

University of Georgia

Managing glyphosate-resistant Palmer amaranth in Roundup Ready and Liberty Link cotton

Trial ID: C13-07

Study Dir.: Stanley Culpepper

Location: Macon County

Investigator: Stanley Culpepper

Reps: 3

Plots: 12 by 24 feet

Spray vol: 14.8 gal/ac

Mix size: 1.5 liters (min 1.1112)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code	Amt to Measure	Plot No. By Rep		
										1	2	3
1	DP 555 BRR									101	206	311
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
2	DP 555 BRR									102	205	320
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
3	DP 555 BRR									105	210	301
	Direx	4		L	2	PT/A	PRE	A	25.34 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
4	DP 555 BRR									106	211	310
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Dual Magnum	7.62		L	1	PT/A	POST 1	B	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
5	DP 555 BRR									110	202	306
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Dual Magnum	7.62		L	1	PT/A	POST 1	B	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
6	DP 555 BRR									112	215	316
	Direx	4		L	2	PT/A	PRE	A	25.34 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Dual Magnum	7.62		L	1	PT/A	POST 1	B	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
7	DP 555 BRR									115	201	312
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Staple	3.2		L	1.7	OZ/A	POST 1	B	1.346 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			

University of Georgia

Reps: 3

Plots: 12 by 24 feet

Spray vol: 14.8 gal/ac

Mix size: 1.5 liters (min 1.1112)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Form Rate	Rate Unit	Grow Stg	Appl Code	Amt Product to Measure	Plot No. By Rep		
										1	2	3
8	DP 555 BRR									116	212	315
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Staple	3.2		L	1.7	OZ/A	POST 1	B	1.346 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
9	DP 555 BRR									120	216	302
	Direx	4		L	2	PT/A	PRE	A	25.34 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 1	B	17.42 ml/mx			
	Staple	3.2		L	1.7	OZ/A	POST 1	B	1.346 ml/mx			
	WeatherMax	4.5		L	22	OZ/A	POST 2	C	17.42 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
10	DP 555 BRR									111	220	305
	No herbicide											
11	Liberty Link									103	219	314
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 1	B	18.21 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 2	C	18.21 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
12	Liberty Link									104	217	309
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 1	B	18.21 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 2	C	18.21 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
13	Liberty Link									107	218	303
	Direx	4		L	2	PT/A	PRE	A	25.34 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 1	B	18.21 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 2	C	18.21 ml/mx			
14	Liberty Link									108	214	313
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 1	B	18.21 ml/mx			
	Dual Magnum	7.62		L	1	PT/A	POST 1	B	12.67 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 2	C	18.21 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
15	Liberty Link									109	213	308
	Prowl H20	3.8		L	2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 1	B	18.21 ml/mx			
	Dual Magnum	7.62		L	1	PT/A	POST 1	B	12.67 ml/mx			
	Ignite	2.34		L	23	OZ/A	POST 2	C	18.21 ml/mx			
	Direx	4		L	1	QT/A	PD	D	25.34 ml/mx			
	MSMA	6		L	2	LB A/A	PD	D	33.78 ml/mx			
16	Liberty Link									113	209	317
	Direx	4		L	2	PT/A	PRE	A	25.34 ml/mx			
	Reflex	2		L	1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34		L	29	OZ/A	POST	B	22.96 ml/mx			
	Ignite	2.34		L	29	OZ/A	POST	C	22.96 ml/mx			

University of Georgia

Reps: 3 Plots: 12 by 24 feet
 Spray vol: 14.8 gal/ac Mix size: 1.5 liters (min 1.1112)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Rate	Form Type	Rate Unit	Grow Stg	Appl Code	Amt Product to Measure	Plot No. By Rep		
										1	2	3
17	Liberty Link									114	208	318
	Prowl H20	3.8	L	2.1	PT/A	PRE	A	26.6 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 1	B	18.21 ml/mx				
	Staple	3.2	L	1.7	OZ/A	POST 1	B	1.346 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 2	C	18.21 ml/mx				
	Direx	4	L	1	QT/A	PD	D	25.34 ml/mx				
	MSMA	6	L	2	LB A/A	PD	D	33.78 ml/mx				
18	Liberty Link									117	207	304
	Prowl H20	3.8	L	2.1	PT/A	PRE	A	26.6 ml/mx				
	Reflex	2	L	1	PT/A	PRE	A	12.67 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 1	B	18.21 ml/mx				
	Staple	3.2	L	1.7	OZ/A	POST 1	B	1.346 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 2	C	18.21 ml/mx				
	Direx	4	L	1	QT/A	PD	D	25.34 ml/mx				
	MSMA	6	L	2	LB A/A	PD	D	33.78 ml/mx				
19	Liberty Link									118	204	319
	Direx	4	L	2	PT/A	PRE	A	25.34 ml/mx				
	Reflex	2	L	1	PT/A	PRE	A	12.67 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 1	B	18.21 ml/mx				
	Ignite	2.34	L	23	OZ/A	POST 2	C	18.21 ml/mx				
	Ignite	2.34	L	29	OZ/A	PD	D	22.96 ml/mx				
20	Liberty Link									119	203	307
	No herbicide											

Sort Order: Treatment

Product quantities required for listed treatments and applications in one trial:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
399.029	ml	Prowl H20	3.8	L	
391.946	ml	WeatherMax	4.5	L	
633.379	ml	Direx	4	L	
591.154	ml	MSMA	6	L	
190.014	ml	Reflex	2	L	
79.172	ml	Dual Magnum	7.62	L	
8.413	ml	Staple	3.2	L	
450.342	ml	Ignite	2.34	L	

* 'Per area' calculations based on spray volume= 14.8 gal/ac, mix size= 1.5 liters (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

Trial Comments

OBJECTIVE: Compare glyphosate-resistant Palmer amaranth response to RR and LL herbicide programs and to also determine the impact of cultivation on these programs.

VISUAL COTTON INJURY:

1. Injury from PRE applied herbicides was not noted. The first rainfall occurred 17 d after PRE herbicide applications and planting, thus injury was not anticipated.
2. Injury from Ignite or Roundup applied to their respective cultivars was minimal.
3. Adding Staple or Dual in with either Ignite or Roundup generally increased injury 5 to 10%.
4. Overall, no significant cotton injury was noted.

University of Georgia

PALMER CONTROL WITHOUT CULTIVATION:

1. Without rainfall to activate PRE herbicides for 17 d, control by all PRE treatments was poor. Control with Reflex + Prowl or Direx + Reflex provided at least twice the level of control as Prowl alone did, although control was still less than 60% with all PRE treatments at 23 DAT.
2. POST applications of Ignite applied to Palmer 2 inches or less provided complete control. Palmer greater than 2 inches was "burnt" to the ground but did begin to regrow about 1 wk later.
3. POST applications of glyphosate provided little to no control.
4. The addition of Dual with glyphosate POST had little impact on control as Palmer had escaped PRE treatments.
5. By 20 DAT, the addition of Staple with glyphosate improved control approximately 30% but control was still not adequate.
6. Late in the season:
 - A. All glyphosate programs provided less than 44% control.
 - B. Ignite based programs with Reflex, Ignite POST, and Direx + MSMA provided 83 to 88% control.

PALMER CONTROL WITH CULTIVATION:

1. Cultivation greatly improved control in the Roundup program during early season; however, by late season minimal benefit in the Roundup program was noted. Although, control with cultivation in the Roundup plus Staple programs did reach 70%.
2. Cultivation was very beneficial in the LL program with late season control by 6 programs plus cultivation providing 93 to 96% control.

PITTED MORNINGGLORY CONTROL:

1. Control was excellent with all programs in both RR and LL cotton with and without cultivation.

SEED YIELD:

1. Cotton yields followed trends in Palmer control.
2. Greatest yields were noted with cultivation and the most effective six LL herbicide programs.
3. LL yields without cultivation were significantly less than those with cultivation.
4. RR programs without cultivation could not be harvested.
5. Five RR programs with cultivation were harvestable. Although yields were less than 900 lbs of seed cotton.

CONCLUSIONS:

1. Ignite at 23 oz/A must be applied to Palmer 2 inches or less.
2. Roundup Ready programs will not be effective if the at plant herbicides are not activated by rainfall or irrigation.
3. Cultivation was extremely important in this trial and needs to be studied more closely.

GENERAL COMMENTS:

1. Each herbicide was 4 rows wide. On May 17 and 24, two rows of each plot were cultivated.

University of Georgia

Managing glyphosate-resistant Palmer amaranth in Roundup Ready and Liberty Link cotton

Trial ID: C13-07

Study Dir.: Stanley Culpepper

Location: Macon County

Investigator: Stanley Culpepper

Weed Code		INJURY	INJURY	INJURY	INJURY	INJURY	AMAPA	AMAPA	AMAPA
Crop Code		cotton	cotton	cotton	cotton	cotton			
Rating Data Type		%	%	%	%	%	%	%	%
Rating Unit		control	control	control	control	control	control	control	control
Rating Date		May-10-07	May-15-07	May-19-07	Jun-04-07	Jun-27-07	May-10-07	May-15-07	May-19-07
Assessed By									
Trt-Eval Interval		23 DA-A	5 DA-B	9 DA-B	5 DA-C	6 DA-D	23 DA-A	5 DA-B	9 DA-B
ARM Action Codes									
# Subsamples, Dec.									
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
		1	2	3	4	5	6	7	8
1	DP 555 BRR Prowl H20 2.1 PT/A WeatherMax 22 OZ/A WeatherMax 22 OZ/A Direx 1 QT/A MSMA 2 LB A/A	0 a	0 e	4 de	0 a	0 a	33 cd	22 f	32 fg
2	DP 555 BRR Prowl H20 2.1 PT/A Reflex 1 PT/A WeatherMax 22 OZ/A WeatherMax 22 OZ/A Direx 1 QT/A MSMA 2 LB A/A	0 a	3 de	5 de	0 a	0 a	52 a	43 de	50 d
3	DP 555 BRR Direx 2 PT/A Reflex 1 PT/A WeatherMax 22 OZ/A WeatherMax 22 OZ/A	0 a	2 e	4 e	0 a	0 a	52 a	43 de	40 ef
4	DP 555 BRR Prowl H20 2.1 PT/A WeatherMax 22 OZ/A Dual Magnum 1 PT/A WeatherMax 22 OZ/A Direx 1 QT/A MSMA 2 LB A/A	0 a	4 cde	4 e	0 a	0 a	27 cd	38 e	30 g
5	DP 555 BRR Prowl H20 2.1 PT/A Reflex 1 PT/A WeatherMax 22 OZ/A Dual Magnum 1 PT/A WeatherMax 22 OZ/A Direx 1 QT/A MSMA 2 LB A/A	0 a	8 a-d	3 e	0 a	0 a	56 a	52 d	62 c
6	DP 555 BRR Direx 2 PT/A Reflex 1 PT/A WeatherMax 22 OZ/A Dual Magnum 1 PT/A WeatherMax 22 OZ/A Direx 1 QT/A MSMA 2 LB A/A	0 a	5 b-e	6 cde	0 a	0 a	53 a	50 d	48 de

University of Georgia

Weed Code		INJURY	INJURY	INJURY	INJURY	INJURY	AMAPA	AMAPA	AMAPA	
Crop Code		cotton	cotton	cotton	cotton	cotton				
Rating Data Type		%	%	%	%	%	%	%	%	
Rating Unit		control	control	control	control	control	control	control	control	
Rating Date		May-10-07	May-15-07	May-19-07	Jun-04-07	Jun-27-07	May-10-07	May-15-07	May-19-07	
Assessed By										
Trt-Eval Interval		23 DA-A	5 DA-B	9 DA-B	5 DA-C	6 DA-D	23 DA-A	5 DA-B	9 DA-B	
ARM Action Codes										
# Subsamples, Dec.										
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	
		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	
7	DP 555 BRR									
	Prowl H20	2.1								
	WeatherMax	22								
	Staple	1.7								
	WeatherMax	22								
	Direx	1								
	MSMA	2								
			0 a	8 a-d	13 a	0 a	0 a	37 bc	65 c	75 b
8	DP 555 BRR									
	Prowl H20	2.1								
	Reflex	1								
	WeatherMax	22								
	Staple	1.7								
	WeatherMax	22								
	Direx	1								
	MSMA	2								
			0 a	11 a	11 abc	0 a	0 a	59 a	73 bc	89 a
9	DP 555 BRR									
	Direx	2								
	Reflex	1								
	WeatherMax	22								
	Staple	1.7								
	WeatherMax	22								
	Direx	1								
	MSMA	2								
			0 a	11 a	12 ab	0 a	0 a	55 a	76 b	76 b
10	DP 555 BRR									
	No herbicide									
			0 a	0 e	2 e	0 a	0 a	0 e	0 g	0 h
11	Liberty Link									
	Prowl H20	2.1								
	Ignite	23								
	Ignite	23								
	Direx	1								
	MSMA	2								
			0 a	3 cde	2 e	0 a	0 a	20 d	93 a	96 a
12	Liberty Link									
	Prowl H20	2.1								
	Reflex	1								
	Ignite	23								
	Ignite	23								
	Direx	1								
	MSMA	2								
			0 a	2 e	2 e	0 a	0 a	48 ab	95 a	93 a
13	Liberty Link									
	Direx	2								
	Reflex	1								
	Ignite	23								
	Ignite	23								
			0 a	0 e	3 e	0 a	0 a	50 ab	93 a	94 a

University of Georgia

Weed Code	INJURY	INJURY	INJURY	INJURY	INJURY	AMAPA	AMAPA	AMAPA			
Crop Code	cotton	cotton	cotton	cotton	cotton						
Rating Data Type	%	%	%	%	%	%	%	%			
Rating Unit	control	control	control	control	control	control	control	control			
Rating Date	May-10-07	May-15-07	May-19-07	Jun-04-07	Jun-27-07	May-10-07	May-15-07	May-19-07			
Assessed By											
Trt-Eval Interval	23 DA-A	5 DA-B	9 DA-B	5 DA-C	6 DA-D	23 DA-A	5 DA-B	9 DA-B			
ARM Action Codes											
# Subsamples, Dec.											
Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4	5	6	7	8
14	Liberty Link			0 a	12 a	7 b-e	0 a	0 a	20 d	93 a	96 a
	Prowl H20	2.1	PT/A								
	Ignite	23	OZ/A								
	Dual Magnum	1	PT/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
15	Liberty Link			0 a	11 ab	6 cde	0 a	0 a	53 a	93 a	93 a
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Dual Magnum	1	PT/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
16	Liberty Link			0 a	5 cde	4 e	0 a	0 a	53 a	93 a	96 a
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	29	OZ/A								
	Ignite	29	OZ/A								
17	Liberty Link			0 a	9 abc	10 a-d	0 a	0 a	20 d	93 a	87 a
	Prowl H20	2.1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
18	Liberty Link			0 a	11 ab	11 abc	0 a	0 a	57 a	90 a	92 a
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
19	Liberty Link			0 a	2 e	3 e	0 a	0 a	55 a	95 a	94 a
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Ignite	23	OZ/A								
	Ignite	29	OZ/A								
20	Liberty Link			0 a	0 e	3 e	0 a	0 a	0 e	0 g	0 h
	No herbicide										
LSD (P=.05)				0.0	4.9	4.9	0.0	0.0	13.4	9.6	8.4
Standard Deviation				0.0	3.0	3.0	0.0	0.0	8.1	5.8	5.1
CV				0.0	56.29	52.61	0.0	0.0	20.3	8.9	7.58
Bartlett's X2				0.0	21.802	17.117	0.0	0.0	13.962	24.489	21.098
P(Bartlett's X2)				.	0.059	0.515	.	.	0.602	0.057	0.175

University of Georgia

Weed Code	INJURY	INJURY	INJURY	INJURY	INJURY	AMAPA	AMAPA	AMAPA
Crop Code	cotton	cotton	cotton	cotton	cotton			
Rating Data Type	%	%	%	%	%	%	%	%
Rating Unit	control	control	control	control	control	control	control	control
Rating Date	May-10-07	May-15-07	May-19-07	Jun-04-07	Jun-27-07	May-10-07	May-15-07	May-19-07
Assessed By								
Trt-Eval Interval	23 DA-A	5 DA-B	9 DA-B	5 DA-C	6 DA-D	23 DA-A	5 DA-B	9 DA-B
ARM Action Codes								
# Subsamples, Dec.								

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

University of Georgia

Weed Code		AMAPA	AMAPA	AMAPA	CU.AMAPA	CU.AMAPA	CU.AMAPA	IPOLA	IPOLA
Crop Code					cultivat	cultivat	cultivat		
Rating Data Type		%	%	%	%	%	%	%	%
Rating Unit		control	control	control	control	control	control	control	control
Rating Date		May-30-07	Jul-19-07	Aug-31-07	May-30-07	Jul-19-07	Aug-31-07	May-10-07	May-19-07
Assessed By									
Trt-Eval Interval		20 DA-B	28 DA-D	71 DA-D	20 DA-B	28 DA-D	71 DA-D	23 DA-A	9 DA-B
ARM Action Codes									
# Subsamples, Dec.									
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
		9	10	11	12	13	14	15	16
1	DP 555 BRR Prowl H20 WeatherMax WeatherMax Direx MSMA	2.1 PT/A 22 OZ/A 22 OZ/A 1 QT/A 2 LB A/A	28 g 5 ef	0 i	72 fg	32 e	0 g	20 d	73 d
2	DP 555 BRR Prowl H20 Reflex WeatherMax WeatherMax Direx MSMA	2.1 PT/A 1 PT/A 22 OZ/A 22 OZ/A 1 QT/A 2 LB A/A	40 ef 22 d	0 i	78 ef	30 e	0 g	42 ab	75 d
3	DP 555 BRR Direx Reflex WeatherMax WeatherMax	2 PT/A 1 PT/A 22 OZ/A 22 OZ/A	38 efg 17 de	0 i	80 def	30 e	0 g	48 ab	72 d
4	DP 555 BRR Prowl H20 WeatherMax Dual Magnum WeatherMax Direx MSMA	2.1 PT/A 22 OZ/A 1 PT/A 22 OZ/A 1 QT/A 2 LB A/A	32 fg 12 def	0 i	86 b-e	30 e	0 g	43 ab	72 d
5	DP 555 BRR Prowl H20 Reflex WeatherMax Dual Magnum WeatherMax Direx MSMA	2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 22 OZ/A 1 QT/A 2 LB A/A	43 e 18 de	0 i	90 a-d	43 de	28 f	30 cd	78 d
6	DP 555 BRR Direx Reflex WeatherMax Dual Magnum WeatherMax Direx MSMA	2 PT/A 1 PT/A 22 OZ/A 1 PT/A 22 OZ/A 1 QT/A 2 LB A/A	43 e 13 def	0 i	84 cde	45 d	32 ef	52 ab	85 c
7	DP 555 BRR Prowl H20 WeatherMax Staple WeatherMax Direx MSMA	2.1 PT/A 22 OZ/A 1.7 OZ/A 22 OZ/A 1 QT/A 2 LB A/A	61 d 37 c	30 g	93 abc	67 c	70 bcd	25 d	88 bc

University of Georgia

Weed Code	AMAPA	AMAPA	AMAPA	CU.AMAPA	CU.AMAPA	CU.AMAPA	IPOLA	IPOLA			
Crop Code				cultivat	cultivat	cultivat					
Rating Data Type	%	%	%	%	%	%	%	%			
Rating Unit	control	control	control	control	control	control	control	control			
Rating Date	May-30-07	Jul-19-07	Aug-31-07	May-30-07	Jul-19-07	Aug-31-07	May-10-07	May-19-07			
Assessed By											
Trt-Eval Interval	20 DA-B	28 DA-D	71 DA-D	20 DA-B	28 DA-D	71 DA-D	23 DA-A	9 DA-B			
ARM Action Codes											
# Subsamples, Dec.											
Trt No.	Treatment Name	Rate	Rate Unit	9	10	11	12	13	14	15	16
15	Liberty Link			90 ab	85 a	88 a	97 ab	96 a	94 a	45 ab	96 ab
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Dual Magnum	1	PT/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
16	Liberty Link			93 a	62 b	35 fg	99 a	78 bc	58 cd	53 a	98 a
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	29	OZ/A								
	Ignite	29	OZ/A								
17	Liberty Link			82 bc	78 a	73 cd	95 ab	95 a	93 ab	18 d	93 ab
	Prowl H20	2.1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
18	Liberty Link			90 ab	93 a	83 ab	98 a	96 a	93 ab	40 bc	96 ab
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
19	Liberty Link			91 ab	85 a	69 d	98 a	93 a	79 abc	50 ab	96 ab
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Ignite	23	OZ/A								
	Ignite	29	OZ/A								
20	Liberty Link			0 h	0 f	0 i	66 gh	10 f	3 g	0 e	0 e
	No herbicide										
LSD (P=.05)		9.5	14.5	6.9	9.1	12.3	21.3	10.4	7.2		
Standard Deviation		5.8	8.8	4.2	5.5	7.4	12.9	6.3	4.3		
CV		9.28	18.86	11.67	6.2	11.67	25.18	18.56	5.46		
Bartlett's X2		13.504	35.18	2.689	35.799	32.788	47.684	19.286	24.198		
P(Bartlett's X2)		0.702	0.002*	0.952	0.002*	0.008*	0.001*	0.201	0.062		

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

University of Georgia

Weed Code		IPOLA	IPOLA	CU.IPOLA	CU.IPOLA	SEED	CU.SEED	SEED	CU.SEED		
Crop Code				cultivat	cultivat	cotton	cotton	cotton	cotton		
Rating Data Type		%	%	%	%	lb	lb	YIELD	YIELD		
Rating Unit		control	control	control	control	plot	plot	LB	LB		
Rating Date		May-30-07	Jul-19-07	May-30-07	Jul-19-07	Nov-02-07	Nov-02-07	Nov-02-07	Nov-02-07		
Assessed By							cultivated		cultivated		
Trt-Eval Interval		20 DA-B	28 DA-D	20 DA-B	28 DA-D	199 DA-A	199 DA-A	199 DA-A	199 DA-A		
ARM Action Codes								TY1	TY2		
# Subsamples, Dec.								1	1		
Trt No.	Treatment Name	Rate	Unit	17	18	19	20	21	22	23	24
1	DP 555 BRR Prowl H20 WeatherMax WeatherMax Direx MSMA	2.1 22 22 1 2	PT/A OZ/A OZ/A QT/A LB A/A	88 a	95 a	98 a	95 a	0 c	0 g	0.0 c	0.0 g
2	DP 555 BRR Prowl H20 Reflex WeatherMax WeatherMax Direx MSMA	2.1 1 22 22 1 2	PT/A PT/A OZ/A OZ/A QT/A LB A/A	87 a	95 a	97 a	95 a	0 c	0 g	0.0 c	0.0 g
3	DP 555 BRR Direx Reflex WeatherMax WeatherMax	2 1 22 22	PT/A PT/A OZ/A OZ/A	87 a	95 a	99 a	95 a	0 c	0 g	0.0 c	0.0 g
4	DP 555 BRR Prowl H20 WeatherMax Dual Magnum WeatherMax Direx MSMA	2.1 22 1 22 1 2	PT/A OZ/A PT/A OZ/A QT/A LB A/A	82 a	95 a	95 a	95 a	0 c	0 g	0.0 c	0.0 g
5	DP 555 BRR Prowl H20 Reflex WeatherMax Dual Magnum WeatherMax Direx MSMA	2.1 1 22 1 22 1 2	PT/A PT/A OZ/A PT/A OZ/A QT/A LB A/A	83 a	95 a	96 a	95 a	0 c	1 f	0.0 c	446.6 f
6	DP 555 BRR Direx Reflex WeatherMax Dual Magnum WeatherMax Direx MSMA	2 1 22 1 22 1 2	PT/A PT/A OZ/A PT/A OZ/A QT/A LB A/A	90 a	95 a	99 a	95 a	0 c	1 f	0.0 c	409.2 f
7	DP 555 BRR Prowl H20 WeatherMax Staple WeatherMax Direx MSMA	2.1 22 1.7 22 1 2	PT/A OZ/A OZ/A OZ/A QT/A LB A/A	85 a	95 a	98 a	95 a	0 c	1 cd	0.0 c	831.6 cd

University of Georgia

Weed Code		IPOLA	IPOLA	CU.IPOLA	CU.IPOLA	SEED	CU.SEED	SEED	CU.SEED		
Crop Code				cultivat	cultivat	cotton	cotton	cotton	cotton		
Rating Data Type		%	%	%	%	lb	lb	YIELD	YIELD		
Rating Unit		control	control	control	control	plot	plot	LB	LB		
Rating Date		May-30-07	Jul-19-07	May-30-07	Jul-19-07	Nov-02-07	Nov-02-07	Nov-02-07	Nov-02-07		
Assessed By							cultivated		cultivated		
Trt-Eval Interval		20 DA-B	28 DA-D	20 DA-B	28 DA-D	199 DA-A	199 DA-A	199 DA-A	199 DA-A		
ARM Action Codes								TY1	TY2		
# Subsamples, Dec.								1	1		
Trt No.	Treatment Name	Rate	Unit	17	18	19	20	21	22	23	24
8	DP 555 BRR Prowl H20 Reflex WeatherMax Staple WeatherMax Direx MSMA	2.1 1 22 1.7 22 1 2	PT/A PT/A OZ/A OZ/A OZ/A QT/A LB A/A	92 a	95 a	98 a	95 a	0 c	1 c	0.0 c	853.6 c
9	DP 555 BRR Direx Reflex WeatherMax Staple WeatherMax Direx MSMA	2 1 22 1.7 22 1 2	PT/A PT/A OZ/A OZ/A OZ/A QT/A LB A/A	88 a	95 a	99 a	95 a	0 c	1 cde	0.0 c	765.6 cde
10	DP 555 BRR No herbicide			0 c	95 a	65 b	95 a	0 c	0 g	0.0 c	0.0 g
11	Liberty Link Prowl H20 Ignite Ignite Direx MSMA	2.1 23 23 1 2	PT/A OZ/A OZ/A QT/A LB A/A	88 a	95 a	99 a	95 a	2 b	2 a	1012.0 b	1568.6 a
12	Liberty Link Prowl H20 Reflex Ignite Ignite Direx MSMA	2.1 1 23 23 1 2	PT/A PT/A OZ/A OZ/A QT/A LB A/A	88 a	95 a	99 a	95 a	2 a	2 a	1218.8 a	1614.8 a
13	Liberty Link Direx Reflex Ignite Ignite	2 1 23 23	PT/A PT/A OZ/A OZ/A	90 a	95 a	99 a	95 a	0 c	1 ef	0.0 c	565.4 ef
14	Liberty Link Prowl H20 Ignite Dual Magnum Ignite Direx MSMA	2.1 23 1 23 1 2	PT/A OZ/A PT/A OZ/A QT/A LB A/A	88 a	95 a	98 a	95 a	2 ab	2 a	1113.2 ab	1597.2 a

University of Georgia

Weed Code	IPOLA	IPOLA	CU.IPOLA	CU.IPOLA	SEED	CU.SEED	SEED	CU.SEED			
Crop Code			cultivat	cultivat	cotton	cotton	cotton	cotton			
Rating Data Type	%	%	%	%	lb	lb	YIELD	YIELD			
Rating Unit	control	control	control	control	plot	plot	LB	LB			
Rating Date	May-30-07	Jul-19-07	May-30-07	Jul-19-07	Nov-02-07	Nov-02-07	Nov-02-07	Nov-02-07			
Assessed By						cultivated		cultivated			
Trt-Eval Interval	20 DA-B	28 DA-D	20 DA-B	28 DA-D	199 DA-A	199 DA-A	199 DA-A	199 DA-A			
ARM Action Codes							TY1	TY2			
# Subsamples, Dec.							1	1			
Trt No.	Treatment Name	Rate	Unit	17	18	19	20	21	22	23	24
15	Liberty Link			90 a	95 a	99 a	95 a	2 a	2 a	1207.8 a	1573.0 a
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Dual Magnum	1	PT/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
16	Liberty Link			92 a	95 a	99 a	95 a	0 c	1 def	0.0 c	578.6 def
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	29	OZ/A								
	Ignite	29	OZ/A								
17	Liberty Link			89 a	95 a	99 a	95 a	2 ab	2 ab	1133.0 ab	1476.2 ab
	Prowl H20	2.1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
18	Liberty Link			85 a	95 a	99 a	95 a	2 a	3 a	1177.0 a	1676.4 a
	Prowl H20	2.1	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Staple	1.7	OZ/A								
	Ignite	23	OZ/A								
	Direx	1	QT/A								
	MSMA	2	LB A/A								
19	Liberty Link			88 a	95 a	99 a	95 a	2 ab	2 b	1108.8 ab	1284.8 b
	Direx	2	PT/A								
	Reflex	1	PT/A								
	Ignite	23	OZ/A								
	Ignite	23	OZ/A								
	Ignite	29	OZ/A								
20	Liberty Link			30 b	95 a	65 b	95 a	0 c	0 g	0.0 c	0.0 g
	No herbicide										
LSD (P=.05)				20.3	0.0	3.9	0.0	0.2	0.4	112.65	242.66
Standard Deviation				12.3	0.0	2.3	0.0	0.1	0.2	68.26	147.05
CV				15.25	0.0	2.47	0.0	17.13	19.3	17.13	19.3
Bartlett's X2				67.264	0.0	4.698	0.0	7.108	30.844	7.108	30.847
P(Bartlett's X2)				0.001*	.	0.789	.	0.311	0.004*	0.311	0.004*

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

Column 23: TY1 = 660.0*[C21]
 Column 24: TY2 = 660.0*[C22]

University of Georgia

	Previous Crops	Previous Pesticides	Year
1.			

MAINTENANCE

Field Prep./Maintenance:

No.	Date	Maintenance Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.							

SOIL DESCRIPTION

% Sand: 82	% OM: 2.0	Texture: loamy sand
% Silt: 14	pH: 6.3	Soil Name: _____
% Clay: 4	CEC: _____	Fert. Level: _____

ADDITIONAL MEASURED ELEMENTS

Element	Quantity	Unit

MOISTURE CONDITIONS

	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

Overall Moisture Conditions: dry

Closest Weather Station: _____ Distance: _____ Unit: ____

APPLICATION DESCRIPTION

	A	B	C	D
Application Date:	Apr-17-07	May-10-07	May-30-07	Jun-21-07
Time of Day:	8:00 pm	6:00 pm	8:00 am	6:00 pm
Application Method:	broadcast	broadcast	broadcast	broadcast
Application Timing:	PRE	Post 1	Post 2	LPD
Applic. Placement:	on soil	overtop	overtop	directed
Air Temp., Unit:	78 F	84 F	78 F	94 F
% Relative Humidity:	49	49	59	41
Wind Velocity, Unit:	2 mph	3 mph	0 mph	5 mph
Dew Presence (Y/N):	N	N	N	N
Water Hardness:				
Soil Temp., Unit:	75 F	84 F	84 F	97 F
Soil Moisture:	moist	fair	fair/dry	fair
% Cloud Cover:	20	0	0	0

CROP STAGE AT EACH APPLICATION

	A	B	C	D
Crop 1 Code, Stage:	GOSHI preplant	GOSHI POST 1	GOSHI POST 2	GOSHI LPD
Stage Scale:	not up	1-2 leaf	6 leaf	11 leaf
Height, Unit:	0 inch	1.5 in	7.5 in	15 in
Crop 2 Code, Stage:	GOSHI preplant	GOSHI POST 1	GOSHI POST 2	GOSHI .
Stage Scale:	not up	1-2 leaf	6 leaf	11 leaf
Height, Unit:	0 inch	1.5 in	7.5 in	15 in

University of Georgia

WEED STAGE AT EACH APPLICATION

	A	B	C	D
Weed 1 Code, Stage:	AMAPA preplant	AMAPA POST 1	AMAPA POST 2	AMAPA LPD
Stage Scale:	not up	2-3 in	1-10 in	1-5 in
Density, Unit:	0 ydsq	10 ydsq	25 ydsq	25 ydsq
Weed 2 Code, Stage:	IPOLA preplant	IPOLA POST 1	IPOLA POST 2	IPOLA LPD
Stage Scale:	not up	3 in	1-4 in	1-4 in
Density, Unit:	0 ydsq	3 ydsq	3 ydsq	3 ydsq

APPLICATION EQUIPMENT

	A	B	C	D
Appl. Equipment:	backpack	backpack	backpack	backpack
Operating Pressure:	24	24	24	26
Nozzle Type:	flat fan	flat fan	flat fan	flat fan
Nozzle Size:	11002	11002	11002	TK2
Nozzle Spacing, Unit:	18 in	18 in	18 in	36 in
Nozzles/Row:	2	2	2	1
Band Width, Unit:				
Boom Length, Unit:	4.5 ft	4.5 ft	4.5 ft	
Boom Height, Unit:	15 in	15 in	15 in	15 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Incorporation Equip.:				
Hours to Incorp.:				
Incorp. Depth, Unit:				
Carrier:	water	water	water	water
Spray Volume, Unit:	14.8 GPA	15 GPA	15 GPA	15 GPA
Spray pH:				
Propellant:	CO2	CO2	CO2	CO2
Tank Mix (Y/N):				

Trt No	Treatment Application Comment