Purdue University

Parazone burndown on glyphosate-resistant weeds

Trial ID: 09S-SEP-NTS-77 Protocol ID: 09S-SEP-NTS-77
Location: SEPAC Study Director: Melissa Kruger/Paul Marquardt
Project ID: Investigator: Dr. Bill Johnson
Sponsor Contact: Gerald Wiley

General Trial Information

Study Director: Melissa Kruger/Paul Marquardt **Title:** Lab Tech VIII/Research Assoc.
Investigator: Dr. William G. Johnson **Title:** Associate Professor

Discipline: H herbicide
Trial Status: E established
Initiation Date: 5/5/09 **Planned Completion Date:** 6/5/09

Trial Location

City: Butlerville
State/Prov.: Indiana
Postal Code: 47223-0216
Country: USA

Objectives:

The objective of the trial is to evaluate the effectiveness of parazone as a burndown on glyphosate-resistant weeds.

Personnel

Study Director: Melissa Kruger/Paul Marquardt **Title:** Lab Tech VIII/Research Assoc.
Affiliation: Purdue University
Address: 915 W. State St.
Location: West Lafayette, IN USA
Postal Code: 47907 **E-mail:** mmkruger@purdue.edu/pmarquar@purdue.edu
Phone No.: 765-494-4621

Investigator: Dr. William G. Johnson **Title:** Associate Professor
Affiliation: Purdue University
Address: 915 W. State St.
Location: West Lafayette, IN USA
Postal Code: 47907 **E-mail:** wgj@purdue.edu
Phone No.: 765-494-4656

Cooperator/Landowner

Cooperator: Southeastern-Purdue Ag Center **Role:** Cooperator
Organization: Purdue University
Address 1: 4425 E Co. Rd. 350 N
Phone No.: 1-812-458-6977
City: Butlerville **Fax No.:** 1-812-458-6979
State/Prov: IN
Postal Code: 477223-021 **E-mail:** biehled@purdue.edu
Country: USA United States

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: AG3402 **Description:** Roundup Ready
BBCH Scale: BSOY **Planting Date:** 5/26/09
Planting Method: DIRDRI direct drilled **Rate, Unit:** 150000 S/A
Depth, Unit: 1 IN
Row Spacing, Unit: 30 IN
Soil Temperature, Unit: 78 F
Soil Moisture: MOIST **Emergence Date:** 5/31/09

Pest Description

Pest 1 Type: W **Code:** SENGL Senecio glabellus
Common Name: Cressleaf groundsel

Pest 2 Type: W **Code:** RANAB Ranunculus abortivus
Common Name: Smallflower buttercup

Pest 3 Type: W **Code:** TAROF Taraxacum officinale
Common Name: Common dandelion

Pest 4 Type: W **Code:** ERICA Erigeron canadensis
Common Name: Horseweed

Pest 5 Type: W **Code:** POAAN Poa annua
Common Name: Annual bluegrass

Pest 6 Type: W **Code:** VENAL Vernonia altissima
Common Name: Tall ironweed

Pest 7 Type: W **Code:** CAPSS Capsella sp.
Common Name: Shepherdspurse

Pest 8 Type: W **Code:** THLAR Thlaspi arvense
Common Name: Field Pennycress

Site and Design

Plot Width, Unit: 10 FT
Plot Length, Unit: 30 FT
Plot Area, Unit: 300 FT2
Replications: 4
Site Type: FIELD field
Experimental Unit: 1 PLOT plot
Tillage Type: NOTILL no-till
Study Design: RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

Description Name: SEPAC Field U4-6
% OM: 1.8 **Texture:** SIL silt loam
pH: 5.6 **Soil Name:** Avonburg
CEC: 6.7

Analyzed By:
A&L Great Lakes Laboratories, Inc. Report #: F07320-0472

Additional Measured Elements

Element	Quantity	Unit
P	7	PPM
K	59	PPM
Mg	140	PPM
Ca	600	PPM

Moisture and Weather Conditions

Closest Weather Station: On research station **Distance, Unit:** 0.5 MI

Application Description

	A
Application Date:	5/5/09
Time of Day:	10:40-11
Application Method:	SPRAY
Application Timing:	PREPLA
Application Placement:	BROSOI
Applied By:	PM
Air Temperature, Unit:	70.5 F
% Relative Humidity:	60
Wind Velocity, Unit:	2 MPH
Wind Direction:	E
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	64 F
Soil Moisture:	MOIST
% Cloud Cover:	90

Crop Stage At Each Application

Purdue University

	A
Crop 1 Code, BBCH Scale:	GLXMA BSOY
Stage Scale Used:	BBCH
Stage Majority, Percent:	N/A

Pest Stage At Each Application

Purdue University

	A
Pest 1 Code, Type, Scale:	SENGL W
Stage Majority, Percent:	FLOWER
Height, Unit:	21 IN
Height Minimum, Maximum:	6 36
Density, Unit:	13 YD2
Pest 2 Code, Type, Scale:	RANAB W
Stage Majority, Percent:	FLOWER
Stage Minimum, Percent:	COTY
Stage Maximum, Percent:	FLOWER
Height, Unit:	6.25 IN
Height Minimum, Maximum:	0.5 12
Density, Unit:	17 YD2
Pest 3 Code, Type, Scale:	TAROF W
Stage Majority, Percent:	FLOWER
Stage Minimum, Percent:	FLOWER
Stage Maximum, Percent:	SEEDSE
Height, Unit:	15 IN
Height Minimum, Maximum:	6 24
Density, Unit:	10 YD2
Pest 4 Code, Type, Scale:	ERICA W
Stage Majority, Percent:	COTY
Height, Unit:	1 IN
Height Minimum, Maximum:	0 2
Density, Unit:	13 YD2
Pest 5 Code, Type, Scale:	POAAN W
Stage Majority, Percent:	FLOWER
Height, Unit:	2.5 IN
Height Minimum, Maximum:	1 4
Density, Unit:	38 YD2
Pest 6 Code, Type, Scale:	VENAL W
Stage Majority, Percent:	VEG
Height, Unit:	10 IN
Height Minimum, Maximum:	6 14
Density, Unit:	1 YD2
Pest 7 Code, Type, Scale:	CAPSS W
Stage Majority, Percent:	FLOWER
Height, Unit:	5 IN
Height Minimum, Maximum:	2 8
Density, Unit:	3 YD2
Pest 8 Code, Type, Scale:	THLAR W
Stage Majority, Percent:	FLOWER
Height, Unit:	13 IN
Height Minimum, Maximum:	6 20
Density, Unit:	3 YD2

Application Equipment

Purdue University

	A
Appl. Equipment:	CO2 Backpack
Equipment Type:	SPRBAC
Operating Pressure, Unit:	17 PSI
Nozzle Type:	Flat Fan
Nozzle Size:	XR11002
Nozzle Spacing, Unit:	15 IN
Nozzles/Row:	6
Boom Length, Unit:	7.5 FT
Boom Height, Unit:	18 IN
Ground Speed, Unit:	3 MPH
Carrier:	H2O
Water Hardness (ppm CaCO3):	150
Spray Volume, Unit:	15 GAL/AC
Mix Size, Unit:	1.8 Liters
Propellant:	CO2
Tank Mix (Y/N):	N no

Purdue University

Parazone burndown on glyphosate-resistant weeds

Trial ID: 09S-SEP-NTS-77 Protocol ID: 09S-SEP-NTS-77
Location: SEPAC Study Director: Melissa Kruger/Paul Marquardt
Project ID: Investigator: Dr. Bill Johnson
Sponsor Contact: Gerald Wiley

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	5	9	2	6	3
	Pest Type				W Weed	W Weed	W Weed	W Weed	W Weed	W Weed
	Pest Code				ERICA	ERICA	ERICA	SENGL	SENGL	RANAB
	Pest Scientific Name				Erigeron canad>	Erigeron canad>	Conyza canaden>	Senecio glabel>	Senecio glabel>	Ranunculus abo>
	Pest Name				Horseweed	Horseweed	Horseweed	Cressleaf grou>	Cressleaf grou>	Smallflower bu>
	Crop Code				N/A	N/A	GLXMA	N/A	N/A	N/A
	Crop Scientific Name						Glycine max			
	Crop Name						Soybean			
	Part Rated				PLOT P	PLOT P	PLOT P	PLOT P	PLOT P	PLOT P
	Rating Date				5/12/09	5/18/09	6/5/09	5/12/09	5/18/09	5/12/09
	Rating Type				CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit				%	%	%	%	%	%
	Sample Size, Unit									
	Number of Subsamples				1	1	1	1	1	1
	Crop Stage Majority				N/A		VC-V1			
	Crop Stage Minimum/Maximum						1-2"			
	Pest Stage Majority				BOLT	BOLT	COTY-BOL	FLOWER	FLOWER	FLOWER
	Pest Stage Minimum/Maximum					0-6"	0-10"		6-36"	
	Pest Density, Unit				10.5YD2	10.5YD2	38 YD2	12.5YD2	12.5YD2	15.5YD2
	Footnote Number									
	Assessed By				GK	MK&JM	MK	GK	MK&JM	GK
	Rating Timing				7 DAT A	14 DAT A	28 DAT A	7 DAT A	14 DAT A	7 DAT A
	Days After First/Last Applic.				7 7	13 13	31 31	7 7	13 13	7 7
	Trt-Eval Interval				7 DA-A	13 DA-A	31 DA-A	7 DA-A	13 DA-A	7 DA-A
	Plant-Eval Interval				-14 DP-1	-8 DP-1	10 DP-1	-14 DP-1	-8 DP-1	-14 DP-1
	Days After Emergence				-19 DE	-13 DE	5 DE-1	-19 DE	-13 DE	-19 DE
	Number of Decimals									
1	Untreated				0.0 c	0.0 b	0.0 b	0.0 c	0.0 b	0.0 c
2	Roundup WeatherMAX	0.77	lb ae/a	A	65.0 b	100.0 a	98.0 a	45.0 b	99.0 a	52.5 b
	Ammonium Sulfate	2	% w/w	A						
3	Parazone	0.5	lb ai/a	A	100.0 a	100.0 a	97.0 a	100.0 a	100.0 a	100.0 a
	COC	1	% v/v	A						
4	Parazone	1	lb ai/a	A	100.0 a	100.0 a	97.3 a	100.0 a	100.0 a	100.0 a
	COC	1	% v/v	A						
5	Parazone	0.5	lb ai/a	A	100.0 a	100.0 a	98.0 a	100.0 a	100.0 a	100.0 a
	Galigan	0.125	lb ai/a	A						
	COC	1	% v/v	A						
6	Parazone	0.5	lb ai/a	A	100.0 a	100.0 a	97.3 a	100.0 a	100.0 a	100.0 a
	Galigan	0.25	lb ai/a	A						
	COC	1	% v/v	A						
7	Parazone	0.5	lb ai/a	A	100.0 a	100.0 a	99.0 a	100.0 a	100.0 a	100.0 a
	2,4-D Ester	1	lb ae/a	A						
	COC	1	% v/v	A						

Purdue University

Pest Type			W Weed	W Weed	W Weed	W Weed	W Weed	W Weed
Pest Code			ERICA	ERICA	ERICA	SENGL	SENGL	RANAB
Pest Scientific Name			Erigeron canad>	Erigeron canad>	Conyza canaden>	Senecio glabel>	Senecio glabel>	Ranunculus abo>
Pest Name			Horseweed	Horseweed	Horseweed	Cressleaf grou>	Cressleaf grou>	Smallflower bu>
Crop Code			N/A	N/A	GLXMA	N/A	N/A	N/A
Crop Scientific Name					Glycine max			
Crop Name					Soybean			
Part Rated			PLOT P	PLOT P	PLOT P	PLOT P	PLOT P	PLOT P
Rating Date			5/12/09	5/18/09	6/5/09	5/12/09	5/18/09	5/12/09
Rating Type			CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit			%	%	%	%	%	%
Sample Size, Unit								
Number of Subsamples			1	1	1	1	1	1
Crop Stage Majority			N/A		VC-V1			
Crop Stage Minimum/Maximum					1-2"			
Pest Stage Majority			BOLT	BOLT	COTY-BOL	FLOWER	FLOWER	FLOWER
Pest Stage Minimum/Maximum				0-6"	0-10"		6-36"	
Pest Density, Unit			10.5YD2	10.5YD2	38 YD2	12.5YD2	12.5YD2	15.5YD2
Footnote Number								
Assessed By			GK	MK&JM	MK	GK	MK&JM	GK
Rating Timing			7 DAT A	14 DAT A	28 DAT A	7 DAT A	14 DAT A	7 DAT A
Days After First/Last Applic.			7 7	13 13	31 31	7 7	13 13	7 7
Trt-Eval Interval			7 DA-A	13 DA-A	31 DA-A	7 DA-A	13 DA-A	7 DA-A
Plant-Eval Interval			-14 DP-1	-8 DP-1	10 DP-1	-14 DP-1	-8 DP-1	-14 DP-1
Days After Emergence			-19 DE	-13 DE	5 DE-1	-19 DE	-13 DE	-19 DE
Number of Decimals								
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	1	5	9	2	6	3
8	Parazone	0.5	lb ai/a	A	100.0 a	100.0 a	98.8 a	100.0 a	100.0 a	100.0 a
	Clarity	0.25	lb ae/a	A						
	COC	1	% v/v	A						
9	Untreated				0.0 c	0.0 b	0.0 b	0.0 c	0.0 b	0.0 c
10	Untreated				0.0 c	0.0 b	0.0 b	0.0 c	0.0 b	0.0 c
LSD (P=.05)					14.27	0.00	2.36	4.59	0.65	2.29
Standard Deviation					9.83	0.00	1.63	3.16	0.45	1.58
CV					14.78	0.0	2.38	4.9	0.64	2.42
Bartlett's X2					0.0	0.0	7.561	0.0	0.0	0.0
P(Bartlett's X2)					.	.	0.182	.	.	.
Replicate F					1.000	0.000	0.336	1.000	1.000	1.000
Replicate Prob(F)					0.4079	1.0000	0.7991	0.4079	0.4079	0.4079
Treatment F					91.966	0.000	3374.575	907.667	46535.337	3587.667
Treatment Prob(F)					0.0001	1.0000	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Purdue University

Pest Type				W Weed	W Weed	W Weed	W Weed
Pest Code				RANAB	TAROF	TAROF	TAROF
Pest Scientific Name				Ranunculus abo>	Taraxacum offi>	Taraxacum offi>	Taraxacum offi>
Pest Name				Smallflower bu>	Common dandeli>	Common dandeli>	Common dandeli>
Crop Code				N/A	N/A	N/A	GLXMA
Crop Scientific Name							Glycine max
Crop Name							Soybean
Part Rated				PLOT P	PLOT P	PLOT P	PLOT P
Rating Date				5/18/09	5/12/09	5/18/09	6/5/09
Rating Type				CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit				%	%	%	%
Sample Size, Unit							
Number of Subsamples				1	1	1	1
Crop Stage Majority							VC-V1
Crop Stage Minimum/Maximum							1-2"
Pest Stage Majority				SENESCE	ROSETT	VEG	COTY-SEE
Pest Stage Minimum/Maximum				4-8"		6-14"	0-18"
Pest Density, Unit				15.5YD2	10 YD2	10 YD2	17 YD2
Footnote Number							
Assessed By				MK&JM	GK	MK&JM	MK
Rating Timing				14 DAT A	7 DAT A	14 DAT A	28 DAT A
Days After First/Last Applic.				13 13	7 7	13 13	31 31
Trt-Eval Interval				13 DA-A	7 DA-A	13 DA-A	31 DA-A
Plant-Eval Interval				-8 DP-1	-14 DP-1	-8 DP-1	10 DP-1
Days After Emergence				-13 DE	-19 DE	-13 DE	5 DE-1
Number of Decimals							
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7	4	8	10
1	Untreated				0.0 b	0.0 c	0.0 d	0.0 c
2	Roundup WeatherMAX	0.77	lb ae/a	A	100.0 a	46.3 b	72.5 c	94.5 a
	Ammonium Sulfate	2	% w/w	A				
3	Parazone	0.5	lb ai/a	A	100.0 a	95.3 a	88.3 b	77.5 b
	COC	1	% v/v	A				
4	Parazone	1	lb ai/a	A	100.0 a	96.5 a	94.5 ab	91.3 a
	COC	1	% v/v	A				
5	Parazone	0.5	lb ai/a	A	100.0 a	97.8 a	96.5 ab	78.8 b
	Galigan	0.125	lb ai/a	A				
	COC	1	% v/v	A				
6	Parazone	0.5	lb ai/a	A	100.0 a	98.5 a	98.5 a	78.8 b
	Galigan	0.25	lb ai/a	A				
	COC	1	% v/v	A				
7	Parazone	0.5	lb ai/a	A	100.0 a	98.0 a	96.8 ab	93.3 a
	2,4-D Ester	1	lb ae/a	A				
	COC	1	% v/v	A				

Purdue University

Pest Type					W Weed	W Weed	W Weed	W Weed
Pest Code					RANAB	TAROF	TAROF	TAROF
Pest Scientific Name					Ranunculus abo>	Taraxacum offi>	Taraxacum offi>	Taraxacum offi>
Pest Name					Smallflower bu>	Common dandeli>	Common dandeli>	Common dandeli>
Crop Code					N/A	N/A	N/A	GLXMA
Crop Scientific Name								Glycine max
Crop Name								Soybean
Part Rated					PLOT P	PLOT P	PLOT P	PLOT P
Rating Date					5/18/09	5/12/09	5/18/09	6/5/09
Rating Type					CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit					%	%	%	%
Sample Size, Unit								
Number of Subsamples					1	1	1	1
Crop Stage Majority								VC-V1
Crop Stage Minimum/Maximum								1-2"
Pest Stage Majority					SENESCE	ROSETT	VEG	COTY-SEE
Pest Stage Minimum/Maximum					4-8"		6-14"	0-18"
Pest Density, Unit					15.5YD2	10 YD2	10 YD2	17 YD2
Footnote Number								
Assessed By					MK&JM	GK	MK&JM	MK
Rating Timing					14 DAT A	7 DAT A	14 DAT A	28 DAT A
Days After First/Last Applic.					13 13	7 7	13 13	31 31
Trt-Eval Interval					13 DA-A	7 DA-A	13 DA-A	31 DA-A
Plant-Eval Interval					-8 DP-1	-14 DP-1	-8 DP-1	10 DP-1
Days After Emergence					-13 DE	-19 DE	-13 DE	5 DE-1
Number of Decimals								
Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	7	4	8	10
8	Parazone	0.5	lb ai/a	A	100.0 a	97.0 a	94.8 ab	83.8 b
	Clarity	0.25	lb ae/a	A				
	COC	1	% v/v	A				
9	Untreated				0.0 b	0.0 c	0.0 d	0.0 c
10	Untreated				0.0 b	0.0 c	0.0 d	0.0 c
LSD (P=.05)					0.00	6.89	6.05	6.94
Standard Deviation					0.00	4.75	4.17	4.79
CV					0.0	7.55	6.49	8.01
Bartlett's X2					0.0	54.903	25.583	8.418
P(Bartlett's X2)					.	0.001*	0.001*	0.209
Replicate F					0.000	1.165	1.641	1.619
Replicate Prob(F)					1.0000	0.3413	0.2032	0.2081
Treatment F					0.000	378.065	464.433	303.559
Treatment Prob(F)					1.0000	0.0001	0.0001	0.0001