

# Purdue University

## Glyphosate Resistant Horseweed Efficacy - Postemergence Corn Treatments

Trial ID: 05-SEPAC-GRH-CPST  
 Location: SEPAC

Study Dir.: Dr. Bill Johnson  
 Investigator: Dr. William G. Johnson

### GENERAL TRIAL INFORMATION

<b>Study Director:</b> Vince Davis	<b>Title:</b> Research Associate
<b>Affiliation:</b> Purdue University	
<b>Postal Code:</b> 47907	
<b>Investigator:</b> Dr. William G. Johnson	<b>Title:</b> Associate Professor
<b>Affiliation:</b> Purdue University	
<b>Postal Code:</b> 47907	

### TRIAL LOCATION

<b>City:</b> Butlerville	
<b>State/Prov.:</b> IN	
<b>Postal Code:</b> 47223	<b>Initiation Date:</b> 7/Apr/2005
<b>Country:</b> USA	<b>Planned Completion Date:</b> 1/Nov/2005
<b>Directions:</b> Field T3	

### COOPERATOR/LANDOWNER

<b>Cooperator:</b> Southeast Purdue Ag Center	<b>Country:</b> USA
<b>Org:</b> Purdue University	<b>Phone No:</b> 812-458-6977
<b>Address 1:</b> 4425 E Co Rd 350 N	<b>Fax No:</b> 812-458-6979
<b>Address 2:</b> PO Box 216	
<b>City:</b> Butlerville	
<b>State/Prov:</b> IN	
<b>Postal Code:</b> 47223	

**Conducted Under GLP (Y/N):** N                      **Conducted Under GEP (Y/N):** N

**Objective:** The objective of this study is to compare the performance of various post corn herbicides applied on large (12 inch) glyphosate resistant horseweed.

### CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	ERICA	HORSEWEED	ERIGERON CANADENSIS L.
2.	PANDI	Panicum dichotomiflorum	Panicum, fall

**Crop 1:** ZEAMX CORN, FIELD                      **Variety:** DKC 60-09 RR/YGCB  
**Planting Date:** 10/May/2004                      **Planting Method:** No-Till planted  
**Rate:** 29000 S/A                      **Depth:** 1 IN  
**Row Spacing:** 30 IN  
**Soil Temperature:** 77 F                      **Soil Moisture:** NORMAL

### SITE AND DESIGN

**Plot Width, Unit:** 10 FT                      **Plot Length, Unit:** 30 FT                      **Reps:** 4  
**Site Type:** FIELD  
**Tillage Type:** No-Till                      **Study Design:** RANDOMIZED COMPLETE BLOCK

No.	Previous Crops	Previous Pesticides	Year
1.	soybean	glyphosate	2004

### MAINTENANCE

**Field Prep./Maintenance:** 6-16-05  
 Accent was added to checks at 12" horseweed or 12" corn stage

No.	Date	Maintenance Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.	24/May/2005	Fusion	2.56		L	20	FL OZ/A

### SOIL DESCRIPTION

**% OM:** 1.3                      **Texture:** Silt Loam  
**pH:** 5.7                      **Soil Name:** Clermont  
**CEC:** 5.5                      **Fert. Level:** P - 29 ppm, K - 61 ppm

### MOISTURE CONDITIONS

No.	Date	Time	Amount	Unit	Type	Interval	Unit
1.	30/Mar/2005	month	5.74	IN	Total Rainfall		
2.	30/Apr/2005	month	3.79	IN	Total Rainfall		
3.	31/May/2005	month	3.33	IN	Total Rainfall		
4.	30/Jun/2005	month	1.95	IN	Total Rainfall		

**Overall Moisture Conditions:** Wet early then very dry after second planting.  
**Closest Weather Station:** Located at SEPAC                      **Distance:** 0.5                      **Unit:** MI

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## APPLICATION DESCRIPTION

A	
Application Date:	16/Jun/2005
Time of Day:	9:00 am
Application Method:	SPRAY
Application Timing:	Late POST
Applic. Placement:	BROFOL
Air Temp., Unit:	74 F
% Relative Humidity:	37
Wind Velocity, Unit:	3 MPH
Soil Temp., Unit:	72 F
Soil Moisture:	moist
% Cloud Cover:	10

## CROP STAGE AT EACH APPLICATION

A	
Crop 1 Code, Stage:	ZEAMX
Stage Scale:	V5-V6

## WEED STAGE AT EACH APPLICATION

A	
Weed 1 Code, Stage:	ERICA
Stage Scale:	1-12"tall
Density, Unit:	30 YD2
Weed 2 Code, Stage:	PANDI
Stage Scale:	2-14"
Density, Unit:	350 YD2

## APPLICATION EQUIPMENT

A	
Appl. Equipment:	CO2 Backp
Operating Pressure:	26-27 psi
Nozzle Type:	XR11002VS
Nozzle Size:	XR11002VS
Nozzle Spacing, Unit:	20 IN
Boom Length, Unit:	10 FT
Boom Height, Unit:	25 IN
Ground Speed, Unit:	3 MPH
Carrier:	water
Spray Volume, Unit:	15 gpa
Propellant:	CO2

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## Glyphosate Resistant Horseweed Efficacy - Postemergence Corn Treatments

Trial ID: 05-SEPAC-GRH-CPST  
Location: SEPAC

Study Dir.: Dr. Bill Johnson  
Investigator: Dr. William G. Johnson

Weed Code									ERICA	PANDI	ERICA
Part Rated									PLAQUA P	PLAQUA P	PLAQUA P
Rating Data Type									Efficacy	Efficacy	Efficacy
Rating Unit									%	%	%
Rating Date									30/Jun/2005	30/Jun/2005	14/Jul/2005
Weed Stage									4-16"	4-22"	4-30"
Weed Density, Unit									30 M2	35 FT2	5 FT2
Assessed By									VMD+VAM	VMD+VAM	WGJ+EOTT
Trt-Eval Interval									14 DA-A	14 DA-A	28 DA-A
Trt No.	Treatment Name	Rate	Unit	Product Rate	Product Unit	Grow Stg	Appl Code	Plot	1	2	3
1	Untreated Check							101	0	95	0
								406	35	40	65
								608	10	50	30
								702	30	30	0
								Mean =	19	54	24
2	Atrazine	1	lb ai/a	1	qt/a	post	A	102	90	100	95
	Crop Oil Conc	1.67	% v/v	1	qt/a	post	A	412	65	40	90
								508	55	50	65
								806	50	50	90
								Mean =	65	60	85
3	Callisto	0.094	lb ai/a	3	oz/a	post	A	103	50	50	30
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	311	65	40	90
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	506	60	50	50
								705	50	40	65
								Mean =	56	45	59
4	Callisto	0.047	lb ai/a	1.5	oz/a	post	A	104	25	25	0
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	408	50	40	80
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	507	35	50	50
								801	50	40	95
								Mean =	40	39	56
5	Atrazine	1	lb ai/a	1	qt/a	post	A	105	98	75	100
	Callisto	0.094	lb ai/a	3	oz/a	post	A	309	98	50	100
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	503	99	50	100
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	805	98	50	100
								Mean =	98	56	100
6	2,4-D Ester	0.5	lb ae/a	1	pt/a	post	A	106	25	50	65
								403	60	50	100
								501	50	50	98
								711	50	50	100
								Mean =	46	50	91
7	Distinct	0.175	lb ae/a	4	oz/a	post	A	107	40	50	25
	NIS	0.25	% v/v	0.25	% v/v	post	A	409	60	40	100
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	606	50	40	80
								704	55	50	98
								Mean =	51	45	76
8	Roundup Weathermax	0.77	lb ae/a	22	oz/a	post	A	108	10	100	0
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	301	50	80	40
								505	10	100	20
								811	25	100	0
								Mean =	24	95	15
9	Roundup Weathermax	1.12	lb ae/a	32	oz/a	post	A	109	20	100	20
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	310	35	100	40
								611	25	100	30
								710	20	100	20
								Mean =	25	100	28

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Rating Unit									%	%	%
Rating Date									30/Jun/2005	30/Jun/2005	14/Jul/2005
Weed Stage									4-16"	4-22"	4-30"
Weed Density, Unit									30 M2	35 FT2	5 FT2
Assessed By									VMD+VAM	VMD+VAM	WGJ+EOTT
Trt-Eval Interval									14 DA-A	14 DA-A	28 DA-A
Trt No.	Treatment Name	Rate	Unit	Product Rate	Product Unit	Grow Stg	Appl Code	Plot	1	2	3
10	Northstar	0.16	lb ai/a	5	oz/a	post	A	110	70	50	75
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	410	75	40	100
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	601	70	50	98
								810	75	70	95
		Mean =							73	53	92
11	Celebrity Plus	0.221	lb ai/a	4.7	oz/a	post	A	111	50	50	80
	NIS	0.25	% v/v	0.25	% v/v	post	A	304	75	30	95
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	509	50	50	80
								809	60	55	100
	Mean =							59	46	89	
12	Steadfast ATZ	0.78	lb ai/a	14	oz/a	post	A	112	75	60	95
	Methylated seed oil	1	% v/v	1	% v/v	post	A	407	50	50	65
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	609	60	70	70
								712	50	60	75
	Mean =							59	60	76	
13	Equip	0.03	lb ai/a	1.5	oz/a	post	A	201	75	50	95
	Methylated Seed Oil	1.25	% v/v	1.5	pt/a	post	A	405	60	40	75
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	511	50	40	75
								708	60	50	92
	Mean =							61	45	84	
14	Option	0.0328	lb ai/a	1.5	oz/a	post	A	202	60	50	35
	Atrazine	0.75	lb ai/a	1.5	pt/a	post	A	306	40	50	70
	Methylated seed oil	1	% v/v	1	% v/v	post	A	612	50	50	50
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	701	60	50	100
	Mean =							53	50	64	
15	Spirit	0.0356	lb ai/a	1	oz/a	post	A	203	60	40	93
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	404	75	40	95
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	502	65	50	90
								706	70	30	100
	Mean =							68	40	95	
16	Permit	0.047	lb ai/a	1	oz/a	post	A	204	60	50	70
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	401	70	50	100
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	510	70	50	90
								804	70	50	95
	Mean =							68	50	89	
17	Yukon	0.253	lb ai/a	6	oz/a	post	A	205	35	50	55
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	303	80	50	98
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	512	70	50	90
								808	85	50	98
	Mean =							68	50	85	
18	Marksman	1.2	lb ai/a	3	pt/a	post	A	206	70	50	90
								308	95	35	100
								603	90	40	100
								802	60	40	100
	Mean =							79	41	98	

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Rating Data Type									Efficacy	Efficacy	Efficacy
Rating Unit									%	%	%
Rating Date									30/Jun/2005	30/Jun/2005	14/Jul/2005
Weed Stage									4-16"	4-22"	4-30"
Weed Density, Unit									30 M2	35 FT2	5 FT2
Assessed By									VMD+VAM	VMD+VAM	WGJ+EOTT
Trt-Eval Interval									14 DA-A	14 DA-A	28 DA-A
Trt No.	Treatment Name	Rate	Rate Unit	Product Rate	Product Rate Unit	Grow Stg	Appl Code	Plot	1	2	3
19	Sencor 75DF	0.14	lb ai/a	3	oz/a	post	A	207	65	50	70
	2,4-D Ester	0.5	lb ae/a	1	pt/a	post	A	402	60	50	100
								602	70	50	100
								803	60	50	100
								Mean =	64	50	93
20	Python	0.05	lb ai/a	1	oz/a	post	A	208	40	50	75
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	312	80	40	100
								605	40	50	60
								709	60	50	90
							Mean =	55	48	81	
21	Hornet WDG	0.128	lb ae/a	3	oz/a	post	A	209	65	60	80
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	305	60	40	95
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	604	50	50	70
								707	60	50	88
							Mean =	59	50	83	
22	Liberty	0.365	lb ae/a	28	oz/a	post	A	210	75	90	60
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	307	90	95	90
								607	60	90	30
								703	85	98	50
							Mean =	78	93	58	
23	Exceed	0.0356	lb ai/a	1	oz/a	post	A	211	75	60	90
	Crop Oil Conc	1	% v/v	1	% v/v	post	A	411	65	40	98
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A	504	65	50	75
								807	65	50	100
							Mean =	68	50	91	
24	Untreated check							212	20	50	0
								302	30	50	45
								610	10	50	20
								812	30	50	40
							Mean =	23	50	26	

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Location: SEPAC

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Weed Code							ERICA	PANDI	ERICA	
Part Rated							PLAQUA P	PLAQUA P	PLAQUA P	
Rating Data Type							Efficacy	Efficacy	Efficacy	
Rating Unit							%	%	%	
Rating Date							30/Jun/2005	30/Jun/2005	14/Jul/2005	
Weed Stage							4-16"	4-22"	4-30"	
Weed Density, Unit							30 M2	35 FT2	5 FT2	
Assessed By							VMD+VAM	VMD+VAM	WGJ+EOTT	
Trt-Eval Interval							14 DA-A	14 DA-A	28 DA-A	
Trt No.	Treatment Name	Rate	Rate Unit	Product Rate	Product Rate Unit	Grow Stg	Appl Code	1	2	3
1	Untreated Check							19 i	54 bcd	24 f
2	Atrazine	1	lb ai/a	1	qt/a	post	A	65 b-e	60 b	85 abc
	Crop Oil Conc	1.67	% v/v	1	qt/a	post	A			
3	Callisto	0.094	lb ai/a	3	oz/a	post	A	56 def	45 c-f	59 de
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
4	Callisto	0.047	lb ai/a	1.5	oz/a	post	A	40 gh	39 f	56 e
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
5	Atrazine	1	lb ai/a	1	qt/a	post	A	98 a	56 bc	100 a
	Callisto	0.094	lb ai/a	3	oz/a	post	A			
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
6	2,4-D Ester	0.5	lb ae/a	1	pt/a	post	A	46 fg	50 b-f	91 ab
7	Distinct	0.175	lb ae/a	4	oz/a	post	A	51 efg	45 c-f	76 b-e
	NIS	0.25	% v/v	0.25	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
8	Roundup Weathermax	0.77	lb ae/a	22	oz/a	post	A	24 i	95 a	15 f
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
9	Roundup Weathermax	1.12	lb ae/a	32	oz/a	post	A	25 hi	100 a	28 f
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
10	Northstar	0.16	lb ai/a	5	oz/a	post	A	73 bc	53 b-e	92 ab
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
11	Celebrity Plus	0.221	lb ai/a	4.7	oz/a	post	A	59 c-f	46 c-f	89 ab
	NIS	0.25	% v/v	0.25	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
12	Steadfast ATZ	0.78	lb ai/a	14	oz/a	post	A	59 c-f	60 b	76 b-e
	Methylated seed oil	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
13	Equip	0.03	lb ai/a	1.5	oz/a	post	A	61 c-f	45 c-f	84 abc
	Methylated Seed Oil	1.25	% v/v	1.5	pt/a	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
14	Option	0.0328	lb ai/a	1.5	oz/a	post	A	53 d-g	50 b-f	64 cde
	Atrazine	0.75	lb ai/a	1.5	pt/a	post	A			
	Methylated seed oil	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			

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Weed Code							ERICA	PANDI	ERICA	
Part Rated							PLAQUA P	PLAQUA P	PLAQUA P	
Rating Data Type							Efficacy	Efficacy	Efficacy	
Rating Unit							%	%	%	
Rating Date							30/Jun/2005	30/Jun/2005	14/Jul/2005	
Weed Stage							4-16"	4-22"	4-30"	
Weed Density, Unit							30 M2	35 FT2	5 FT2	
Assessed By							VMD+VAM	VMD+VAM	WGJ+EOTT	
Trt-Eval Interval							14 DA-A	14 DA-A	28 DA-A	
Trt No.	Treatment Name	Rate	Rate Unit	Product Rate	Product Rate Unit	Grow Stg	Appl Code	1	2	3
15	Spirit	0.0356	lb ai/a	1	oz/a	post	A	68 bcd	40 ef	95 ab
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
16	Permit	0.047	lb ai/a	1	oz/a	post	A	68 bcd	50 b-f	89 ab
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
17	Yukon	0.253	lb ai/a	6	oz/a	post	A	68 bcd	50 b-f	85 abc
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
18	Marksman	1.2	lb ai/a	3	pt/a	post	A	79 b	41 def	98 ab
19	Sencor 75DF	0.14	lb ai/a	3	oz/a	post	A	64 b-e	50 b-f	93 ab
	2,4-D Ester	0.5	lb ae/a	1	pt/a	post	A			
20	Python	0.05	lb ai/a	1	oz/a	post	A	55 d-g	48 b-f	81 a-d
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
21	Hornet WDG	0.128	lb ae/a	3	oz/a	post	A	59 c-f	50 b-f	83 abc
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
22	Liberty	0.365	lb ae/a	28	oz/a	post	A	78 b	93 a	58 e
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
23	Exceed	0.0356	lb ai/a	1	oz/a	post	A	68 bcd	50 b-f	91 ab
	Crop Oil Conc	1	% v/v	1	% v/v	post	A			
	AMS	2.5	lb ai/a	2.5	lb ai/a	post	A			
24	Untreated check							23 i	50 b-f	26 f
LSD (P=.05)							15.9	13.6	22.8	
Standard Deviation							11.2	9.6	16.1	
CV							19.87	17.46	22.3	
Grand Mean							56.44	54.98	72.3	
Bartlett's X2							42.785	31.555	32.963	
P(Bartlett's X2)							0.007*	0.011*	0.062	
Replicate F							5.237	5.723	12.743	
Replicate Prob(F)							0.0026	0.0015	0.0001	
Treatment F							11.959	12.189	10.111	
Treatment Prob(F)							0.0001	0.0001	0.0001	

Means followed by same letter do not significantly differ (P=.05, LSD)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Trial Comments

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E-Longitude Determination	W 085.52053 ==>	360 - 85.52053	=	274.47947	May 24, 2004 - Field prep /
Maintenance	SEPAC farm crew applied Fusion (20 oz/acre + 1 qt/acre COC) to clean up the false timothy and annual bluegrass in the study area.	June 5, 2004			Corn planted by
SEPAC crew. Corn variety is DKC 60-09 RR/YGCB, so treatments receiving Liberty applications are expected to have crop injury.	October 5, 2004				Final horseweed rating date.
Corn is nearing harvest, so one final assessment of horseweed populations was collected.					