

University of Georgia

Comparison of glyphosate formulations in RR cotton

Trial ID: C42-03
Location: Ponder farm

Study Dir.: Tim Grey
Investigator: Stanley Culpepper

GENERAL TRIAL INFORMATION

Study Director: Grey and Culpepper **Title:** Weed Science
Affiliation: University of Georgia
Postal Code: 31793
Investigator: Stanley Culpepper **Title:** Ext. Agronomist-Weeds
Affiliation: University of Georgia
Postal Code: 31793

TRIAL LOCATION

City: TyTy **Trial Status:** completed
State/Prov.: GA **Trial Reliability:** good
Postal Code: 31793 **Initiation Date:** May-01-03
Country: USA

Conducted Under GLP (Y/N): N

Conducted Under GEP (Y/N): N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	AMAPA	Palmer amaranth	
2.	PANTE	Texas panicum	
3.	RCHSC	Florida pusley	

Crop 1: GOSHI cotton **Variety:** DP 555 B/RR
Planting Date: May-01-03 **Planting Method:** conventional
Rate: 3 seed/ft **Depth:** 0.5 in
Row Spacing: 36 inch **Seed Bed:** bedded
Soil Temperature: 80 F **Soil Moisture:** moist **Emergence Date:** May-05-03

SITE AND DESIGN

Plot Width, Unit: 12 FT **Plot Length, Unit:** 25 FT **Reps:** 4
Site Type: Ponder farm
Tillage Type: conventional **Study Design:** RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand: 94 **% OM:** 1.3 **Texture:** sand
% Silt: 2 **pH:** 5.4 **Soil Name:** Tifton sandy loam
% Clay: 4 **CEC:** 0.

APPLICATION DESCRIPTION

	A	B	C
Application Date:	May-13-03	May-20-03	Jun-10-03
Time of Day:	6 pm	6 pm	7 PM
Application Method:	broadcast	broadcast	broadcast
Application Timing:	POST1	POST2	Lay-by
Applic. Placement:	overtop	overtop	directed
Air Temp., Unit:	80 F	84 F	88 F
% Relative Humidity:	32	44	52
Wind Velocity, Unit:	3 mph	3 mph	2 mph
Dew Presence (Y/N):	n	n	n
Soil Temp., Unit:	82 F	85 F	91 F
Soil Moisture:	moist	moist	moist
% Cloud Cover:	100	100	0

CROP STAGE AT EACH APPLICATION

	A	B	C
Crop 1 Code, Stage:	GOSHI POST1	GOSHI POST2	GOSHI Lay-by
Stage Scale:	V1	V4	V11
Height, Unit:	2.5 inch	4 inch	18 inch

University of Georgia

WEED STAGE AT EACH APPLICATION

	A	B	C
Weed 1 Code, Stage:	AMAPA POST1	AMAPA POST2	AMAPA Lay-by
Stage Scale:	<2 inch	<1 inch	4-6 inch
Density, Unit:	100 ydsq	. .	. .
Weed 2 Code, Stage:	PANTE POST1	PANTE POST2	PANTE Lay-by
Stage Scale:	<2 inch	<1 inch	4-6 inch
Density, Unit:	1 ydsq		. .
Weed 3 Code, Stage:	RCHSC POST 1	RCHSC POST2	RCHSC Lay-by
Stage Scale:	<1 inch	<1 inch	1 inch
Density, Unit:	3 ydsq	. .	. .

APPLICATION EQUIPMENT

	A	B	C
Appl. Equipment:	backpack	backpack	backpack
Operating Pressure:	22	22	18
Nozzle Type:	flat fan	flat fan	flat fan
Nozzle Size:	11002	11002	11002
Nozzle Spacing, Unit:	18 inch	18 inch	12 inch
Nozzles/Row:	2	2	3
Boom Length, Unit:	4.5 feet	4.5 feet	2 feet
Boom Height, Unit:	15 inch	15 inch	12 inch
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	water	water	water
Spray Volume, Unit:	14.8 GPA	14.8 GPA	14.8 GPA
Propellant:	CO2	CO2	CO2
Tank Mix (Y/N):	Y	Y	Y

University of Georgia

Comparison of glyphosate formulations in RR cotton

Trial ID: C42-03

Study Dir.: Tim Grey

Location: Ponder farm

Investigator: Stanley Culpepper

Weed Code			GOSHI	GOSHI	GOSHI	GOSHI	GOSHI	AMAPA	AMAPA
Crop Code			injury	injury	injury	injury	inj (stunt)	control	control
Rating Data Type			percent	percent	percent	percent	percent	percent	percent
Rating Unit			May-17-03	May-23-03	May-30-03	Jun-15-03	Aug-20-03	May-17-03	May-23-03
Rating Date					17 DA-A	17 DA-A			
Trt-Eval Interval									
ARM Action Codes									
# Subsamples, Dec.									
Trt No.	Treatment Name	Rate Unit	1	2	3	4	5	6	7
1	Untreated		0.0	0.0	0.0	0.0	99.0	0.0	0.0
2	Untreated		0.0	0.0	0.0	0.0	99.0	0.0	0.0
3	Roundup WeatherMax	16 fl oz/a	0.0	0.0	2.3	0.0	0.5	99.0	99.0
	Roundup WeatherMax	16 fl oz/a							
	Roundup WeatherMax	16 fl oz/a							
4	Roundup WeatherMax	42.67 fl oz/a	1.0	3.3	2.5	0.0	0.5	99.0	99.0
	Roundup WeatherMax	42.67 fl oz/a							
	Roundup WeatherMax	42.67 fl oz/a							
5	Roundup UltraMax	19.5 fl oz/a	0.5	1.8	1.3	0.0	1.5	99.0	99.0
	Roundup UltraMax	19.5 fl oz/a							
	Roundup UltraMax	19.5 fl oz/a							
6	Roundup UltraMax	52 fl oz/a	1.8	4.3	8.0	0.0	1.3	99.0	99.0
	Roundup UltraMax	52 fl oz/a							
	Roundup UltraMax	52 fl oz/a							
7	Roundup Original	24 fl oz/a	1.0	1.5	6.0	0.0	0.0	99.0	99.0
	Induce	0.5 % v/v							
	Roundup Original	24 fl oz/a							
	Induce	0.5 % v/v							
	Roundup Original	24 fl oz/a							
	Induce	0.5 % v/v							
8	Roundup Original	64 fl oz/a	3.0	16.0	11.5	0.0	2.0	99.0	99.0
	Induce	0.5 % v/v							
	Roundup Original	64 fl oz/a							
	Induce	0.5 % v/v							
	Roundup Original	64 fl oz/a							
	Induce	0.5 % v/v							
9	Roundup Ultra	24 fl oz/a	1.0	2.5	5.0	0.0	3.0	99.0	99.0
	Roundup Ultra	24 fl oz/a							
	Roundup Ultra	24 fl oz/a							
10	Roundup Ultra	64 fl oz/a	6.3	36.5	33.3	6.5	6.0	99.0	99.0
	Roundup Ultra	64 fl oz/a							
	Roundup Ultra	64 fl oz/a							
11	GlyStar Plus	24 fl oz/a						99.0	99.0
	GlyStar Plus	24 fl oz/a							
	GlyStar Plus	24 fl oz/a							
12	GlyStar Plus	64 fl oz/a						99.0	99.0
	GlyStar Plus	64 fl oz/a							
	GlyStar Plus	64 fl oz/a							
13	GlyStar	24 fl oz/a	0.5	1.3	3.5	0.0	2.3	99.0	99.0
	Induce	0.5 % v/v							
	GlyStar	24 fl oz/a							
	Induce	0.5 % v/v							
	GlyStar	24 fl oz/a							
	Induce	0.5 % v/v							
14	GlyStar	64 fl oz/a	1.5	9.0	7.0	0.0	1.3	99.0	99.0
	Induce	0.5 % v/v							
	GlyStar	64 fl oz/a							
	Induce	0.5 % v/v							
	GlyStar	64 fl oz/a							
	Induce	0.5 % v/v							

University of Georgia

Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval ARM Action Codes # Subsamples, Dec.				GOSHI injury percent May-17-03	GOSHI injury percent May-23-03	GOSHI injury percent May-30-03 17 DA-A	GOSHI injury percent Jun-15-03 17 DA-A	GOSHI inj (stunt) percent Aug-20-03	AMAPA control percent May-17-03	AMAPA control percent May-23-03
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7
15	Glyphomax Plus	24	fl oz/a	0.0	2.8	5.0	0.0	2.0	99.0	99.0
	Glyphomax Plus	24	fl oz/a							
	Glyphomax Plus	24	fl oz/a							
16	Glyphomax Plus	64	fl oz/a	0.8	3.0	4.0	0.0	2.5	99.0	99.0
	Glyphomax Plus	64	fl oz/a							
	Glyphomax Plus	64	fl oz/a							
17	Touchdown IQ	24	fl oz/a	1.0	1.5	3.5	0.0	3.0	99.0	99.0
	Touchdown IQ	24	fl oz/a							
	Touchdown IQ	24	fl oz/a							
18	Touchdown IQ	64	fl oz/a	4.5	7.3	14.0	0.0	1.0	99.0	99.0
	Touchdown IQ	64	fl oz/a							
	Touchdown IQ	64	fl oz/a							
19	Clearout 41 Plus	24	fl oz/a	1.3	16.3	20.8	4.0	3.8	99.0	99.0
	Clearout 41 Plus	24	fl oz/a							
	Clearout 41 Plus	24	fl oz/a							
20	Clearout 41 Plus	64	fl oz/a	14.0	36.3	41.3	12.3	7.5	99.0	99.0
	Clearout 41 Plus	64	fl oz/a							
	Clearout 41 Plus	64	fl oz/a							
21	A13013M	17.3	fl oz/a	0.3	0.0	0.5	0.0	2.3	99.0	99.0
	A13013M	17.3	fl oz/a							
	A13013M	17.3	fl oz/a							
22	A13013M	46	fl oz/a	4.8	2.3	6.8	0.0	1.3	99.0	99.0
	A13013M	46	fl oz/a							
	A13013M	46	fl oz/a							
23	Warrant	17.9	fl oz/a	0.8	1.8	6.0	0.0	4.8	99.0	99.0
	Warrant	17.9	fl oz/a							
	Warrant	17.9	fl oz/a							
24	Warrant	48	fl oz/a	2.0	8.3	9.5	0.0	0.8	99.0	99.0
	Warrant	48	fl oz/a							
	Warrant	48	fl oz/a							
LSD (P=.05)				2.67	4.00	6.16	0.89	3.14	0.00	0.00
Standard Deviation				1.89	2.83	4.36	0.63	2.22	0.00	0.00
CV				90.88	40.11	50.07	61.12	19.95	0.0	0.0
Bartlett's X2				31.581	28.107	31.324	0.95	14.595	0.0	0.0
P(Bartlett's X2)				0.017*	0.044*	0.037*	0.622	0.69	.	.

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

University of Georgia

Weed Code		AMAPA	PANTE	PANTE	PANTE	RCHSC	RCHSC	RCHSC		
Crop Code										
Rating Data Type		control	control	control	control	control	control	control		
Rating Unit		percent	percent	percent	percent	percent	percent	percent		
Rating Date		Aug-20-03	May-17-03	May-23-03	Aug-20-03	May-23-03	May-17-03	Aug-20-03		
Trt-Eval Interval										
ARM Action Codes										
# Subsamples, Dec.										
Trt No.	Treatment Name	Rate	Unit	8	9	10	11	12	13	14
1	Untreated			0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Untreated			0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Roundup WeatherMax	16	fl oz/a	96.8	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup WeatherMax	16	fl oz/a							
	Roundup WeatherMax	16	fl oz/a							
4	Roundup WeatherMax	42.67	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup WeatherMax	42.67	fl oz/a							
	Roundup WeatherMax	42.67	fl oz/a							
5	Roundup UltraMax	19.5	fl oz/a	94.5	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup UltraMax	19.5	fl oz/a							
	Roundup UltraMax	19.5	fl oz/a							
6	Roundup UltraMax	52	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup UltraMax	52	fl oz/a							
	Roundup UltraMax	52	fl oz/a							
7	Roundup Original	24	fl oz/a	98.0	99.0	99.0	99.0	99.0	99.0	99.0
	Induce	0.5	% v/v							
	Roundup Original	24	fl oz/a							
	Induce	0.5	% v/v							
	Roundup Original	24	fl oz/a							
	Induce	0.5	% v/v							
8	Roundup Original	64	fl oz/a	93.3	99.0	99.0	99.0	99.0	99.0	99.0
	Induce	0.5	% v/v							
	Roundup Original	64	fl oz/a							
	Induce	0.5	% v/v							
	Roundup Original	64	fl oz/a							
	Induce	0.5	% v/v							
9	Roundup Ultra	24	fl oz/a	96.8	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup Ultra	24	fl oz/a							
	Roundup Ultra	24	fl oz/a							
10	Roundup Ultra	64	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Roundup Ultra	64	fl oz/a							
	Roundup Ultra	64	fl oz/a							
11	GlyStar Plus	24	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	GlyStar Plus	24	fl oz/a							
	GlyStar Plus	24	fl oz/a							
12	GlyStar Plus	64	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	GlyStar Plus	64	fl oz/a							
	GlyStar Plus	64	fl oz/a							
13	GlyStar	24	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Induce	0.5	% v/v							
	GlyStar	24	fl oz/a							
	Induce	0.5	% v/v							
	GlyStar	24	fl oz/a							
	Induce	0.5	% v/v							
14	GlyStar	64	fl oz/a	98.0	99.0	99.0	99.0	99.0	99.0	99.0
	Induce	0.5	% v/v							
	GlyStar	64	fl oz/a							
	Induce	0.5	% v/v							
	GlyStar	64	fl oz/a							
	Induce	0.5	% v/v							
15	Glyphomax Plus	24	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Glyphomax Plus	24	fl oz/a							
	Glyphomax Plus	24	fl oz/a							

University of Georgia

Weed Code				AMAPA	PANTE	PANTE	PANTE	RCHSC	RCHSC	RCHSC
Crop Code										
Rating Data Type				control	control	control	control	control	control	control
Rating Unit				percent	percent	percent	percent	percent	percent	percent
Rating Date				Aug-20-03	May-17-03	May-23-03	Aug-20-03	May-23-03	May-17-03	Aug-20-03
Trt-Eval Interval										
ARM Action Codes										
# Subsamples, Dec.										
Trt No.	Treatment Name	Rate	Unit	8	9	10	11	12	13	14
16	Glyphomax Plus	64	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Glyphomax Plus	64	fl oz/a							
	Glyphomax Plus	64	fl oz/a							
17	Touchdown IQ	24	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Touchdown IQ	24	fl oz/a							
	Touchdown IQ	24	fl oz/a							
18	Touchdown IQ	64	fl oz/a	91.8	99.0	99.0	99.0	99.0	99.0	99.0
	Touchdown IQ	64	fl oz/a							
	Touchdown IQ	64	fl oz/a							
19	Clearout 41 Plus	24	fl oz/a	96.8	99.0	99.0	99.0	99.0	99.0	99.0
	Clearout 41 Plus	24	fl oz/a							
	Clearout 41 Plus	24	fl oz/a							
20	Clearout 41 Plus	64	fl oz/a	92.0	99.0	99.0	99.0	99.0	99.0	99.0
	Clearout 41 Plus	64	fl oz/a							
	Clearout 41 Plus	64	fl oz/a							
21	A13013M	17.3	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	A13013M	17.3	fl oz/a							
	A13013M	17.3	fl oz/a							
22	A13013M	46	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	A13013M	46	fl oz/a							
	A13013M	46	fl oz/a							
23	Warrant	17.9	fl oz/a	99.0	99.0	99.0	99.0	99.0	99.0	99.0
	Warrant	17.9	fl oz/a							
	Warrant	17.9	fl oz/a							
24	Warrant	48	fl oz/a	98.0	99.0	99.0	99.0	99.0	99.0	99.0
	Warrant	48	fl oz/a							
	Warrant	48	fl oz/a							
LSD (P=.05)				6.27	0.00	0.00	0.00	0.00	0.00	0.00
Standard Deviation				4.43	0.00	0.00	0.00	0.00	0.00	0.00
CV				4.96	0.0	0.0	0.0	0.0	0.0	0.0
Bartlett's X2				22.781	0.0	0.0	0.0	0.0	0.0	0.0
P(Bartlett's X2)				0.007*	.	.	.	.	.	.

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

University of Georgia

Weed Code			GOSHI	GOSHI
Crop Code			seed yld	seed yld
Rating Data Type			lb/plot	lb/A
Rating Unit			Sep-24-03	Sep-24-03
Rating Date				
Trt-Eval Interval				
ARM Action Codes				TY1
# Subsamples, Dec.				1
Trt No.	Treatment Name	Rate Unit	15	16
1	Untreated		0.0	0.0
2	Untreated		0.0	0.0
3	Roundup WeatherMax	16 fl oz/a	8.9	2570.0
	Roundup WeatherMax	16 fl oz/a		
	Roundup WeatherMax	16 fl oz/a		
4	Roundup WeatherMax	42.67 fl oz/a	9.8	2832.9
	Roundup WeatherMax	42.67 fl oz/a		
	Roundup WeatherMax	42.67 fl oz/a		
5	Roundup UltraMax	19.5 fl oz/a	9.1	2652.8
	Roundup UltraMax	19.5 fl oz/a		
	Roundup UltraMax	19.5 fl oz/a		
6	Roundup UltraMax	52 fl oz/a	9.7	2827.0
	Roundup UltraMax	52 fl oz/a		
	Roundup UltraMax	52 fl oz/a		
7	Roundup Original	24 fl oz/a	8.4	2430.6
	Induce	0.5 % v/v		
	Roundup Original	24 fl oz/a		
	Induce	0.5 % v/v		
	Roundup Original	24 fl oz/a		
	Induce	0.5 % v/v		
8	Roundup Original	64 fl oz/a	9.7	2805.3
	Induce	0.5 % v/v		
	Roundup Original	64 fl oz/a		
	Induce	0.5 % v/v		
	Roundup Original	64 fl oz/a		
	Induce	0.5 % v/v		
9	Roundup Ultra	24 fl oz/a	9.7	2829.9
	Roundup Ultra	24 fl oz/a		
	Roundup Ultra	24 fl oz/a		
10	Roundup Ultra	64 fl oz/a	10.5	3034.7
	Roundup Ultra	64 fl oz/a		
	Roundup Ultra	64 fl oz/a		
11	GlyStar Plus	24 fl oz/a	9.6	2780.6
	GlyStar Plus	24 fl oz/a		
	GlyStar Plus	24 fl oz/a		
12	GlyStar Plus	64 fl oz/a	8.3	2416.1
	GlyStar Plus	64 fl oz/a		
	GlyStar Plus	64 fl oz/a		
13	GlyStar	24 fl oz/a	9.7	2812.5
	Induce	0.5 % v/v		
	GlyStar	24 fl oz/a		
	Induce	0.5 % v/v		
	GlyStar	24 fl oz/a		
	Induce	0.5 % v/v		
14	GlyStar	64 fl oz/a	9.2	2661.5
	Induce	0.5 % v/v		
	GlyStar	64 fl oz/a		
	Induce	0.5 % v/v		
	GlyStar	64 fl oz/a		
	Induce	0.5 % v/v		
15	Glyphomax Plus	24 fl oz/a	9.5	2758.8
	Glyphomax Plus	24 fl oz/a		
	Glyphomax Plus	24 fl oz/a		

University of Georgia

Weed Code			GOSHI	GOSHI
Crop Code			seed yld	seed yld
Rating Data Type			lb/plot	lb/A
Rating Unit			Sep-24-03	Sep-24-03
Rating Date				
Trt-Eval Interval				
ARM Action Codes				TY1
# Subsamples, Dec.				1
Trt No.	Treatment Name	Rate	Unit	
				15
				16
16	Glyphomax Plus	64	fl oz/a	9.8
	Glyphomax Plus	64	fl oz/a	2843.0
	Glyphomax Plus	64	fl oz/a	
17	Touchdown IQ	24	fl oz/a	9.3
	Touchdown IQ	24	fl oz/a	2692.0
	Touchdown IQ	24	fl oz/a	
18	Touchdown IQ	64	fl oz/a	7.4
	Touchdown IQ	64	fl oz/a	2141.7
	Touchdown IQ	64	fl oz/a	
19	Clearout 41 Plus	24	fl oz/a	8.4
	Clearout 41 Plus	24	fl oz/a	2429.2
	Clearout 41 Plus	24	fl oz/a	
20	Clearout 41 Plus	64	fl oz/a	8.0
	Clearout 41 Plus	64	fl oz/a	2333.4
	Clearout 41 Plus	64	fl oz/a	
21	A13013M	17.3	fl oz/a	8.9
	A13013M	17.3	fl oz/a	2571.5
	A13013M	17.3	fl oz/a	
22	A13013M	46	fl oz/a	9.7
	A13013M	46	fl oz/a	2803.8
	A13013M	46	fl oz/a	
23	Warrant	17.9	fl oz/a	8.7
	Warrant	17.9	fl oz/a	2513.4
	Warrant	17.9	fl oz/a	
24	Warrant	48	fl oz/a	9.3
	Warrant	48	fl oz/a	2697.8
	Warrant	48	fl oz/a	
LSD (P=.05)			1.90	551.95
Standard Deviation			1.34	390.28
CV			16.03	16.03
Bartlett's X2			47.256	47.255
P(Bartlett's X2)			0.001*	0.001*

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

Column 16: TY1 = 290.4*[15]

Trial Comments

OBJECTIVE: Evaluate cotton tolerance to several formulations of glyphosate.

RESULTS:

Crop Injury (Injury was a measure of leaf necrosis except for late-season rating was a measure of plant stunting):

- 1) One leaf applications caused less than 10% except with high rate of ClearOut Plus (14%).
- 2) At 3 d after the POST 2 application, injury was greater than 10% with the high rate of Roundup Original (16%), the high rate of Roundup Ultra (36%), the low (16%) and high rate (36%) of ClearOUT 41 Plus.
- 3) By 10 d after the POST 2 application, injury was greater than 10% with the high rate of Roundup Original (12%), the high rate of Roundup Ultra (33%), the high rate of Touchdown IQ (14%), and the low (21%) and high (41%) rate of ClearOut Plus.
- 4) By late-season, plant stunting was 5% or less in all plots except the high rate of ClearOut Plus and in the non-treated control (pigweed competitor).

Weed Control:

- 1) Excellent early and late -eason control of Palmer, pusley, and Texas panicum was noted.

University of Georgia

Seed Cotton Yield:

- 1) Little difference in yield was noted.
- 2) Yields less than 2400 lb/A were only noted in the high rate of Touchdown IQ and Clearout Plus