

# University of Georgia

Griffin products directed in RR cotton

Trial ID: C34-03  
Location: Moultrie

Study Dir.: Stanley Culpepper  
Investigator: Stanley Culpepper

## GENERAL TRIAL INFORMATION

**Study Director:** Stanley Culpepper      **Title:** Ext.weed science  
**Affiliation:** University of Georgia      **Postal Code:** 31794  
**Investigator:** Stanley Culpepper      **Title:** Ext. weed science  
**Affiliation:** University of Georgia      **Postal Code:** 31794

**Trial Status:** completed      **Initiation Date:** May-09-03      **Country:** U.S.A.  
**City:** Moultrie      **State/Prov.:** Ga  
**Conducted Under GLP (Y/N):** N      **Conducted Under GEP (Y/N):** N

## CROP AND PEST DESCRIPTION

**Weed 1:** DIGSA large crabgrass      **2:** IPOLA pitted morningglory  
**Weed 3:** CYPES yellow nutsedge      **4:** IAQTA smallflower morningglory

**Crop 1:** GOSHI cotton      **Variety:** FM 989 BRR      **Planting Date:** May-09-03  
**Planting Method:** conventional      **Rate:** 3 seed/ft      **Depth:** 0.5 in  
**Row Spacing:** 38 in      **Seed Bed:** bedded  
**Soil Temperature:** 83 F      **Soil Moisture:** good      **Emergence Date:** May-14-03

**Plot Width, Unit:** 12 FT      **Plot Length, Unit:** 20 FT      **Reps:** 4  
**Site Type:** research station  
**Tillage Type:** conventional      **Study Design:** RANDOMIZED COMPLETE BLOCK

## SOIL DESCRIPTION

**Texture:** .      **% OM:** 1.2      **% Sand:** 88      **% Silt:** 12      **% Clay:** 0  
**pH:** 6      **CEC:** 0.      **Soil Name:** .      **Fertility Level:** .

**Overall Moisture Conditions:** wet

## APPLICATION DESCRIPTION

	A	B	C	D	E	F
<b>Application Date:</b>	May-25-03	Jun-11-03	Jul-03-03			
<b>Time of Day:</b>	8 am	7 pm	10:00am			
<b>Application Method:</b>	broadcast	broadcast	broadcast			
<b>Application Timing:</b>	2-leaf	8-leaf	14-leaf			
<b>Applic. Placement:</b>	overtop	directed	directed			
<b>Air Temp., Unit:</b>	78 F	88 F	83 F			
<b>% Relative Humidity:</b>	65	49	55			
<b>Wind Velocity, Unit:</b>	2 mph	2 mph	4 mph			
<b>Dew Presence (Y/N):</b>	n	n	n			
<b>Soil Temp., Unit:</b>	75 F	89 F	83 F			
<b>Soil Moisture:</b>	moist	moist	wet			
<b>% Cloud Cover:</b>	100	100	70			

## CROP STAGE AT EACH APPLICATION

	A	B	C	D	E	F
<b>Crop 1 GOSHI Stage:</b>	1-leaf	7-leaf	12-leaf			
<b>Stage Scale:</b>	V1	V7	V12			
<b>Height, Unit:</b>	2.5 inch	9 inch	20 inch			

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WEED STAGE AT EACH APPLICATION						
	A	B	C	D	E	F
<b>Weed 1 DIGSA Stage:</b>	POST1	PDIR1	PDIR2			
<b>Stage Scale:</b>	<0.25"	6-8"diam	6-20"diam			
<b>Density, Unit:</b>	. .	29 ydsq	. .			
<b>Weed 2 IPOLA Stage:</b>	POST1	PDIR1	PDIR2			
<b>Stage Scale:</b>	<1"	4-5"	2-14"			
<b>Density, Unit:</b>	. .	9 ydsq	. .			
<b>Weed 3 CYPES Stage:</b>	POST 1	PDIR1	PDIR2			
<b>Stage Scale:</b>	5b,6"	8b,10"	10b,12"			
<b>Density, Unit:</b>	. .	4 ydsq	. .			
<b>Weed 4 IAQTA Stage:</b>	POST 1	PDIR1	PDIR2			
<b>Stage Scale:</b>	<0.5"	<3"	2-8"			
<b>Density, Unit:</b>	. .	2 ydsq	. .			

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

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Trial ID: C34-03  
 Location: Moultrie

Study Dir.: Stanley Culpepper  
 Investigator: Stanley Culpepper

Weed Code			GOSHI	GOSHI	GOSHI	DIGSA	DIGSA	DIGSA	IPOLA
Crop Code			injury	injury	injury	control	control	control	control
Rating Data Type			percent	percent	percent	percent	percent	percent	percent
Rating Unit			Jun-16-03	Jun-21-03	Jul-12-03	Jun-21-03	Jul-12-03	Sep-08-03	Jun-16-03
Rating Date			-17 DA-C	-12 DA-C	9 DA-C	-12 DA-C	9 DA-C	67 DA-C	-17 DA-C
Trt-Eval Interval									
PRM Data Type									
# Subsamples, Dec.									
Trt No.	Treatment Name	Rate	1	2	3	4	5	6	7
		Unit							
1	Roundup WeatherMax	22 fl oz/a	0.0	0.0	1.5	0.0	0.0	0.0	0.0
2	Roundup WeatherMax	22 fl oz/a	6.8	2.3	0.0	66.0	65.5	68.3	93.0
	Direx	1.2 pt/a							
	Surfac 820	0.25 % v/v							
	Direx	1.2 pt/a							
	Surfac 820	0.25 % v/v							
3	Roundup WeatherMax	22 fl oz/a	9.0	14.5	4.0	38.8	57.3	26.3	63.3
	Linex	1.2 pt/a							
	Surfac 820	0.25 % v/v							
	Linex	1.2 pt/a							
	Surfac 820	0.25 % v/v							
4	Roundup WeatherMax	22 fl oz/a	5.5	4.8	8.0	46.3	58.8	54.8	90.8
	Caparol	1.2 pt/a							
	Surfac 820	0.25 % v/v							
	Caparol	1.2 pt/a							
	Surfac 820	0.25 % v/v							
5	Roundup WeatherMax	22 fl oz/a	9.5	10.8	3.0	58.5	63.8	48.5	91.3
	Linex	0.6 pt/a							
	Direx	0.6 pt/a							
	Surfac 820	0.25 % v/v							
	Linex	0.6 pt/a							
	Direx	0.6 pt/a							
	Surfac 820	0.25 % v/v							
6	Roundup WeatherMax	22 fl oz/a	45.3	16.0	9.0	17.5	25.0	15.0	95.8
	Cotoran	1.0 pt/a							
	Aim	0.5 fl oz/a							
	Surfac 820	0.25 % v/v							
	Cotoran	1.0 pt/a							
	Aim	0.5 fl oz/a							
	Surfac 820	0.25 % v/v							
7	Roundup WeatherMax	22 fl oz/a	0.0	0.0	0.0	99.0	99.0	99.0	80.0
	Roundup WeatherMax	22 fl oz/a							
	Direx	2 pt/a							
	Surfac 820	0.25 % v/v							
8	Roundup WeatherMax	22 fl oz/a	0.0	0.0	2.0	99.0	99.0	98.5	80.0
	Roundup WeatherMax	22 fl oz/a							
	Linex	2 pt/a							
	Surfac 820	0.25 % v/v							
9	Roundup WeatherMax	22 fl oz/a	0.0	0.0	0.0	99.0	98.0	99.0	80.0
	Roundup WeatherMax	22 fl oz/a							
	Cotton-Pro	2.4 pt/a							
	Surfac 820	0.25 % v/v							
10	Roundup WeatherMax	22 fl oz/a	0.0	0.0	0.0	99.0	99.0	99.0	80.0
	Roundup WeatherMax	22 fl oz/a							
	Linex	1 pt/a							
	Direx	1 pt/a							
	Surfac 820	0.25 % v/v							

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Weed Code				DIGSA	DIGSA	DIGSA	IPOLA			
Crop Code										
Rating Data Type				control	control	control	control			
Rating Unit				percent	percent	percent	percent			
Rating Date				Jun-21-03	Jul-12-03	Sep-08-03	Jun-16-03			
Trt-Eval Interval				-12 DA-C	9 DA-C	67 DA-C	-17 DA-C			
PRM Data Type										
# Subsamples, Dec.										
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7
11	Roundup WeatherMax	22	fl oz/a	0.0	0.0	0.0	99.0	97.8	99.0	80.0
	Roundup WeatherMax	22	fl oz/a							
	Cotoran	1.0	pt/a							
	Aim	0.5	fl oz/a							
	Surfac 820	0.25	% v/v							
12	Roundup WeatherMax	22	fl oz/a	0.0	0.0	0.0	99.0	99.0	98.5	80.0
	Roundup WeatherMax	22	fl oz/a							
	Roundup WeatherMax	22	fl oz/a							
LSD (P=.05)				3.78	3.03	6.14	11.73	15.48	13.17	12.03
Standard Deviation				2.62	2.10	4.25	8.12	10.72	9.12	8.33
CV				41.32	52.26	185.46	11.88	14.93	13.58	10.94
Bartlett's X2				9.634	6.124	3.262	3.129	25.628	27.409	41.599
P(Bartlett's X2)				0.047*	0.19	0.66	0.536	0.001*	0.001*	0.001*

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

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Weed Code			IPOLA	IPOLA	IPOLA	CYPES	CYPES	IAQTA	IAQTA	
Crop Code										
Rating Data Type										
Rating Unit			control	control	control	control	control	control	control	
Rating Date			percent	percent	percent	percent	percent	percent	percent	
Trt-Eval Interval			Jun-21-03	Jul-12-03	Sep-08-03	Jun-16-03	Jun-21-03	Jul-12-03	Sep-08-03	
PRM Data Type			-12 DA-C	9 DA-C	67 DA-C	-17 DA-C	-12 DA-C	9 DA-C	67 DA-C	
# Subsamples, Dec.										
Trt No.	Treatment Name	Rate	Unit	8	9	10	11	12	13	14
1	Roundup WeatherMax	22	fl oz/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Roundup WeatherMax	22	fl oz/a	94.3	84.0	77.0	40.0	20.0	95.3	91.0
	Direx	1.2	pt/a							
	Surfac 820	0.25	% v/v							
	Direx	1.2	pt/a							
	Surfac 820	0.25	% v/v							
3	Roundup WeatherMax	22	fl oz/a	53.8	78.5	48.8	32.5	20.0	83.8	74.8
	Linex	1.2	pt/a							
	Surfac 820	0.25	% v/v							
	Linex	1.2	pt/a							
	Surfac 820	0.25	% v/v							
4	Roundup WeatherMax	22	fl oz/a	86.3	91.0	85.3	40.0	15.0	96.0	94.0
	Caparol	1.2	pt/a							
	Surfac 820	0.25	% v/v							
	Caparol	1.2	pt/a							
	Surfac 820	0.25	% v/v							
5	Roundup WeatherMax	22	fl oz/a	92.5	90.3	93.5	40.0	20.0	94.5	97.5
	Linex	0.6	pt/a							
	Direx	0.6	pt/a							
	Surfac 820	0.25	% v/v							
	Linex	0.6	pt/a							
	Direx	0.6	pt/a							
	Surfac 820	0.25	% v/v							
6	Roundup WeatherMax	22	fl oz/a	98.0	94.8	96.5	27.5	20.0	94.8	97.5
	Cotoran	1.0	pt/a							
	Aim	0.5	fl oz/a							
	Surfac 820	0.25	% v/v							
	Cotoran	1.0	pt/a							
	Aim	0.5	fl oz/a							
	Surfac 820	0.25	% v/v							
7	Roundup WeatherMax	22	fl oz/a	80.0	91.8	97.8	20.0	50.0	99.0	99.0
	Roundup WeatherMax	22	fl oz/a							
	Direx	2	pt/a							
	Surfac 820	0.25	% v/v							
8	Roundup WeatherMax	22	fl oz/a	80.0	91.3	90.5	20.0	60.0	97.0	98.5
	Roundup WeatherMax	22	fl oz/a							
	Linex	2	pt/a							
	Surfac 820	0.25	% v/v							
9	Roundup WeatherMax	22	fl oz/a	80.0	89.3	98.5	20.0	60.0	98.5	99.0
	Roundup WeatherMax	22	fl oz/a							
	Cotton-Pro	2.4	pt/a							
	Surfac 820	0.25	% v/v							
10	Roundup WeatherMax	22	fl oz/a	80.0	89.5	93.0	20.0	57.5	94.5	98.5
	Roundup WeatherMax	22	fl oz/a							
	Linex	1	pt/a							
	Direx	1	pt/a							
	Surfac 820	0.25	% v/v							
11	Roundup WeatherMax	22	fl oz/a	80.0	92.3	97.0	20.0	50.0	98.0	99.0
	Roundup WeatherMax	22	fl oz/a							
	Cotoran	1.0	pt/a							
	Aim	0.5	fl oz/a							
	Surfac 820	0.25	% v/v							

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Weed Code		IPOLA	IPOLA	IPOLA	CYPES	CYPES	IAQTA	IAQTA
Crop Code								
Rating Data Type		control	control	control	control	control	control	control
Rating Unit		percent	percent	percent	percent	percent	percent	percent
Rating Date		Jun-21-03	Jul-12-03	Sep-08-03	Jun-16-03	Jun-21-03	Jul-12-03	Sep-08-03
Trt-Eval Interval		-12 DA-C	9 DA-C	67 DA-C	-17 DA-C	-12 DA-C	9 DA-C	67 DA-C
PRM Data Type								
# Subsamples, Dec.								
Trt Treatment								
No. Name	Rate Unit	8	9	10	11	12	13	14
12 Roundup WeatherMax	22 fl oz/a	82.0	95.3	97.3	20.0	50.0	99.0	98.5
Roundup WeatherMax	22 fl oz/a							
Roundup WeatherMax	22 fl oz/a							
LSD (P=.05)		9.18	16.43	16.90	7.26	12.82	4.22	5.97
Standard Deviation		6.35	11.38	11.70	5.03	8.88	2.93	4.14
CV		8.41	13.82	14.4	20.1	25.22	3.34	4.74
Bartlett's X2		16.79	28.556	55.412	0.577	8.447	12.836	43.032
P(Bartlett's X2)		0.005*	0.001*	0.001*	0.447	0.077	0.118	0.001*

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

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Weed Code			GOSHI	GOSHI	
Crop Code			seed yld	seed yld	
Rating Data Type			lb/plot	lb/A	
Rating Unit					
Rating Date			Oct-06-03	Oct-06-03	
Trt-Eval Interval					
PRM Data Type				TY1	
# Subsamples, Dec.				1	
Trt No.	Treatment Name	Rate	Unit	15	16
1	Roundup WeatherMax	22	fl oz/a	0.4	317.6
2	Roundup WeatherMax	22	fl oz/a	4.1	2983.9
	Direx	1.2	pt/a		
	Surfac 820	0.25	% v/v		
	Direx	1.2	pt/a		
	Surfac 820	0.25	% v/v		
3	Roundup WeatherMax	22	fl oz/a	2.4	1713.4
	Linex	1.2	pt/a		
	Surfac 820	0.25	% v/v		
	Linex	1.2	pt/a		
	Surfac 820	0.25	% v/v		
4	Roundup WeatherMax	22	fl oz/a	3.0	2203.4
	Caparol	1.2	pt/a		
	Surfac 820	0.25	% v/v		
	Caparol	1.2	pt/a		
	Surfac 820	0.25	% v/v		
5	Roundup WeatherMax	22	fl oz/a	3.7	2671.7
	Linex	0.6	pt/a		
	Direx	0.6	pt/a		
	Surfac 820	0.25	% v/v		
	Linex	0.6	pt/a		
	Direx	0.6	pt/a		
	Surfac 820	0.25	% v/v		
6	Roundup WeatherMax	22	fl oz/a	1.6	1148.9
	Cotoran	1.0	pt/a		
	Aim	0.5	fl oz/a		
	Surfac 820	0.25	% v/v		
	Cotoran	1.0	pt/a		
	Aim	0.5	fl oz/a		
	Surfac 820	0.25	% v/v		
7	Roundup WeatherMax	22	fl oz/a	4.5	3288.8
	Roundup WeatherMax	22	fl oz/a		
	Direx	2	pt/a		
	Surfac 820	0.25	% v/v		
8	Roundup WeatherMax	22	fl oz/a	4.7	3390.4
	Roundup WeatherMax	22	fl oz/a		
	Linex	2	pt/a		
	Surfac 820	0.25	% v/v		
9	Roundup WeatherMax	22	fl oz/a	4.4	3216.2
	Roundup WeatherMax	22	fl oz/a		
	Cotton-Pro	2.4	pt/a		
	Surfac 820	0.25	% v/v		
10	Roundup WeatherMax	22	fl oz/a	3.7	2704.4
	Roundup WeatherMax	22	fl oz/a		
	Linex	1	pt/a		
	Direx	1	pt/a		
	Surfac 820	0.25	% v/v		
11	Roundup WeatherMax	22	fl oz/a	4.4	3165.4
	Roundup WeatherMax	22	fl oz/a		
	Cotoran	1.0	pt/a		
	Aim	0.5	fl oz/a		
	Surfac 820	0.25	% v/v		

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Weed Code				
Crop Code			GOSHI	GOSHI
Rating Data Type			seed yld	seed yld
Rating Unit			lb/plot	lb/A
Rating Date			Oct-06-03	Oct-06-03
Trt-Eval Interval				
PRM Data Type				TY1
# Subsamples, Dec.				1
Trt No.	Treatment Name	Rate	Unit	
				15
				16
12	Roundup WeatherMax	22	fl oz/a	4.1
	Roundup WeatherMax	22	fl oz/a	3009.3
	Roundup WeatherMax	22	fl oz/a	
LSD (P=.05)				1.19
Standard Deviation				0.83
CV				24.13
Bartlett's X2				10.054
P(Bartlett's X2)				0.526

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

Column 16: TY1 = 726.0\*[15]

## Trial Comments

OBJECTIVE: Compare linuron, diuron, and prometryn directed in Roundup Ready cotton.

### CROP RESPONSE:

- 1) Leaf chlorosis was noted at 5 d after directing linuron, diuron, or prometryn to 9 inch cotton (6 to 10%).
- 2) By 10 d after directing linuron, diuron, or prometryn to 9 inch cotton, leaf chlorosis from linuron was 12% greater than that noted with diuron and 9% greater than that noted with prometryn. Visual leaf chlorosis from linuron slowly disappeared.
- 3) Injury (stem necrosis and loss of plants) from Aim plus Cotoran was severe when directed to 9 inch cotton.
- 4) Applying linuron, diuron, or prometryn to 20 inch cotton caused little to no visual injury symptoms.

### WEED RESPONSE:

#### Large crabgrass:

- 1) Early directed applications of diuron and linuron plus diuron were more effective than linuron alone or prometryn at 10 d after application. By late-season after sequential directed applications, the diuron system was more effective than the linuron, prometryn, or linuron + diuron system. The linuron system was the least effective.
- 2) Glyphosate was far more effective than linuron, diuron, or prometryn in controlling crabgrass.
- 3) Applying diuron, linuron, or prometryn at layby rated provided similar and excellent control. These applications were applied following glyphosate at 2 and 8 leaf stage of cotton development, thus crabgrass was less than 3 inches at time of these applications.

#### Pitted morningglory:

- 1) Early directed applications of diuron, prometryn, or linuron + diuron provided excellent control (90+%). Linuron alone was less effective.
- 2) Diuron, prometryn, and linuron + diuron were more effective than glyphosate early directed. However, glyphosate was more effective than linuron alone.
- 3) All late directed applications using high rates of linuron, diuron, or prometryn provided excellent control as morningglory was less than 5 inches at time of application.

#### Yellow nutsedge:

- 1) Early season control was poor with all treatments.
- 2) Sequential glyphosate applications were more effective than glyphosate followed by prometryn, linuron, or diuron (no MSMA was added).
- 3) Rust took nutsedge out during mid-season.

#### Smallflower morningglory:

- 1) Early directed applications of diuron, prometryn, and linuron + diuron provided excellent control (94 to 96% control). Linuron was at least 11% less effective.
- 2) Sequential diuron, prometryn, and linuron + diuron directed applications were more effective than sequential linuron systems.
- 3) Layby applications of linuron, diuron, or prometryn at high rates as well as glyphosate provided excellent control. Again weed size was less than 5 inches because of two previous glyphosate applications.

### SEED YIELDS:



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- 1) Yields followed trends noted in crabgrass control.
- 2) Yields from plots treated with sequential linuron treatments were less than those treated with sequential diuron or diuron + linuron treatments.
- 3) Yields from plots treated with Aim + Cotoran were also poor as little crabgrass control was noted.
- 4) If glyphosate was applied at 2 and 8 leaf it did not matter what layby option was selected.

## CONCLUSIONS:

- 1) Linuron was not impressive on in this trial.
- 2) Grasses larger than 3 inches will be difficult to manage with linuron, diuron, or prometryn systems.