Purdue Weed Science

Influence of EXP-1422 on Glyphosate and Glufosinate in Corn for Grain.

Trial ID: 18S-TPAC-CORN-11 Location: TPAC Trial Year: 2018
Protocol ID: 18S-TPAC-CORN-11 Investigator: Dr. Bill Johnson
Project ID: Study Director: Dr. Bryan Young
Sponsor Contact: S. Bernard - Italpollina

General Trial Information

Study Director: Dr. Bryan Young **Title:** Professor
Investigator: Dr. Bill Johnson **Title:** Professor

Discipline: H herbicide

Trial Location

City: Lafayette **Country:** USA United States
State/Prov.: Indiana
Postal Code: 47909

Latitude of LL Corner °: 40.29176 N
Longitude of LL Corner °: 86.90549 W

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Study Director: Dr. Bryan Young **Title:** Professor
Organization: Purdue University
Address: 915 W. State Street
City+State/Prov: West Lafayette, IN
Postal Code: 47907 **E-mail:** BryanYoung@purdue.edu
Country: USA United States

Investigator: Dr. Bill Johnson **Title:** Professor
Organization: Purdue University
Address: 915 W. State Street
City+State/Prov: West Lafayette, IN
Postal Code: 47907 **E-mail:** wgj@purdue.edu
Country: USA United States

Cooperator/Landowner

Cooperator: Jay Young **Role:** Superintendent
Organization: Purdue University
Address 1: 8343 US 231 S
City: Lafayette **Phone No.:** 765-538-3422
State/Prov: IN **Fax No.:** 765-538-3423
Postal Code: 47909
Country: USA United States **E-mail:** jayyoung@purdue.edu

Crop Description

Crop 1: ZEAMX Zea mays Corn
Variety: DKC62-52RIB
Description: RR/LL Stacked

Planting Date: Apr-27-2018
Planting Method: PLANTD planted
Planting Rate, Unit: 32000 S/A **Planting Equipment:** PP plot planter
Depth, Unit: 1.5 IN **Emergence Date:** May-7-2018
Row Spacing, Unit: 30 IN

Harvested Width, Unit: 5 FT
Harvested Length, Unit: 25 FT
Soil Temperature, Unit: 61 F **% Standard Moisture:** 15.5
Soil Moisture: DRY dry

Pest Description

Pest 1 Type: W **Code:** AMBTR Ambrosia trifida
Common Name: Giant ragweed

Site and Design

Treated Plot Width: 10 FT **Site Type:** FIELD field
Treated Plot Length: 30 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 300 FT2 **Treatments:** 5 **Tillage Type:** CONTIL conventional-till
Replications: 4 **Study Design:** RACOBL Randomized Complete Block (RCB)

Field Prep./Maintenance:
4/26/18-Farm Applied 180 lbs of N applied as UAN 28-0-0.
4/27/18-Applied Blanket of Bicept II Magnmum at 2.4 quarts/acre.
5/22/18-Applied Roundup Powermax and Liberty at 32 oz/acre on associated treatments to kill giant ragweed in order to apply the EXP-1422 treatments at later growth stage. Corn was at V4 at application.

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Soil Description

Description Name: TPAC-Field 4A
% OM: 3.1 **Texture:** SIL silt loam
pH: 6 **Soil Name:** Toronto-Millbrook
CEC: 11.1

Application Description

	A
Application Date:	Jun-8-2018
Appl. Start Time:	3:10 PM
Appl. Stop Time:	3:40 PM
Application Method:	SPRAY
Application Timing:	POSPOS
Application Placement:	BROADC
Applied By:	S. DESIMINI
Air Temperature, Unit:	85 F
% Relative Humidity:	57
Wind Velocity, Unit:	6 MPH
Wind Direction:	NNW
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	80 F
Soil Moisture:	SLIWET
% Cloud Cover:	40

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	ZEAMX BCOR
Stage Scale Used:	BBCH
Stage Majority, Percent:	17
Stage Minimum, Percent:	16
Stage Maximum, Percent:	17
Height, Unit:	20 IN
Height Minimum, Maximum:	18 24

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMBTR W
Stage Majority, Percent:	12
Stage Minimum, Percent:	10
Stage Maximum, Percent:	16
Height, Unit:	3 IN
Height Minimum, Maximum:	0.25 10
Density, Unit:	19 FT2

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Application Equipment

	A
Appl. Equipment:	CO2 BACKPACK
Equipment Type:	BACSPR
Operation Pressure, Unit:	18 PSI
Nozzle Type:	FLAFXR
Nozzle Size:	XR11002
Nozzle Spacing, Unit:	15 IN
Nozzles/Row:	8
Boom Length, Unit:	10 FT
Boom Height, Unit:	17 IN
Ground Speed, Unit:	3 MPH
Carrier:	WATER
Spray Volume, Unit:	15 GAL/AC
Mix Size, Unit:	1.8 L
Propellant:	COMCO2

Date	By	Notes
Jun-12-2018	D. JOHNSON	Evening storm brought hail and damage to crop occured. After application a rain shower occured at 4:30pm.
Jul-2-2018	D. JOHNSON	There were 5 corn plants taken accidentally from the middle left row of plot 102 in regards for yield purposes.

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Reps: 4 Plots: 10 by 30 feet
Spray vol: 15 GAL/AC Mix Size: 1.8 L (total for 4 plots; minimum=1.564 L)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Appl Code	Appl Description	Amt Product to Measure	Rep 1	2	3	4
1	UNTREATED CHECK									101	203	305	401
2	ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	fl oz/a	A	V4-V8 CORN	30.0 mL/mx	102	205	301	403
	DRY AMS	100	%	SG	8.5	lb/100 gal	A	V4-V8 CORN	18.33 g/mx				
3	ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	fl oz/a	A	V4-V8 CORN	30.0 mL/mx	103	202	304	402
	EXP-1422	100	%	L	16	fl oz/a	A	V4-V8 CORN	15.0 mL/mx				
	DRY AMS	100	%	SG	8.5	lb/100 gal	A	V4-V8 CORN	18.33 g/mx				
4	LIBERTY 280 SL	2.34	LB/GAL	SL	32	fl oz/a	A	V4-V8 CORN	30.0 mL/mx	104	201	302	405
	DRY AMS	100	%	SG	8.5	lb/100 gal	A	V4-V8 CORN	18.33 g/mx				
5	LIBERTY 280 SL	2.34	LB/GAL	SL	32	fl oz/a	A	V4-V8 CORN	30.0 mL/mx	105	204	303	404
	EXP-1422	100	%	L	16	fl oz/a	A	V4-V8 CORN	15.0 mL/mx				
	DRY AMS	100	%	SG	8.5	lb/100 gal	A	V4-V8 CORN	18.33 g/mx				

Sort Order: Treatment

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	2	3	4	5	6
	Pest Type					W Weed		W Weed		W Weed
	Pest Code					AMBTR		AMBTR		AMBTR
	Pest Name					Giant ragweed		Giant ragweed		Giant ragweed
	Crop Code				ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
	Crop Name				Corn	Corn	Corn	Corn	Corn	Corn
	Part Rated				PLOT -	PLOT -	PLOT -	PLOT -	PLOT -	PLOT -
	Rating Date				Jun-8-2018	Jun-8-2018	Jun-15-2018	Jun-15-2018	Jun-22-2018	Jun-22-2018
	Rating Type				PHYGEN	CONTROL	PHYGEN	CONTROL	PHYGEN	CONTROL
	Rating Unit				%	%	%	%	%	%
	Number of Subsamples				1	1	1	1	1	1
	Assessed By				D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON
	Rating Timing				A1	A1	A2	A2	A3	A3
	Days After First/Last Applic.				0 0	0 0	7 7	7 7	14 14	14 14
	Trt-Eval Interval				14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A	14 DA-A
	Days After Emergence				32 DE-1	32 DE-1	39 DE-1	39 DE-1	46 DE-1	46 DE-1
	ARM Action Codes				P	P	P	P	P	P
	Number of Decimals				0	0	0	0	0	0
1	UNTREATED CHECK				0	0	0	0	0	0
2	ROUNDUP POWERMAX	32	fl oz/a	A	0 -	74 -	0 -	90 b	0 -	88 a
	DRY AMS	8.5	lb/100 gal	A						
3	ROUNDUP POWERMAX	32	fl oz/a	A	0 -	71 -	0 -	91 b	0 -	86 b
	EXP-1422	16	fl oz/a	A						
	DRY AMS	8.5	lb/100 gal	A						
4	LIBERTY 280 SL	32	fl oz/a	A	0 -	68 -	0 -	91 b	0 -	85 b
	DRY AMS	8.5	lb/100 gal	A						
5	LIBERTY 280 SL	32	fl oz/a	A	0 -	70 -	0 -	94 a	0 -	89 a
	EXP-1422	16	fl oz/a	A						
	DRY AMS	8.5	lb/100 gal	A						
	LSD P=.05				.	5.5	.	1.7	.	1.6
	Standard Deviation				0.0	3.4	0.0	1.1	0.0	1.0
	CV				0.0	4.87	0.0	1.17	0.0	1.17
	Levene's F				0.00	0.80	0.00	0.733	0.00	0.80
	Levene's Prob(F)				0.00*	0.517	0.00*	0.552	0.00*	0.517
	Skewness				.	-0.2453	.	0.7107	.	0.1181
	Kurtosis				.	-1.3681	.	-1.3252	.	-1.0416
	Replicate F				0.000	1.588	0.000	2.561	0.000	0.405
	Replicate Prob(F)				1.0000	0.2594	1.0000	0.1200	1.0000	0.7528
	Treatment F				0.000	2.294	0.000	7.829	0.000	8.838
	Treatment Prob(F)				1.0000	0.1466	1.0000	0.0070	1.0000	0.0048

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
Untreated treatment(s) 1 excluded from analysis.
Could not calculate LSD (% mean diff) for columns 1,3,5 because error mean square = 0.

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Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7	8	9	10	11	12
	Pest Type						W Weed			
	Pest Code						AMBTR			
	Pest Name						Giant ragweed			
	Crop Code				ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
	Crop Name				Corn	Corn	Corn	Corn	Corn	Corn
	Part Rated				PLANT -	PLANT -	PLOT -	PLOT -	PLOT -	PLOT -
	Rating Date				Jun-22-2018	Aug-2-2017	Jul-5-2018	Oct-9-2018	Oct-9-2018	Oct-9-2018
	Rating Type				GREEN	WEIFRE	CONTROL	YIELD	MOICON	YIELD
	Rating Unit				SPAD	kg	%	lb/plot	%	BU
	Number of Subsamples				10	10	1	1	1	1
	Assessed By				P. CALDWELL	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON	D. JOHNSON
	Rating Timing				A4	A5	A6			
	Days After First/Last Applic.				14 14	-310 -310	27 27	123 123	123 123	123 123
	Trt-Eval Interval				14 DA-A	14 DA-A	14 DA-A	123 DA-A	123 DA-A	123 DA-A
	Days After Emergence				46 DE-1	-278 DE-1	59 DE-1	155 DE-1	155 DE-1	155 DE-1
	ARM Action Codes				P	P	P	P	P	TY1
	Number of Decimals				1	3	0	1	1	1
1	UNTREATED CHECK				51.7	0.577	0	18.1	15.7	112.4
2	ROUNDUP POWERMAX	32	fl oz/a	A	59.4 -	0.809 -	90 -	41.3 -	15.8 -	255.8 -
	DRY AMS	8.5	lb/100 gal	A						
3	ROUNDUP POWERMAX	32	fl oz/a	A	56.4 -	0.780 -	88 -	44.1 -	15.6 -	274.4 -
	EXP-1422	16	fl oz/a	A						
	DRY AMS	8.5	lb/100 gal	A						
4	LIBERTY 280 SL	32	fl oz/a	A	58.6 -	0.776 -	88 -	39.8 -	15.7 -	246.8 -
	DRY AMS	8.5	lb/100 gal	A						
5	LIBERTY 280 SL	32	fl oz/a	A	56.5 -	0.796 -	90 -	42.4 -	15.8 -	262.6 -
	EXP-1422	16	fl oz/a	A						
	DRY AMS	8.5	lb/100 gal	A						
	LSD P=.05				2.83	0.0844	4.1	6.06	0.36	37.69
	Standard Deviation				1.77	0.0528	2.5	3.79	0.23	23.57
	CV				3.07	6.68	2.87	9.05	1.45	9.07
	Levene's F				1.808	2.184	0.383	0.677	0.02	0.686
	Levene's Prob(F)				0.199	0.143	0.767	0.583	0.996	0.578
	Skewness				0.4214	-0.3822	0.0541	-0.2127	-0.1132	-0.1826
	Kurtosis				0.607	-1.2192	-0.6073	-0.214	-0.4521	-0.1492
	Replicate F				0.386	0.286	0.270	2.678	8.129	2.554
	Replicate Prob(F)				0.7658	0.8346	0.8453	0.1102	0.0063	0.1206
	Treatment F				3.011	0.319	0.631	0.941	1.194	0.972
	Treatment Prob(F)				0.0871	0.8117	0.6133	0.4605	0.3662	0.4475

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Pest Type
W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop
Pest Code
AMBTR, Ambrosia trifida, Giant ragweed = US
Crop Code
ZEAMX, BCOR, Zea mays, Corn = US
Part Rated
PLOT = plot
PLANT = plant
Rating Type
PHYGEN = phytotoxicity - general / injury
GREEN = green
WEIFRE = weight - fresh
YIELD = yield
MOICON = moisture content
Rating Unit
% = percent
SPAD = spad
kg = kilogram
lb/plot = pounds per plot
BU = bushel
Rating Timing
A1 = 1st Assessment According to Trial Schedule
A2 = 2nd Assessment According to trial Schedule
A3 = 3rd Assessment According to Trial Schedule
A4 = 4th Assessment According to Trial Schedule
A5 = 5th Assessment According to Trial Schedule
A6 = 6th Assessment according to Trial Schedule
ARM Action Codes
P = Rating scale of 0 to 100 (e.g. % control or injury)
TY1 = 6.222857*[C10]*(100-[C11])/84.5