	10.88	8.03
	Levene's F^				.	.	0.584	1.168	2.005
	Levene's Prob(F)				.	.	0.712	0.363	0.127
	Skewness^				.	.	-0.2209	0.1335	-0.6947
	Kurtosis^				.	.	0.3958	2.5357*	1.9289*
	Replicate F				0.000	0.000	3.509	5.505	1.095
	Replicate Prob(F)				1.0000	1.0000	0.0416	0.0094	0.3816
	Treatment F				0.000	0.000	2.390	2.494	1.232
	Treatment Prob(F)				1.0000	1.0000	0.0876	0.0780	0.3424

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

Syngenta Soybean Herbicide Shootout

Trial ID: 21S-PALM-SOY-07 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-07 Investigator (Creator): Dr. Joe Ikley
Project ID: H072SMAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*
	Pest Type				W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth
	Crop Type, Code					
	Crop Name					
	Rating Date				Jul-5-2021	Jul-20-2021
	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-12-2021	Aug-12-2021
	Days After First/Last Applic.				54, 13	69, 28
	Days After Emergence				40 DE-1	55 DE-1
1	BOUNDARY	1.67	pt/a	A	65.0 b	62.5 b
	FLEXSTAR GT 3.5	2.7	pt/a	B		
	N-PAK AMS	2.5	% v/v	B		
	PRIME OIL	1	% v/v	B		
2	BROADAXE XC	25	fl oz/a	A	76.3 b	78.8 ab
	FLEXSTAR GT 3.5	2.7	pt/a	B		
	N-PAK AMS	2.5	% v/v	B		
	PRIME OIL	1	% v/v	B		
3	PREFIX	1.5	pt/a	A	75.0 b	68.8 b
	FLEXSTAR GT 3.5	2.7	pt/a	B		
	N-PAK AMS	2.5	% v/v	B		
	PRIME OIL	1	% v/v	B		
4	BOUNDARY	1.67	pt/a	A	97.0 a	98.0 a
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	CLASS ACT RIDION	1	% v/v	B		
	VOLT-EDGE	20	fl oz/a	B		
	ON-TARGET	0.5	% v/v	B		
5	BROADAXE XC	25	fl oz/a	A	96.0 a	96.0 a
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	CLASS ACT RIDION	1	% v/v	B		
	VOLT-EDGE	20	fl oz/a	B		
	ON-TARGET	0.5	% v/v	B		
6	PREFIX	1.5	pt/a	A	91.0 a	92.3 a
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B		
	ROUNDUP POWERMAX	32	fl oz/a	B		
	CLASS ACT RIDION	1	% v/v	B		
	VOLT-EDGE	20	fl oz/a	B		
	ON-TARGET	0.5	% v/v	B		
	LSD P=.05				11.89	14.47
	Standard Deviation				7.89	9.60
	CV				9.46	11.61
	Levene's F^				0.974	3.846
	Levene's Prob(F)				0.46	0.015*
	Skewness^				-0.1785	-0.3989
	Kurtosis^				0.2286	0.1818
	Replicate F				2.223	0.597
	Replicate Prob(F)				0.1276	0.6265
	Treatment F				11.076	9.728
	Treatment Prob(F)				0.0001	0.0003

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

Syngenta Soybean Herbicide Shootout

Trial ID: 21S-PALM-SOY-07 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-07 Investigator (Creator): Dr. Joe Ikley
Project ID: H072SMAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

North Dakota State University

Engenia and Liberty Efficacy in Xtendflex Soybeans

Trial ID: 21S-PALM-SOY-09 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-09 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-3-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 11
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Palmerville, ND
% OM: 6.6
pH: 7.4 **Soil Name:** Barnes-Svea Loam

Application Description

	A	B
Application Date	Jun-22-2021	Jul-7-2021
Appl. Start Time	11:10 AM	11:25 AM
Appl. Stop Time	11:30 AM	11:40 AM
Application Method	SPRAY	SPRAY
Application Timing	POEMCR	POEMCR
Application Placement	BROFOL	BROFOL
Applied By	Stith, J	Stith, J
Appl. Entry Date	Jun-30-2021	Jul-16-2021
Air Temperature Start, Stop	73, 75 F	72, 66 F
% Relative Humidity Start, Stop	37, 37	57, 58
Wind Velocity+Dir. Start	6 MPH, SW	3 MPH, NNE
Wind Velocity+Dir. Stop	4 MPH, SW	2 MPH, NNE
Wind Velocity+Dir. Max	7 MPH, SW	4 MPH, NNE
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	64 F	74 F
Soil Moisture	NORMAL	DRY
Soil Surface Condition	CLOTRA	CLOTRA
% Cloud Cover	0	100

North Dakota State University

Engenia and Liberty Efficacy in Xtendflex Soybeans

Trial ID: 21S-PALM-SOY-09 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-09 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Application Equipment

	A	B
Appl. Equipment	Walter	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TTI/TT	TTI/XR
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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	May-3-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Engenia and Liberty Efficacy in Xtendflex Soybeans

Trial ID: 21S-PALM-SOY-09 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-09 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-28-2021	Jul-5-2021	Jul-12-2021	Jul-20-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				6, 6	13, 13	20, 5	28, 13
	Days After Emergence				33 DE-1	40 DE-1	47 DE-1	55 DE-1
1	Untreated				0.0 d	0.0 c	0.0 d	0.0 d
2	ENGENIA	12.8	fl oz/a	A	72.5 abc	83.8 a	92.5 ab	91.3 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
3	ENGENIA	12.8	fl oz/a	A	65.0 abc	70.0 ab	70.0 c	63.8 c
	LIBERTY 280 SL	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
4	ENGENIA	12.8	fl oz/a	A	77.5 ab	82.5 a	82.5 b	78.8 b
	LIBERTY 280 SL	32	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
5	ENGENIA	12.8	fl oz/a	A	65.0 abc	83.8 a	88.8 ab	90.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
6	ENGENIA	12.8	fl oz/a	A	57.5 bc	82.5 a	97.0 ab	99.0 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
7	ENGENIA	12.8	fl oz/a	A	57.5 bc	70.0 ab	97.0 ab	99.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
8	ENGENIA	12.8	fl oz/a	A	75.0 abc	88.8 a	98.0 a	99.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	OUTLOOK	12	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	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.
* Adjusted means
^Calculated from residual.

North Dakota State University

Engenia and Liberty Efficacy in Xtendflex Soybeans

Trial ID: 21S-PALM-SOY-09 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-09 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name				Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Rating Date				Jun-28-2021	Jul-5-2021	Jul-12-2021	Jul-20-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				6, 6	13, 13	20, 5	28, 13
	Days After Emergence				33 DE-1	40 DE-1	47 DE-1	55 DE-1
9	ENGENIA	12.8	fl oz/a	A	66.3 abc	83.8 a	92.5 ab	95.8 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	CLASS ACT RIDION	1	% v/v	A				
	SENTRIS	8	fl oz/a	A				
	ENGENIA	12.8	fl oz/a	B				
	ZIDUA SC	3.25	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
	SENTRIS	8	fl oz/a	B				
10	LIBERTY 280 SL	32	fl oz/a	A	85.0 a	68.8 ab	91.3 ab	93.5 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENGENIA	12.8	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	CLASS ACT RIDION	1	% v/v	B				
	SENTRIS	8	fl oz/a	B				
11	LIBERTY 280 SL	32	fl oz/a	A	52.5 c	52.5 b	88.8 ab	94.5 a
	OUTLOOK	12	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENGENIA	12.8	fl oz/a	B				
	ZIDUA SC	3.25	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	CLASS ACT RIDION	1	% v/v	B				
	SENTRIS	8	fl oz/a	B				
	LSD P=.05				14.41	13.83	9.27	9.05
	Standard Deviation				9.98	9.58	6.42	6.27
	CV				16.29	13.75	7.86	7.62
	Levene's F^				1.154	1.078	2.602	2.976
	Levene's Prob(F)				0.355	0.406	0.019*	0.009*
	Skewness^				0.3541	1.0668*	-0.3622	-0.0622
	Kurtosis^				0.0707	2.3496*	0.0553	0.637
	Replicate F				1.025	0.056	0.731	0.601
	Replicate Prob(F)				0.3954	0.9824	0.5418	0.6193
	Treatment F				20.297	28.057	77.443	87.197
	Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

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

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-4-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 10
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Palmerville, ND
% OM: 6.6
pH: 7.4 **Soil Name:** Barnes-Svea Loam

Application Description

	A	B
Application Date	Jun-24-2021	Jul-7-2021
Appl. Start Time	10:30 AM	10:50 AM
Appl. Stop Time	10:55 AM	11:05 AM
Application Method	SPRAY	SPRAY
Application Timing	POSTWE	POSTWE
Application Placement	BROFOL	BROFOL
Applied By	Desimini, S	Stith, J
Appl. Entry Date	Jun-30-2021	Jul-15-2021
Air Temperature Start, Stop	77, 79 F	73, 78 F
% Relative Humidity Start, Stop	45, 45	50, 43
Wind Velocity+Dir. Start	2 MPH, NW	4 MPH, N
Wind Velocity+Dir. Stop	3 MPH, NW	3 MPH, N
Wind Velocity+Dir. Max	4 MPH, NW	5 MPH, N
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	76 F	74 F
Soil Moisture	NORMAL	DRY
Soil Surface Condition	CLODDY	CLOTRA

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Application Equipment

	A	B
Appl. Equipment	Mjolnir	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	AIXR	AIXR
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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	May-4-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	CHEAL	AMAPA	CHEAL
	Pest Name				Palmer amaranth	common lambsquarters	Palmer amaranth	common lambsquarters
	Rating Date				Jul-2-2021	Jul-2-2021	Jul-7-2021	Jul-7-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				8, 8	8, 8	13, 13	13, 13
1	Untreated				0.0 c	0.0 b	0.0 c	0.0 b
2	ENLIST ONE	2	pt/a	A	80.0 ab	87.5 a	82.5 ab	93.5 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
3	LIBERTY 280 SL	32	fl oz/a	A	78.8 b	90.0 a	70.0 b	93.8 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
4	ENLIST ONE	2	pt/a	A	92.5 ab	92.5 a	86.3 ab	95.8 a
	LIBERTY 280 SL	32	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
5	ENLIST ONE	2	pt/a	A	87.5 ab	90.0 a	86.3 ab	95.8 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
6	ENLIST ONE	2	pt/a	A	93.8 a	93.8 a	92.5 a	97.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
7	ENLIST ONE	2	pt/a	A	88.8 ab	95.0 a	86.3 ab	97.0 a
	LIBERTY 280 SL	32	fl oz/a	A				
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
8	ENLIST ONE	2	pt/a	A	93.8 a	92.5 a	92.5 a	97.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	OUTLOOK	12	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
9	LIBERTY 280 SL	32	fl oz/a	A	90.0 ab	94.8 a	85.0 ab	96.0 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENLIST ONE	2	pt/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	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.
* Adjusted means
^Calculated from residual.

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	CHEAL	AMAPA	CHEAL
	Pest Name				Palmer amaranth	common lambsquarters	Palmer amaranth	common lambsquarters
	Rating Date				Jul-2-2021	Jul-2-2021	Jul-7-2021	Jul-7-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				8, 8	8, 8	13, 13	13, 13
10	LIBERTY 280 SL	32	fl oz/a	A	86.3 ab	93.8 a	78.8 ab	96.0 a
	OUTLOOK	12	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENLIST ONE	2	pt/a	B				
	ZIDUA SC	3.25	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
	LSD P=.05				9.01	5.46	10.96	4.41
	Standard Deviation				6.21	3.76	7.55	3.04
	CV				7.85	4.53	9.94	3.53
	Levene's F^				1.385	0.293	2.85	1.446
	Levene's Prob(F)				0.239	0.971	0.015*	0.214
	Skewness^				-1.2102*	-1.0229*	-0.5364	-0.3463
	Kurtosis^				2.7217*	1.0697	-0.0083	0.509
	Replicate F				0.016	2.851	0.058	0.292
	Replicate Prob(F)				0.9971	0.0560	0.9811	0.8310
	Treatment F				82.929	241.803	53.006	398.040
	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
^Calculated from residual.

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	5*	6*	7*	8*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	CHEAL	AMAPA	CHEAL
	Pest Name				Palmer amaranth	common lambsquarters	Palmer amaranth	common lambsquarters
	Rating Date				Jul-12-2021	Jul-12-2021	Jul-20-2021	Jul-20-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				18, 5	18, 5	26, 13	26, 13
1	Untreated				0.0 d	0.0 c	0.0 d	0.0 b
2	ENLIST ONE	2	pt/a	A	82.3 ab	96.8 a	79.8 ab	96.8 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
3	LIBERTY 280 SL	32	fl oz/a	A	57.5 c	92.3 b	55.0 c	94.5 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
4	ENLIST ONE	2	pt/a	A	77.5 b	98.0 a	72.5 b	98.0 a
	LIBERTY 280 SL	32	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
5	ENLIST ONE	2	pt/a	A	96.8 a	99.0 a	96.8 a	99.0 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
6	ENLIST ONE	2	pt/a	A	99.0 a	99.0 a	99.0 a	99.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
7	ENLIST ONE	2	pt/a	A	96.8 a	99.0 a	96.8 a	99.0 a
	LIBERTY 280 SL	32	fl oz/a	A				
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
8	ENLIST ONE	2	pt/a	A	98.0 a	99.0 a	99.0 a	99.0 a
	ZIDUA SC	3.25	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	LIBERTY 280 SL	32	fl oz/a	B				
	OUTLOOK	12	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
9	LIBERTY 280 SL	32	fl oz/a	A	95.8 a	99.0 a	98.0 a	99.0 a
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENLIST ONE	2	pt/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	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.
* Adjusted means
^Calculated from residual.

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	5*	6*	7*	8*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPA	CHEAL	AMAPA	CHEAL
	Pest Name				Palmer amaranth	common lambsquarters	Palmer amaranth	common lambsquarters
	Rating Date				Jul-12-2021	Jul-12-2021	Jul-20-2021	Jul-20-2021
	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				18, 5	18, 5	26, 13	26, 13
10	LIBERTY 280 SL	32	fl oz/a	A	91.3 ab	96.8 a	92.3 a	99.0 a
	OUTLOOK	12	fl oz/a	A				
	ROUNDUP POWERMAX	32	fl oz/a	A				
	N-PAK AMS	3	lb ai/a	A				
	ENLIST ONE	2	pt/a	B				
	ZIDUA SC	3.25	fl oz/a	B				
	ROUNDUP POWERMAX	32	fl oz/a	B				
	N-PAK AMS	3	lb ai/a	B				
	LSD P=.05				12.42	3.67	12.52	3.16
	Standard Deviation				8.56	2.53	8.63	2.18
	CV				10.77	2.88	10.94	2.47
	Levene's F^				2.049	0.725	2.814	2.666
	Levene's Prob(F)				0.068	0.683	0.016*	0.021*
	Skewness^				0.4075	-0.7989*	0.311	-0.7496*
	Kurtosis^				1.1779	3.1183*	1.6304*	2.2425*
	Replicate F				1.005	1.130	0.532	1.771
	Replicate Prob(F)				0.4059	0.3544	0.6645	0.1765
	Treatment F				51.807	599.394	52.663	811.466
	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
^Calculated from residual.

North Dakota State University

Liberty and Enlist One Efficacy in E3 Soybean

Trial ID: 21S-PALM-SOY-10 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-10 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact: Ken Deibert, BASF

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
CHEAL, Chenopodium album, common lambsquarters = US
Rating Type
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

North Dakota State University

Soybean PRE Herbicide Showcase Showdown

Trial ID: 21S-PALM-SOY-16 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-16 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-6-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley

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:** RACOBL Randomized Complete Block (RCB)

Application Description

	A
Application Date	May-13-2021
Appl. Start Time	9:40 AM
Appl. Stop Time	10:20 AM
Application Method	SPRAY
Application Timing	PREEM
Application Placement	BROSOI
Applied By	Haugrud, N
Appl. Entry Date	May-20-2021
Air Temperature Start, Stop	59, 59 F
% Relative Humidity Start, Stop	40, 40
Wind Velocity+Dir. Start	9 MPH, SW
Wind Velocity+Dir. Stop	9 MPH, SW
Wind Velocity+Dir. Max	13 MPH, SW
Wet Leaves (Y/N)	N, no
Soil Temperature	51 F
Soil Moisture	DRY
Soil Surface Condition	CLODDY
% Cloud Cover	0

North Dakota State University

Soybean PRE Herbicide Showcase Showdown

Trial ID: 21S-PALM-SOY-16 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-16 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Application Equipment

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

Notes

Context	Date	By	Notes
STATUS	May-6-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Soybean PRE Herbicide Showcase Showdown

Trial ID: 21S-PALM-SOY-16 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-16 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*
	Pest Type					W, Weed	W, Weed	W, Weed
	Pest Code					AMAPA	AMAPA	AMAPA
	Pest Name					Palmer amaranth	Palmer amaranth	Palmer amaranth
	Crop Type, Code				C, GLXMA			
	Crop Name				Soybean			
	Rating Date				Jun-9-2021	Jun-9-2021	Jun-22-2021	Jul-7-2021
	Rating Type				PHYGEN	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-12-2021	Aug-12-2021	Aug-12-2021	Aug-12-2021
	Days After First/Last Applic.				27, 27	27, 27	40, 40	55, 55
	Trt-Eval Interval				27 DA-A	27 DA-A	40 DA-A	55 DA-A
	Days After Emergence				14 DE-1	14 DE-1	27 DE-1	42 DE-1
1	Untreated Check				0.0 b	0.0 c	0.0 f	0.0 d
2	DUAL II MAGNUM	1.67	pt/a	A	0.0 b	77.5 b	61.3 de	27.5 cd
3	OUTLOOK	18	fl oz/a	A	1.3 b	78.8 b	66.3 cde	30.0 bcd
4	ZIDUA SC	5	fl oz/a	A	1.3 b	96.0 a	91.3 ab	80.0 a
5	WARRANT	1.9	qt/a	A	0.0 b	85.0 ab	77.5 a-e	51.3 abc
6	VALOR SX	3	oz/a	A	0.0 b	88.8 ab	76.3 a-e	37.5 a-d
7	SPARTAN	12	fl oz/a	A	1.3 b	86.3 ab	78.8 a-e	43.8 abc
8	REFLEX	0.75	pt/a	A	0.0 b	86.3 ab	68.8 b-e	40.0 a-d
9	TRICOR	8	oz/a	A	1.3 b	83.8 ab	72.5 a-e	33.8 bcd
10	PROWL H20	3	pt/a	A	1.3 b	71.3 b	57.5 e	41.3 a-d
11	BOUNDARY	1.5	pt/a	A	0.0 b	76.3 b	68.8 b-e	30.0 bcd
12	BROADAXE XC	25	fl oz/a	A	7.5 a	96.8 a	83.8 a-d	42.5 a-d
13	FIERCE EZ	6	fl oz/a	A	3.8 ab	99.0 a	95.0 a	72.5 abc
14	FIERCE MTZ	1.5	pt/a	A	2.5 b	98.0 a	92.5 a	73.8 ab
15	AUTHORITY EDGE	11	fl oz/a	A	3.8 ab	95.8 a	96.0 a	81.3 a
16	AUTHORITY MTZ	18	oz/a	A	0.0 b	98.0 a	85.0 abc	57.5 abc
	LSD P=.05				3.49	10.88	14.23	26.34
	Standard Deviation				2.45	7.64	9.99	18.50
	CV				165.23	9.28	13.65	39.86
	Levene's F^				2.506	1.621	0.906	1.412
	Levene's Prob(F)				0.008*	0.103	0.562	0.18
	Skewness^				0.8859*	0.2541	-0.078	-0.2537
	Kurtosis^				1.7843*	0.4915	0.7605	-0.4426
	Replicate F				0.584	0.167	1.236	0.821
	Replicate Prob(F)				0.6283	0.9179	0.3078	0.4894
	Treatment F				2.801	38.345	20.940	5.687
	Treatment Prob(F)				0.0039	0.0001	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

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

Xtendflex Soybean Showcase Showdown

Trial ID: 21S-PALM-SOY-17 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-17 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: May-6-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley

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:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Palmerville, ND
% OM: 6.6
pH: 7.4 **Soil Name:** Barnes-Svea Loam

Application Description

	A	B
Application Date	May-12-2021	Jun-15-2021
Appl. Start Time	2:15 PM	12:30 PM
Appl. Stop Time	2:35 PM	12:50 PM
Application Method	SRPAY	SPRAY
Application Timing	PREEM	POEMCR
Application Placement	BROSOI	BROFOL
Applied By	Stith, J	Stith, J
Appl. Entry Date	May-20-2021	Jun-16-2021
Air Temperature Start, Stop	74, 74 F	84, 86 F
% Relative Humidity Start, Stop	16, 16	30, 30
Wind Velocity+Dir. Start	8 MPH, SW	5 MPH, E
Wind Velocity+Dir. Stop	8 MPH, SW	7.3 MPH, E
Wind Velocity+Dir. Max	10 MPH, SW	10 MPH, E
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	51 F	80 F
Soil Moisture	DRY	DRY
Soil Surface Condition	CLODDY	CLODDY
% Cloud Cover	5	20

North Dakota State University

Xtendflex Soybean Showcase Showdown

Trial ID: 21S-PALM-SOY-17 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-17 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Application Equipment

	A	B
Appl. Equipment	Walter	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	TTI
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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	May-6-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Xtendflex Soybean Showcase Showdown

Trial ID: 21S-PALM-SOY-17 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-17 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code					AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name					Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Crop Type, Code				C, GLXMA				
	Crop Name				Soybean				
	Rating Date				Jun-15-2021	Jun-15-2021	Jun-28-2021	Jul-12-2021	Jul-26-2021
	Rating Type				PHYGEN	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				Sep-14-2021	Sep-14-2021	Sep-14-2021	Sep-14-2021	Sep-14-2021
	Days After First/Last Applic.				34, 34	34, 34	47, 13	61, 27	75, 41
1	Untreated Check				0.0 -	0.0 d	0.0 c	0.0 c	0.0 c
2	ZIDUA PRO	4.5	fl oz/a	A	0.0 -	92.5 a	99.0 a	99.0 a	98.0 a
	ENGENIA	12.8	fl oz/a	B					
	ZIDUA SC	3.25	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	INTACT	0.5	% v/v	B					
	SENTRIS	8	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
3	ZIDUA PRO	4.5	fl oz/a	A	0.0 -	88.8 ab	96.0 a	93.8 a	92.3 a
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	OUTLOOK	12	fl oz/a	B					
	N-PAK AMS	5	% v/v	B					
4	ZIDUA PRO	4.5	fl oz/a	A	0.0 -	93.8 a	98.0 a	96.0 a	97.0 a
	ENGENIA	12.8	fl oz/a	B					
	LIBERTY 280 SL	32	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	ZIDUA SC	3.25	fl oz/a	B					
	INTACT	0.5	% v/v	B					
	SENTRIS	8	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
5	BROADAXE XC	25	fl oz/a	A	0.0 -	87.3 ab	93.5 a	93.5 a	96.8 a
	TAVIUM PLUS VAPORGRIP	3.53	pt/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	INTACT	0.5	% v/v	B					
	CLASS ACT RIDION	1	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
6	BOUNDARY	1.67	pt/a	A	0.0 -	78.8 b	86.3 b	75.0 b	77.5 b
	FLEXSTAR GT 3.5	2.7	pt/a	B					
	N-PAK AMS	2.5	% v/v	B					
	PRIME OIL	1	% v/v	B					
7	MAULER	8	fl oz/a	A	0.0 -	65.0 c	94.8 a	98.0 a	94.5 a
	WARRANT	1.5	qt/a	A					
	XTENDIMAX	22	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	WARRANT	1.5	qt/a	B					
	INTACT	0.5	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
8	XTENDIMAX	22	fl oz/a	A	0.0 -	95.0 a	98.0 a	98.0 a	95.8 a
	MAULER	8	fl oz/a	A					
	WARRANT	1.5	qt/a	A					
	XTENDIMAX	22	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	WARRANT	1.5	qt/a	B					
	INTACT	0.5	% v/v	B					
	VOLT-EDGE	20	fl oz/a	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.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Xtendflex Soybean Showcase Showdown

Trial ID: 21S-PALM-SOY-17 Location: Palmerville, ND Trial Year: 2021
Protocol ID: 21S-PALM-SOY-17 Investigator (Creator): Dr. Joe Ikley
Project ID: Study Director: Dr. Joe Ikley
Sponsor Contact:

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code					AMAPA	AMAPA	AMAPA	AMAPA
	Pest Name					Palmer amaranth	Palmer amaranth	Palmer amaranth	Palmer amaranth
	Crop Type, Code				C, GLXMA				
	Crop Name				Soybean				
	Rating Date				Jun-15-2021	Jun-15-2021	Jun-28-2021	Jul-12-2021	Jul-26-2021
	Rating Type				PHYGEN	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				Sep-14-2021	Sep-14-2021	Sep-14-2021	Sep-14-2021	Sep-14-2021
	Days After First/Last Applic.				34, 34	34, 34	47, 13	61, 27	75, 41
9	KYBER	1.5	pt/a	A	0.0 -	87.3 ab	98.0 a	98.0 a	99.0 a
	XTENDIMAX	22	fl oz/a	B					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	EVERPREX	1	pt/a	B					
	INTACT	0.5	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
10	XTENDIMAX	22	fl oz/a	A	0.0 -	97.0 a	98.0 a	96.8 a	96.8 a
	FIERCE MTZ	1	pt/a	A					
	ROUNDUP POWERMAX	32	fl oz/a	B					
	XTENDIMAX	22	fl oz/a	B					
	PERPETUO	6	fl oz/a	B					
	SELECT MAX	9	fl oz/a	B					
	INDUCE	0.25	% v/v	B					
	INTACT	0.5	% v/v	B					
	VOLT-EDGE	20	fl oz/a	B					
	CLASS ACT RIDION	1	% v/v	B					
	LSD P=.05				.	9.07	4.79	4.65	5.68
	Standard Deviation				0.00	6.25	3.30	3.21	3.91
	CV				0.0	7.96	3.84	3.78	4.62
	Levene's F^				.	1.062	2.943	1.741	0.848
	Levene's Prob(F)				.	0.418	0.013*	0.123	0.58
	Skewness^				.	0.1341	0.1455	-0.5418	-0.479
	Kurtosis^				.	2.9806*	0.6786	0.5682	-0.0801
	Replicate F				0.000	1.658	0.968	0.220	0.163
	Replicate Prob(F)				1.0000	0.1995	0.4223	0.8814	0.9202
	Treatment F				0.000	87.010	340.854	364.515	241.571
	Treatment Prob(F)				1.0000	0.0001	0.0001	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
AMAPA, Amaranthus palmeri, Palmer amaranth = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Ikley, J = Extension Agent

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

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** RACOBL Randomized Complete Block (RCB)

Application Description

	A	B
Application Date	May-18-2021	Jun-3-2021
Appl. Start Time	8:05 AM	11:00 AM
Appl. Stop Time	8:35 AM	11:20 AM
Application Method	SPRAY	SPRAY
Application Timing	PREEM	EAPOCR
Application Placement	BROSOI	BROFOL
Applied By	Ikley, J	Stith, J
Appl. Entry Date	May-20-2021	Jun-16-2021
Air Temperature Start, Stop	65, 67 F	90, 93 F
% Relative Humidity Start, Stop	62, 60	25, 25
Wind Velocity+Dir. Start	7 MPH, SSE	8.2 MPH, W
Wind Velocity+Dir. Stop	8 MPH, SSE	9.3 MPH, W
Wind Velocity+Dir. Max	9 MPH, SSE	9.7 MPH, W
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	59 F	60 F
Soil Moisture	DRY	DRY
Soil Surface Condition	COARSE	COARSE
% Cloud Cover	50	90

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Application Equipment

	A	B
Appl. Equipment	Mjolnir	Walter
Equipment Type	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI
Nozzle Model	11002	11002
Nozzle Type	TEEJAI	XR
Nozzle Spacing	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT
Boom Height	20 IN	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed	
	Pest Code					SETPU	HELAN	AMBEL	AMAPO	
	Pest Name					Yellow foxtail	sunflower	Common ragweed	Powell's amaranth	
	Crop Type, Code				C, ZEAMX					C, ZEAMX
	Crop Name				Corn					Corn
	Rating Date				Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-11-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
	Data Entry Date				Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				16, 16	16, 16	16, 16	16, 16	16, 16	24, 8
	Days After Emergence				8 DE-1	8 DE-1	8 DE-1	8 DE-1	8 DE-1	16 DE-1
	ARM Action Codes									
	Number of Decimals									
1	Untreated				0.0 -	0.0 b	0.0 b	0.0 d	0.0 b	0.0 -
2	BICEP LITE II MAGNUM	1	qt/a	A	0.0 -	87.5 a	65.0 a	55.0 bc	91.7 a	0.0 -
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
3	LUMAX EZ	1.5	qt/a	A	0.0 -	90.2 a	45.0 a	65.6 abc	94.7 a	0.0 -
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
4	SURESTART II	1.75	pt/a	A	0.0 -	83.5 a	72.5 a	77.3 abc	91.7 a	0.0 -
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
5	HARNESS	1.5	pt/a	A	0.0 -	91.3 a	65.0 a	77.5 abc	96.0 a	0.0 -
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
6	VERDICT	14	fl oz/a	A	0.0 -	91.3 a	86.3 a	92.5 a	96.0 a	0.0 -
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
7	SURESTART II	1.75	pt/a	A	0.0 -	91.3 a	75.0 a	82.5 abc	93.3 a	0.0 -
	RESICORE	1.25	qt/a	B						
	ROUNDUP POWERMAX	26.6	fl oz/a	B						
	N-PAK AMS	2.5	qt/a	B						
8	HARNESS	1.5	pt/a	A	0.0 -	80.2 a	42.5 a	60.0 abc	91.7 a	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	qt/a	B						
9	VERDICT	10	fl oz/a	A	0.0 -	80.2 a	85.0 a	87.5 ab	96.0 a	0.0 -
	ARMEZON PRO	18	fl oz/a	B						
	ROUNDUP POWERMAX	26.6	fl oz/a	B						
	N-PAK AMS	2.5	qt/a	B						
10	ACURON FLEXI XR	3	qt/a	A	0.0 -	88.8 a	85.0 a	82.5 abc	93.3 a	0.0 -
11	ACURON XR	3	qt/a	A	0.0 -	85.2 a	66.8 a	90.1 ab	93.0 a	0.0 -

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=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed	
	Pest Code					SETPU	HELAN	AMBEL	AMAPO	
	Pest Name					Yellow foxtail	sunflower	Common ragweed	Powell's amaranth	
	Crop Type, Code				C, ZEAMX					C, ZEAMX
	Crop Name				Corn					Corn
	Rating Date				Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-3-2021	Jun-11-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	PHYGEN
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
	Data Entry Date				Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				16, 16	16, 16	16, 16	16, 16	16, 16	24, 8
	Days After Emergence				8 DE-1	8 DE-1	8 DE-1	8 DE-1	8 DE-1	16 DE-1
	ARM Action Codes									
	Number of Decimals									
12	HARNESS MAX	75	fl oz/a	A	0.0 -	94.5 a	45.0 a	50.0 c	96.0 a	0.0 -
	LSD P=.05				.	9.59	26.93	20.95	4.06	.
	Standard Deviation				0.00	6.62	18.70	14.51	2.40	0.00
	CV				0.0	8.29	30.68	21.48	2.79	0.0
	Levene's F^				.	0.814	1.355	1.712	0.348	.
	Levene's Prob(F)				.	0.627	0.237	0.114	0.964	.
	Skewness^				.	-0.5581	0.1818	-0.0221	-0.0747	.
	Kurtosis^				.	0.2297	0.3787	-0.2521	-0.9353	.
	Replicate F				0.000	0.544	1.234	0.964	23.231	0.000
	Replicate Prob(F)				1.0000	0.6565	0.3134	0.4226	0.0001	1.0000
	Treatment F				0.000	59.987	7.018	12.092	384.983	0.000
	Treatment Prob(F)				1.0000	0.0001	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. 2=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7*	8*	9*	10*	11*	12*
	Pest Type					W, Weed	W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code					SETPU	HELAN	AMAPO	SETPU	HELAN
	Pest Name					yellow foxtail	sunflower	Powell's amaranth	yellow foxtail	sunflower
	Crop Type, Code				C, ZEAMX					
	Crop Name				Corn					
	Rating Date				Jul-1-2021	Jul-1-2021	Jul-1-2021	Jul-1-2021	Jul-27-2021	Jul-27-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
	Data Entry Date				Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				44, 28	44, 28	44, 28	44, 28	70, 54	70, 54
	Days After Emergence				36 DE-1	36 DE-1	36 DE-1	36 DE-1	62 DE-1	62 DE-1
	ARM Action Codes									
	Number of Decimals									
1	Untreated				0.0 -	0.0 d	0.0 d	0.0 d	0.0 -	0.0 e
2	BICEP LITE II MAGNUM	1	qt/a	A	0.0 -	99.0 a	80.0 a	99.0 a	100.0 -	75.0 abc
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
3	LUMAX EZ	1.5	qt/a	A	0.0 -	99.0 a	87.5 a	99.0 a	100.0 -	90.0 a
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
4	SURESTART II	1.75	pt/a	A	0.0 -	99.0 a	86.3 a	99.0 a	100.0 -	82.5 ab
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
5	HARNESS	1.5	pt/a	A	0.0 -	98.0 a	85.0 a	99.0 a	100.0 -	80.0 ab
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
6	VERDICT	14	fl oz/a	A	0.0 -	99.0 a	86.3 a	99.0 a	100.0 -	85.0 ab
	ACURON GT	3.75	pt/a	B						
	ACTIVATOR 90 - NIS	0.25	% v/v	B						
	N-PAK AMS	2.5	qt/a	B						
7	SURESTART II	1.75	pt/a	A	0.0 -	99.0 a	85.0 a	99.0 a	100.0 -	85.0 ab
	RESICORE	1.25	qt/a	B						
	ROUNDUP POWERMAX	26.6	fl oz/a	B						
	N-PAK AMS	2.5	qt/a	B						
8	HARNESS	1.5	pt/a	A	0.0 -	99.0 a	62.5 a	92.3 bc	100.0 -	62.5 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	qt/a	B						
9	VERDICT	10	fl oz/a	A	0.0 -	99.0 a	70.0 a	93.5 b	100.0 -	70.0 bc
	ARMEZON PRO	18	fl oz/a	B						
	ROUNDUP POWERMAX	26.6	fl oz/a	B						
	N-PAK AMS	2.5	qt/a	B						
10	ACURON FLEXI XR	3	qt/a	A	0.0 -	45.3 b	42.5 b	89.4 c	20.0 -	25.0 d
11	ACURON XR	3	qt/a	A	0.0 -	46.7 b	30.0 bc		20.0 -	20.0 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. 2=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Pest Type			W, Weed	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code			SETPU	HELAN	AMAPO	SETPU	HELAN
Pest Name			yellow foxtail	sunflower	Powell's amaranth	yellow foxtail	sunflower
Crop Type, Code		C, ZEAMX					
Crop Name		Corn					
Rating Date		Jul-1-2021	Jul-1-2021	Jul-1-2021	Jul-1-2021	Jul-27-2021	Jul-27-2021
Rating Type		PHYGEN	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max		%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples		1	1	1	1	1	1
Assessed By		Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date		Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
Days After First/Last Applic.		44, 28	44, 28	44, 28	44, 28	70, 54	70, 54
Days After Emergence		36 DE-1	36 DE-1	36 DE-1	36 DE-1	62 DE-1	62 DE-1
ARM Action Codes							
Number of Decimals							
Trt No.	Treatment Name / Rate / Rate Unit / Appl Code	7*	8*	9*	10*	11*	12*
12	HARNESS MAX 75 fl oz/a A	0.0 -	35.3 c	20.0 c		20.0 -	15.0 d
LSD P=.05		.	6.04	18.12	2.83	.	10.53
Standard Deviation		0.00	4.17	12.59	1.95	0.00	7.32
CV		0.0	5.18	20.56	2.24	0.0	12.72
Levene's F^		.	11.327	3.367	1.319	.	1.07
Levene's Prob(F)		.	0.00*	0.003*	0.271	.	0.411
Skewness^		.	-0.053	0.7854*	1.139*	.	0.9393*
Kurtosis^		.	9.0442*	5.2954*	3.5661*	.	3.4507*
Replicate F		0.000	1.755	1.112	2.039	0.000	0.519
Replicate Prob(F)		1.0000	0.1787	0.3581	0.1341	1.0000	0.6722
Treatment F		0.000	244.697	23.568	999.118	0.000	79.896
Treatment Prob(F)		1.0000	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. 2=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	13*	14*	15*	16*	17*
	Pest Type				W, Weed				
	Pest Code				AMAPO				
	Pest Name				Powell's amaranth				
	Crop Type, Code					C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX
	Crop Name					Corn	Corn	Corn	Corn
	Rating Date				Jul-27-2021	Oct-21-2021	Oct-21-2021	Oct-21-2021	Oct-21-2021
	Rating Type				CONTRO	YIELD	MOICON	WEITES	YIELD
	Rating Unit/Min/Max				%, 0, 100	LB, -, -	%, 0, 100	LB, -, -	BU, -, -
	Number of Subsamples				1	1	1	1	1
	Assessed By				Haugrud, N	Haugrud, N.	Haugrud, N.	Haugrud, N.	Haugrud, N.
	Data Entry Date				Aug-17-2021	Nov-3-2021	Nov-3-2021	Nov-3-2021	
	Days After First/Last Applic.				70, 54	156, 140	156, 140	156, 140	156, 140
	Days After Emergence				62 DE-1	148 DE-1	148 DE-1	148 DE-1	148 DE-1
	ARM Action Codes								TY1
	Number of Decimals								1
1	Untreated				0.0 c	24.168 c	18.43 -	55.08 -	120.2 c
2	BICEP LITE II MAGNUM	1	qt/a	A	100.0 a	42.568 ab	19.93 -	57.53 -	209.2 ab
	ACURON GT	3.75	pt/a	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
	N-PAK AMS	2.5	qt/a	B					
3	LUMAX EZ	1.5	qt/a	A	100.0 a	43.793 ab	17.98 -	57.93 -	220.7 ab
	ACURON GT	3.75	pt/a	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
	N-PAK AMS	2.5	qt/a	B					
4	SURESTART II	1.75	pt/a	A	100.0 a	44.120 ab	20.18 -	57.95 -	216.1 ab
	ACURON GT	3.75	pt/a	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
	N-PAK AMS	2.5	qt/a	B					
5	HARNESS	1.5	pt/a	A	100.0 a	43.810 ab	18.93 -	57.38 -	217.6 ab
	ACURON GT	3.75	pt/a	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
	N-PAK AMS	2.5	qt/a	B					
6	VERDICT	14	fl oz/a	A	100.0 a	42.810 ab	19.98 -	57.88 -	210.2 ab
	ACURON GT	3.75	pt/a	B					
	ACTIVATOR 90 - NIS	0.25	% v/v	B					
	N-PAK AMS	2.5	qt/a	B					
7	SURESTART II	1.75	pt/a	A	100.0 a	45.138 ab	17.55 -	57.93 -	228.5 a
	RESICORE	1.25	qt/a	B					
	ROUNDUP POWERMAX	26.6	fl oz/a	B					
	N-PAK AMS	2.5	qt/a	B					
8	HARNESS	1.5	pt/a	A	96.3 a	41.478 ab	19.60 -	57.48 -	204.7 ab
	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	qt/a	B					
9	VERDICT	10	fl oz/a	A	96.3 a	46.135 a	19.25 -	57.78 -	228.6 a
	ARMEZON PRO	18	fl oz/a	B					
	ROUNDUP POWERMAX	26.6	fl oz/a	B					
	N-PAK AMS	2.5	qt/a	B					
10	ACURON FLEXI XR	3	qt/a	A	34.7 b	38.740 ab	20.08 -	57.15 -	191.4 ab
11	ACURON XR	3	qt/a	A		42.108 ab	17.83 -	57.90 -	212.6 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=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	13*	14*	15*	16*	17*
Pest Type					W, Weed				
Pest Code					AMAPO				
Pest Name					Powell's amaranth				
Crop Type, Code						C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX
Crop Name						Corn	Corn	Corn	Corn
Rating Date					Jul-27-2021	Oct-21-2021	Oct-21-2021	Oct-21-2021	Oct-21-2021
Rating Type					CONTRO	YIELD	MOICON	WEITES	YIELD
Rating Unit/Min/Max					%, 0, 100	LB, -, -	%, 0, 100	LB, -, -	BU, -, -
Number of Subsamples					1	1	1	1	1
Assessed By					Haugrud, N	Haugrud, N.	Haugrud, N.	Haugrud, N.	Haugrud, N.
Data Entry Date					Aug-17-2021	Nov-3-2021	Nov-3-2021	Nov-3-2021	
Days After First/Last Applic.					70, 54	156, 140	156, 140	156, 140	156, 140
Days After Emergence					62 DE-1	148 DE-1	148 DE-1	148 DE-1	148 DE-1
ARM Action Codes									TY1
Number of Decimals									1
12	HARNESS MAX	75	fl oz/a	A		30.628 bc	20.33 -	57.30 -	149.7 bc
LSD P=.05					5.86	8.7681	3.212	2.446	45.46
Standard Deviation					4.02	6.0948	2.233	1.700	31.60
CV					4.72	15.06	11.65	2.96	15.74
Levene's F^					25.124	4.303	1.224	0.822	3.667
Levene's Prob(F)					0.00*	0.00*	0.307	0.619	0.002*
Skewness^					-0.0345	-0.4075	-0.1699	-3.1944*	-0.4505
Kurtosis^					11.9868*	3.8895*	1.1389	19.4122*	3.4865*
Replicate F					1.704	0.205	1.007	0.992	0.210
Replicate Prob(F)					0.1917	0.8919	0.4020	0.4088	0.8889
Treatment F					276.664	4.587	0.806	0.874	4.356
Treatment Prob(F)					0.0001	0.0003	0.6337	0.5727	0.0005

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=3.5; 3=3.9; 4,10,13=3.6; 8,11=3.3
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,6,7,11 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Acuron GT: Evaluation of weed control, crop tolerance and yield in a two pass system

Trial ID: 21S-PROSPER-CORN-19 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-19 Investigator (Creator): Dr. Joe Ikley
Project ID: HBI008B4-2021US 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
HELAN, Helianthus annuus, sunflower = US
AMBEL, Ambrosia artemisiifolia, Common ragweed = US
AMAPO, Amaranthus powellii, Powell's amaranth = US
Crop Type, Code
C = EPPO species (Bayer) codes
ZEAMX, BCOR, Zea mays, Corn = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
YIELD = yield
MOICON = moisture content
WEITES = weight - test
Rating Unit/Min/Max
%, 0, 100 = percent
LB, , = pound
BU, , = bushel
Assessed By
Haugrud, N = Research Specailist
ARM Action Codes
TY1 = 5.18571429*[14]*(100-[15])/84.5

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-30-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: Dr. Joe Ikley
Role: SPONSR sponsor
Sponsor: Brett Miller, Trevor Israel, Brock W.

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:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Prosper
% Sand: 23 **% OM:** 4.2 **Texture:** SIL silt loam
% Silt: 53 **pH:** 6.6 **Soil Name:** Kindred-Bearden Silty Clay Loam
% Clay: 24 **CEC:** 20.8

Application Description

	A	B	C	D
Application Date	May-18-2021	Jun-10-2021	Jun-22-2021	Jun-15-2021
Appl. Start Time	8:40 AM	8:45 AM	11:30 AM	3:00 PM
Appl. Stop Time	9:10 AM	9:00 AM	11:35 AM	3:02 PM
Application Method	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing	PREEM	POEMCR	POEMCR	POEMCR
Application Placement	BROSOI	BROFOL	BROFOL	BROFOL
Applied By	Ikley, J	Stith, J	Haugrud, N	Stith, J
Appl. Entry Date	May-20-2021	Jun-16-2021	Jun-30-2021	Jun-16-2021
Air Temperature Start, Stop	67, 69 F	74, 76 F	77, 77 F	89, 89 F
% Relative Humidity Start, Stop	60, 59	72, 72	43, 43	29, 29
Wind Velocity+Dir. Start	8 MPH, SSE	9.2 MPH, NE	6 MPH, NNW	1.1 MPH, NE
Wind Velocity+Dir. Stop	9 MPH, SSE	9.8 MPH, NE	6 MPH, NNW	1.1 MPH, NE
Wind Velocity+Dir. Max	10 MPH, SSE	10 MPH, NE	7 MPH, NNW	1.1 MPH, NE
Wet Leaves (Y/N)	N, no	N, no	N, no	N, no
Soil Temperature	59 F	76 F	67 F	86 F
Soil Moisture	DRY	DRY	NORMAL	DRY
Soil Surface Condition	COARSE	COARSE	COARSE	COARSE
% Cloud Cover	50	0	0	30

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Application Equipment

	A	B	C	D
Appl. Equipment	Mjolnir	Walter	Narsil	Walter
Equipment Type	BACCAI	BACCAI	BACCAI	BACCAI
Operation Pressure	28 PSI	28 PSI	28 PSI	28 PSI
Nozzle Model	11002	11002	8002	11002
Nozzle Type	TEEJAI	XR	XR	XR
Nozzle Spacing	20 IN	20 IN	20 IN	20 IN
Boom Length	6.67 FT	6.67 FT	6.67 FT	6.67 FT
Boom Height	20 IN	20 IN	20 IN	20 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-30-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	May-20-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type					W, Weed	W, Weed	W, Weed	
	Pest Code					SETPU	AMAPO	AMBEL	
	Pest Name					yellow foxtail	Powell's amaranth	Common ragweed	
	Crop Type, Code				C, ZEAMX				C, ZEAMX
	Crop Name				Corn				Corn
	Rating Date				Jun-1-2021	Jun-1-2021	Jun-1-2021	Jun-1-2021	Jun-9-2021
	Rating Type				PHYGEN	CONTRO	CONTRO	CONTRO	PHYGEN
	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				14, 14	14, 14	14, 14	14, 14	22, 22
	Days After Emergence				7 DE-1	7 DE-1	7 DE-1	7 DE-1	15 DE-1
1	Untreated				0.0 -	0.0 b	0.0 b	0.0 b	0.0 -
2	LUMAX EZ	2.7	qt/a	A	0.0 -	83.8 a	98.7 a	89.6 a	0.0 -
3	BICEP LITE II MAGNUM	1	qt/a	B	0.0 -	0.0 b	0.0 b	0.0 b	0.0 -
	HALEX GT	3.6	pt/a	B					
	AATREX	0.5	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 -	88.5 a	96.8 a	91.3 a	0.0 -
5	LUMAX EZ	1.5	qt/a	A	0.0 -	90.0 a	99.0 a	90.0 a	0.0 -
	HALEX GT	3.6	pt/a	B					
	AATREX	0.5	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 -	88.5 a	98.0 a	92.3 a	0.0 -
	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 -	87.5 a	99.0 a	90.0 a	0.0 -
	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	CALLISTO XTRA	24	fl oz/a	A	0.0 -	90.0 a	99.0 a	91.3 a	0.0 -
	ACURON GT	3.75	pt/a	B					
	N-PAK AMS	8.5	lb ai/100 gal	B					
9	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	0.0 -	83.8 a	99.0 a	92.3 a	0.0 -
	ROUNDUP POWERMAX	1	qt/a	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
	DRY AMMONIUM SULFATE	3	lb ai/a	C					
10	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	0.0 -	89.8 a	96.8 a	94.5 a	0.0 -
	AATREX	0.5	lb ai/a	A					
	ROUNDUP POWERMAX	1	qt/a	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
	DRY AMMONIUM SULFATE	3	lb ai/a	C					
11	KATAGON	3.2	fl oz/a	D	0.0 -	0.0 b	0.0 b	0.0 b	0.0 -
	DESTINY HC HSMOC	1	% v/v	D					
12	KATAGON	3.2	fl oz/a	B	0.0 -	0.0 b	0.0 b	0.0 b	0.0 -
	AATREX	1	pt/a	B					
	DESTINY HC HSMOC	1	% v/v	B					
13	HELMET MAXX	2.25	qt/a	A	0.0 -	92.5 a	96.8 a	92.3 a	0.0 -
	ROUNDUP POWERMAX	1	lb ae/a	A					
	N-PAK AMS	8.5	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Pest Type				W, Weed	W, Weed	W, Weed	
Pest Code				SETPU	AMAPO	AMBEL	
Pest Name				yellow foxtail	Powell's amaranth	Common ragweed	
Crop Type, Code				C, ZEAMX			C, ZEAMX
Crop Name				Corn			Corn
Rating Date				Jun-1-2021	Jun-1-2021	Jun-1-2021	Jun-9-2021
Rating Type				PHYGEN	CONTRO	CONTRO	PHYGEN
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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
Days After First/Last Applic.				14, 14	14, 14	14, 14	22, 22
Days After Emergence				7 DE-1	7 DE-1	7 DE-1	15 DE-1
Trt No.	Treatment Name	Rate	Rate Unit / Appl Code	1*	2*	3*	4*	5*
14	HELMET MAXX	3.5	qt/a B	0.0 -	0.0 b	0.0 b	0.0 b	0.0 -
LSD P=.05				.	8.81	3.12	3.82	.
Standard Deviation				0.00	6.15	2.18	2.67	0.00
CV				0.0	10.91	3.49	4.58	0.0
Levene's F^				.	0.352	0.713	1.30	.
Levene's Prob(F)				.	0.977	0.74	0.252	.
Skewness^				.	-0.2302	-2.0673*	1.1131*	.
Kurtosis^				.	-0.4331	5.8231*	1.5024*	.
Replicate F				0.000	10.962	0.960	1.389	0.000
Replicate Prob(F)				1.0000	0.0001	0.4217	0.2609	1.0000
Treatment F				0.000	203.358	1983.936	1151.758	0.000
Treatment Prob(F)				1.0000	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	6*	7*	8*	9*	10*
	Pest Type				W, Weed	W, Weed	W, Weed		W, Weed
	Pest Code				SETPU	AMAPO	AMBEL		SETPU
	Pest Name				yellow foxtail	Powell's amaranth	Common ragweed		yellow foxtail
	Crop Type, Code							C, ZEAMX	
	Crop Name							Corn	
	Rating Date				Jun-9-2021	Jun-9-2021	Jun-9-2021	Jun-21-2021	Jun-21-2021
	Rating Type				CONTRO	CONTRO	CONTRO	PHYGEN	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				22, 22	22, 22	22, 22	34, 6	34, 6
	Days After Emergence				15 DE-1	15 DE-1	15 DE-1	27 DE-1	27 DE-1
1	Untreated				0.0 b	0.0 c	0.0 c	0.0 -	0.0 d
2	LUMAX EZ	2.7	qt/a	A	62.5 a	89.9 ab	82.6 b	0.0 -	28.6 c
3	BICEP LITE II MAGNUM	1	qt/a	B	0.0 b	0.0 c	0.0 c	0.0 -	93.5 a
	HALEX GT	3.6	pt/a	B					
	AATREX	0.5	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	67.5 a	92.3 ab	83.8 b	0.0 -	34.0 c
5	LUMAX EZ	1.5	qt/a	A	77.5 a	92.0 ab	85.0 b	0.0 -	91.8 a
	HALEX GT	3.6	pt/a	B					
	AATREX	0.5	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	65.0 a	90.0 ab	85.0 b	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	72.5 a	87.5 b	87.5 ab	0.0 -	97.0 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	CALLISTO XTRA	24	fl oz/a	A	70.0 a	94.5 ab	88.8 ab	0.0 -	97.0 a
	ACURON GT	3.75	pt/a	B					
	N-PAK AMS	8.5	lb ai/100 gal	B					
9	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	67.5 a	92.3 ab	90.0 ab	0.0 -	27.5 c
	ROUNDUP POWERMAX	1	qt/a	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
	DRY AMMONIUM SULFATE	3	lb ai/a	C					
10	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	75.0 a	96.8 a	96.8 a	0.0 -	32.5 c
	AATREX	0.5	lb ai/a	A					
	ROUNDUP POWERMAX	1	qt/a	C					
	ACTIVATOR 90 - NIS	0.25	% v/v	C					
	DRY AMMONIUM SULFATE	3	lb ai/a	C					
11	KATAGON	3.2	fl oz/a	D	0.0 b	0.0 c	0.0 c	0.0 -	12.5 cd
	DESTINY HC HSMOC	1	% v/v	D					
12	KATAGON	3.2	fl oz/a	B	0.0 b	0.0 c	0.0 c	0.0 -	80.0 a
	AATREX	1	pt/a	B					
	DESTINY HC HSMOC	1	% v/v	B					
13	HELMET MAXX	2.25	qt/a	A	77.5 a	94.5 ab	90.0 ab	0.0 -	32.5 c
	ROUNDUP POWERMAX	1	lb ae/a	A					
	N-PAK AMS	8.5	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Pest Type			W, Weed	W, Weed	W, Weed		W, Weed
Pest Code			SETPU	AMAPO	AMBEL		SETPU
Pest Name			yellow foxtail	Powell's amaranth	Common ragweed		yellow foxtail
Crop Type, Code						C, ZEAMX	
Crop Name						Corn	
Rating Date			Jun-9-2021	Jun-9-2021	Jun-9-2021	Jun-21-2021	Jun-21-2021
Rating Type			CONTRO	CONTRO	CONTRO	PHYGEN	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
Days After First/Last Applic.			22, 22	22, 22	22, 22	34, 6	34, 6
Days After Emergence			15 DE-1	15 DE-1	15 DE-1	27 DE-1	27 DE-1
Trt No.	Treatment Name	Rate Unit	Appl Code	6*	7*	8*	9*	10*
14	HELMET MAXX	3.5 qt/a	B	0.0 b	0.0 c	0.0 c	0.0 -	60.0 b
LSD P=.05				13.96	5.41	7.03	.	15.15
Standard Deviation				9.75	3.78	4.91	0.00	10.58
CV				21.54	6.43	8.78	0.0	18.55
Levene's F^				0.48	1.711	1.325	.	1.889
Levene's Prob(F)				0.923	0.095	0.239	.	0.062
Skewness^				-0.2911	-0.6423	-0.8122*	.	0.174
Kurtosis^				-0.0928	1.6101*	2.2132*	.	0.8034
Replicate F				11.311	2.885	2.396	0.000	1.072
Replicate Prob(F)				0.0001	0.0482	0.0832	1.0000	0.3729
Treatment F				52.674	585.711	315.482	0.000	44.632
Treatment Prob(F)				0.0001	0.0001	0.0001	1.0000	0.0001

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Due to missing data, the effective replicates used for mean comparisons are: col. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	11*	12*	13*	14*
	Pest Type				W, Weed	W, Weed		W, Weed
	Pest Code				AMAPO	AMBEL		SETPU
	Pest Name				Powell's amaranth	Common ragweed		yellow foxtail
	Crop Type, Code						C, ZEAMX	
	Crop Name						Corn	
	Rating Date				Jun-21-2021	Jun-21-2021	Jul-7-2021	Jul-7-2021
	Rating Type				CONTRO	CONTRO	PHYGEN	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				34, 6	34, 6	50, 15	50, 15
	Days After Emergence				27 DE-1	27 DE-1	43 DE-1	43 DE-1
1	Untreated				0.0 e	0.0 e	0.0 -	0.0 e
2	LUMAX EZ	2.7	qt/a	A	82.9 bc	80.0 c	0.0 -	18.4 d
3	BICEP LITE II MAGNUM	1	qt/a	B	99.5 a	98.5 a	0.0 -	93.5 a
	HALEX GT	3.6	pt/a	B				
	AATREX	0.5	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	89.6 abc	89.0 abc	0.0 -	27.8 d
5	LUMAX EZ	1.5	qt/a	A	98.8 a	98.8 a	0.0 -	94.3 a
	HALEX GT	3.6	pt/a	B				
	AATREX	0.5	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	99.8 a	99.8 a	0.0 -	96.8 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	100.0 a	100.0 a	0.0 -	97.0 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	CALLISTO XTRA	24	fl oz/a	A	99.8 a	99.8 a	0.0 -	97.0 a
	ACURON GT	3.75	pt/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
9	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	87.5 bc	90.0 abc	0.0 -	77.5 b
	ROUNDUP POWERMAX	1	qt/a	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
	DRY AMMONIUM SULFATE	3	lb ai/a	C				
10	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	85.0 bc	86.6 bc	0.0 -	77.5 b
	AATREX	0.5	lb ai/a	A				
	ROUNDUP POWERMAX	1	qt/a	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
	DRY AMMONIUM SULFATE	3	lb ai/a	C				
11	KATAGON	3.2	fl oz/a	D	25.0 d	25.0 d	0.0 -	77.5 b
	DESTINY HC HSMOC	1	% v/v	D				
12	KATAGON	3.2	fl oz/a	B	93.5 ab	93.5 ab	0.0 -	77.5 b
	AATREX	1	pt/a	B				
	DESTINY HC HSMOC	1	% v/v	B				
13	HELMET MAXX	2.25	qt/a	A	80.0 c	83.3 bc	0.0 -	22.5 d
	ROUNDUP POWERMAX	1	lb ae/a	A				
	N-PAK AMS	8.5	lb ai/a	A				

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Due to missing data, the effective replicates used for mean comparisons are: col. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
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North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	11*	12*	13*	14*
	Pest Type				W, Weed	W, Weed		W, Weed
	Pest Code				AMAPO	AMBEL		SETPU
	Pest Name				Powell's amaranth	Common ragweed		yellow foxtail
	Crop Type, Code						C, ZEAMX	
	Crop Name						Corn	
	Rating Date				Jun-21-2021	Jun-21-2021	Jul-7-2021	Jul-7-2021
	Rating Type				CONTRO	CONTRO	PHYGEN	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				34, 6	34, 6	50, 15	50, 15
	Days After Emergence				27 DE-1	27 DE-1	43 DE-1	43 DE-1
14	HELMET MAXX	3.5	qt/a	B	91.3 ab	88.8 abc	0.0 -	50.0 c
	LSD P=.05				7.26	6.53	.	10.13
	Standard Deviation				5.07	4.55	0.00	7.07
	CV				6.28	5.65	0.0	10.65
	Levene's F^				0.812	0.832	.	1.091
	Levene's Prob(F)				0.645	0.626	.	0.394
	Skewness^				0.0197	0.6483	.	0.4019
	Kurtosis^				1.8369*	1.6409*	.	1.7687*
	Replicate F				1.144	2.311	0.000	4.084
	Replicate Prob(F)				0.3439	0.0937	1.0000	0.0133
	Treatment F				141.375	174.796	0.000	87.406
	Treatment Prob(F)				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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	15*	16*	17*	18*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPO	AMBEL	SETPU	AMAPO
	Pest Name				Powell's amaranth	Common ragweed	yellow foxtail	Powell's amaranth
	Crop Type, Code							
	Crop Name							
	Rating Date				Jul-7-2021	Jul-7-2021	Jul-21-2021	Jul-21-2021
	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				50, 15	50, 15	64, 29	64, 29
	Days After Emergence				43 DE-1	43 DE-1	57 DE-1	57 DE-1
1	Untreated				0.0 d	0.0 f	0.0 d	0.0 f
2	LUMAX EZ	2.7	qt/a	A	72.9 bc	69.8 d	9.0 d	51.6 d
3	BICEP LITE II MAGNUM	1	qt/a	B	97.0 a	97.0 ab	93.8 a	97.3 a
	HALEX GT	3.6	pt/a	B				
	AATREX	0.5	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	83.2 ab	84.1 bc	24.2 c	75.1 c
5	LUMAX EZ	1.5	qt/a	A	99.8 a	98.8 a	94.8 a	97.5 a
	HALEX GT	3.6	pt/a	B				
	AATREX	0.5	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	99.8 a	99.8 a	97.3 a	100.0 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	99.8 a	99.8 a	96.3 a	100.0 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	CALLISTO XTRA	24	fl oz/a	A	99.8 a	99.8 a	96.3 a	100.0 a
	ACURON GT	3.75	pt/a	B				
	N-PAK AMS	8.5	lb ai/100 gal	B				
9	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	95.5 a	95.9 ab	100.0 a	100.0 a
	ROUNDUP POWERMAX	1	qt/a	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
	DRY AMMONIUM SULFATE	3	lb ai/a	C				
10	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	96.0 a	96.1 ab	100.0 a	100.0 a
	AATREX	0.5	lb ai/a	A				
	ROUNDUP POWERMAX	1	qt/a	C				
	ACTIVATOR 90 - NIS	0.25	% v/v	C				
	DRY AMMONIUM SULFATE	3	lb ai/a	C				
11	KATAGON	3.2	fl oz/a	D	95.0 a	92.5 abc	77.5 b	91.3 ab
	DESTINY HC HSMOC	1	% v/v	D				
12	KATAGON	3.2	fl oz/a	B	91.0 a	91.0 abc	77.5 b	90.0 ab
	AATREX	1	pt/a	B				
	DESTINY HC HSMOC	1	% v/v	B				
13	HELMET MAXX	2.25	qt/a	A	64.4 c	51.4 e	10.0 d	27.6 e
	ROUNDUP POWERMAX	1	lb ae/a	A				
	N-PAK AMS	8.5	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
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^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	15*	16*	17*	18*
	Pest Type				W, Weed	W, Weed	W, Weed	W, Weed
	Pest Code				AMAPO	AMBEL	SETPU	AMAPO
	Pest Name				Powell's amaranth	Common ragweed	yellow foxtail	Powell's amaranth
	Crop Type, Code							
	Crop Name							
	Rating Date				Jul-7-2021	Jul-7-2021	Jul-21-2021	Jul-21-2021
	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-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				50, 15	50, 15	64, 29	64, 29
	Days After Emergence				43 DE-1	43 DE-1	57 DE-1	57 DE-1
14	HELMET MAXX	3.5	qt/a	B	82.5 ab	82.5 c	35.0 c	80.0 bc
	LSD P=.05				11.42	8.25	11.09	8.81
	Standard Deviation				7.95	5.73	7.74	6.13
	CV				9.4	6.85	11.57	7.52
	Levene's F^				1.36	3.263	0.68	3.174
	Levene's Prob(F)				0.225	0.003*	0.771	0.003*
	Skewness^				0.4101	-0.3865	0.2884	0.2586
	Kurtosis^				5.3227*	7.4605*	3.1915*	1.1366
	Replicate F				1.076	2.125	1.494	1.810
	Replicate Prob(F)				0.3722	0.1165	0.2323	0.1640
	Treatment F				44.077	86.783	98.323	96.648
	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Pest Type	W, Weed	
Pest Code	AMBEL	
Pest Name	Common ragweed	
Crop Type, Code		
Crop Name		
Rating Date	Jul-21-2021	
Rating Type	CONTRO	
Rating Unit/Min/Max	%, 0, 100	
Number of Subsamples	1	1
Assessed By	Haugrud, N	
Data Entry Date	Aug-17-2021	
Days After First/Last Applic.	64, 29	
Days After Emergence	57 DE-1	

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	19*	20
1	Untreated				0.0 e	
2	LUMAX EZ	2.7	qt/a	A	60.7 c	
3	BICEP LITE II MAGNUM	1	qt/a	B	97.3 a	
	HALEX GT	3.6	pt/a	B		
	AATREX	0.5	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	84.4 ab	
5	LUMAX EZ	1.5	qt/a	A	97.5 a	
	HALEX GT	3.6	pt/a	B		
	AATREX	0.5	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	100.0 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	100.0 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	CALLISTO XTRA	24	fl oz/a	A	100.0 a	
	ACURON GT	3.75	pt/a	B		
	N-PAK AMS	8.5	lb ai/100 gal	B		
9	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	100.0 a	
	ROUNDUP POWERMAX	1	qt/a	C		
	ACTIVATOR 90 - NIS	0.25	% v/v	C		
	DRY AMMONIUM SULFATE	3	lb ai/a	C		
10	V-10494 2.04 LBAI/GAL SC 2146	1	qt/a	A	99.8 a	
	AATREX	0.5	lb ai/a	A		
	ROUNDUP POWERMAX	1	qt/a	C		
	ACTIVATOR 90 - NIS	0.25	% v/v	C		
	DRY AMMONIUM SULFATE	3	lb ai/a	C		
11	KATAGON	3.2	fl oz/a	D	91.3 ab	
	DESTINY HC HSMOC	1	% v/v	D		
12	KATAGON	3.2	fl oz/a	B	90.0 ab	
	AATREX	1	pt/a	B		
	DESTINY HC HSMOC	1	% v/v	B		
13	HELMET MAXX	2.25	qt/a	A	20.7 d	
	ROUNDUP POWERMAX	1	lb ae/a	A		
	N-PAK AMS	8.5	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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Pest Type				W, Weed	
Pest Code				AMBEL	
Pest Name				Common ragweed	
Crop Type, Code					
Crop Name					
Rating Date				Jul-21-2021	
Rating Type				CONTRO	
Rating Unit/Min/Max				%, 0, 100	
Number of Subsamples				1	1
Assessed By				Haugrud, N	
Data Entry Date				Aug-17-2021	
Days After First/Last Applic.				64, 29	
Days After Emergence				57 DE-1	
Trt No.	Treatment Name	Rate	Rate Unit / Appl Code	19*	20
14	HELMET MAXX	3.5	qt/a B	80.0 b	
LSD P=.05				9.37	.
Standard Deviation				6.50	.
CV				7.86	.
Levene's F^				8.246	.
Levene's Prob(F)				0.00*	.
Skewness^				-0.0503	.
Kurtosis^				7.6352*	.
Replicate F				0.486	
Replicate Prob(F)				0.6946	
Treatment F				80.429	
Treatment Prob(F)				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. 1-9=3.9; 10,11,13,14,17=3.8; 12,15=3.5; 16=3.3; 18=3.4; 19=3.2
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,5,9,13,20 because error mean square = 0.
^Calculated from residual.

North Dakota State University

Corn Herbicide Systems

Trial ID: 21S-PROSPER-CORN-22 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-CORN-22 Investigator (Creator): Dr. Joe Ikley
Project ID: H024BIAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Trevor Israel, Brock W.

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
SETPU, Setaria helvola, yellow foxtail = US
AMAPO, Amaranthus powellii, Powell's amaranth = US
AMBEL, Ambrosia artemisiifolia, Common ragweed = US
Crop Type, Code
C = EPPO species (Bayer) codes
ZEAMX, BCOR, Zea mays, Corn = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Haugrud, N = Research Specailist

North Dakota State University

Fusilade DX with Enlist for Volunteer Corn - Adjuvant Comparison

Trial ID: 21S-PROSPER-SOY-18 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-SOY-18 Investigator (Creator): Dr. Joe Ikley
Project ID: H073FPAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

General Trial Information
Study Director: Dr. Joe Ikley

Trial Status: E established
ARM Trial Created On: Apr-28-2021

Conducted Under GLP: No
Conducted Under GEP: No

Contacts
Role: STYDIR study director
Study Director: 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:** 10
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description
Description Name: Prosper
% Sand: 23 **% OM:** 4.2 **Texture:** SIL silt loam
% Silt: 53 **pH:** 6.6 **Soil Name:** Kindred-Bearden Silty Clay Loam
% Clay: 24 **CEC:** 20.8

Application Description

	A
Application Date	Jun-17-2021
Appl. Start Time	11:50 AM
Appl. Stop Time	12:35 PM
Application Method	SPRAY
Application Timing	POEMCR
Application Placement	BROFOL
Applied By	Haugrud, N
Appl. Entry Date	Jun-30-2021
Air Temperature Start, Stop	81, 83 F
% Relative Humidity Start, Stop	26, 22
Wind Velocity+Dir. Start	4 MPH, NE
Wind Velocity+Dir. Stop	2 MPH, NE
Wind Velocity+Dir. Max	5 MPH, NE
Wet Leaves (Y/N)	N, no
Soil Temperature	71 F
Soil Moisture	DRY
Soil Surface Condition	COARSE
% Cloud Cover	5

North Dakota State University

Fusilade DX with Enlist for Volunteer Corn - Adjuvant Comparison

Trial ID: 21S-PROSPER-SOY-18 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-SOY-18 Investigator (Creator): Dr. Joe Ikley
Project ID: H073FPAD-2021US 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	11002
Nozzle Type	TT
Nozzle Spacing	20 IN
Boom Length	6.67 FT
Boom Height	20 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-28-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
STATUS	Jun-30-2021	Dr. Joe Ikley	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

North Dakota State University

Fusilade DX with Enlist for Volunteer Corn - Adjuvant Comparison

Trial ID: 21S-PROSPER-SOY-18 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-SOY-18 Investigator (Creator): Dr. Joe Ikley
Project ID: H073FPAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
	Pest Type					W, Weed		W, Weed	W, Weed	W, Weed
	Pest Code					ZEAMX		ZEAMX	ZEAMX	ZEAMX
	Pest Name					Corn		Corn	CORN	Corn
	Crop Type, Code				C, GLXMA		C, GLXMA			
	Crop Name				Soybean		Soybean			
	Rating Date				Jun-23-2021	Jun-23-2021	Jul-1-2021	Jul-1-2021	Jul-14-2021	Jul-27-2021
	Rating Type				PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO
	Rating Unit/Min/Max				%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
	Data Entry Date				Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
	Days After First/Last Applic.				6, 6	6, 6	14, 14	14, 14	27, 27	40, 40
	Trt-Eval Interval				6 DA-A	6 DA-A	14 DA-A	14 DA-A	27 DA-A	40 DA-A
	Days After Emergence				28 DE-1	28 DE-1	36 DE-1	36 DE-1	49 DE-1	62 DE-1
1	Untreated				0.0 c	0.0 e	0.0 b	0.0 d	0.0 e	0.0 e
2	LIBERTY 280 SL	32	fl oz/a	A	0.0 c	40.0 a	0.0 b	94.8 a	83.8 ab	71.3 ab
	FUSLIADE DX	6	fl oz/a	A						
	N-PAK AMS	3	lb ai/a	A						
3	LIBERTY 280 SL	32	fl oz/a	A	17.5 ab	11.3 d	5.0 a	65.0 c	42.5 d	22.5 d
	FUSLIADE DX	6	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	N-PAK AMS	3	lb ai/a	A						
4	LIBERTY 280 SL	32	fl oz/a	A	18.8 a	20.0 bc	5.0 a	82.5 b	73.8 b	57.5 b
	FUSLIADE DX	8	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	N-PAK AMS	3	lb ai/a	A						
5	LIBERTY 280 SL	32	fl oz/a	A	17.5 ab	27.5 b	5.0 a	88.8 ab	77.5 b	62.5 ab
	FUSLIADE DX	10	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	N-PAK AMS	3	lb ai/a	A						
6	LIBERTY 280 SL	32	fl oz/a	A	12.5 b	42.5 a	3.8 a	95.0 a	91.3 a	80.0 a
	SELECT MAX	8	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	N-PAK AMS	3	lb ai/a	A						
7	LIBERTY 280 SL	32	fl oz/a	A	0.0 c	41.3 a	0.0 b	95.0 a	90.0 a	77.5 a
	FUSLIADE DX	6	fl oz/a	A						
	SUPERB HC HSPOC	0.25	% v/v	A						
	N-PAK AMS	3	lb ai/a	A						
8	LIBERTY 280 SL	32	fl oz/a	A	16.3 ab	17.5 c	5.0 a	65.0 c	50.0 c	40.0 c
	FUSLIADE DX	6	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	SUPERB HC HSPOC	0.25	% v/v	A						
	N-PAK AMS	3	lb ai/a	A						
9	LIBERTY 280 SL	32	fl oz/a	A	18.8 a	20.0 bc	5.0 a	82.5 b	76.3 b	68.8 ab
	FUSLIADE DX	8	fl oz/a	A						
	ENLIST ONE	2	pt/a	A						
	SUPERB HC HSPOC	0.25	% 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.
* Adjusted means
^Calculated from residual.

North Dakota State University

Fusilade DX with Enlist for Volunteer Corn - Adjuvant Comparison

Trial ID: 21S-PROSPER-SOY-18 Location: Prosper, ND Trial Year: 2021
Protocol ID: 21S-PROSPER-SOY-18 Investigator (Creator): Dr. Joe Ikley
Project ID: H073FPAD-2021US Study Director: Dr. Joe Ikley
Sponsor Contact: Brett Miller, Syngenta

Pest Type		W, Weed		W, Weed	W, Weed	W, Weed
Pest Code		ZEAMX		ZEAMX	ZEAMX	ZEAMX
Pest Name		Corn		Corn	CORN	Corn
Crop Type, Code	C, GLXMA		C, GLXMA			
Crop Name	Soybean		Soybean			
Rating Date	Jun-23-2021	Jun-23-2021	Jul-1-2021	Jul-1-2021	Jul-14-2021	Jul-27-2021
Rating Type	PHYGEN	CONTRO	PHYGEN	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1	1
Assessed By	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N	Haugrud, N
Data Entry Date	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021	Aug-17-2021
Days After First/Last Applic.	6, 6	6, 6	14, 14	14, 14	27, 27	40, 40
Trt-Eval Interval	6 DA-A	6 DA-A	14 DA-A	14 DA-A	27 DA-A	40 DA-A
Days After Emergence	28 DE-1	28 DE-1	36 DE-1	36 DE-1	49 DE-1	62 DE-1
Trt No. Treatment Name	Rate Rate Unit	Appl Code	1*	2*	3*	4*	5*	6*
10 LIBERTY 280 SL	32	fl oz/a	A	18.8 a	25.0 bc	5.0 a	91.3 ab	82.5 ab	63.8 ab
FUSLIADE DX	10	fl oz/a	A						
ENLIST ONE	2	pt/a	A						
SUPERB HC HSPOC	0.25	% v/v	A						
N-PAK AMS	3	lb ai/a	A						
LSD P=.05				3.85	5.71	1.15	6.57	7.37	12.39
Standard Deviation				2.65	3.93	0.79	4.53	5.08	8.54
CV				22.11	16.05	23.42	5.96	7.61	15.71
Levene's F^				0.624	0.732	0.711	0.605	6.628	0.808
Levene's Prob(F)				0.767	0.676	0.694	0.782	0.00*	0.613
Skewness^				0.4236	0.4768	-3.2005*	1.0496*	0.1057	0.6929
Kurtosis^				1.4254	-0.2514	18.2785*	2.4811*	-0.1144	2.0337*
Replicate F				0.474	2.048	1.000	1.203	1.968	1.540
Replicate Prob(F)				0.7032	0.1308	0.4079	0.3275	0.1426	0.2270
Treatment F				40.895	49.419	35.667	163.945	124.849	36.717
Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Pest Type
W, Weed = Weed or volunteer crop
Pest Code
ZEAMX, Zea mays, Corn = US
Crop Type, Code
C = EPPO species (Bayer) codes
GLXMA, BSOY, Glycine max, Soybean = US
Rating Type
PHYGEN = phytotoxicity - general / injury
CONTRO = control / burndown or knockdown
Rating Unit/Min/Max
%, 0, 100 = percent
Assessed By
Haugrud, N = Research Specailist

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.