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Control of volunteer RR cotton with Liberty and volunteer LL cotton with Roundup

Trial ID: C27-03 Study Dir.: Stanley Culpepper
Location: Ponder farm 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-05-03 **Country:** U.S.A.
City: TyTy **State/Prov.:** Ga **Postal Code:** 31794
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND PEST DESCRIPTION

Weed 1..

Crop 1: GOSHI cotton **Variety:** FM 966 LL **Planting Date:** May-05-03
Planting Method: conventional **Rate:** 3.75 seed/ft **Depth:** 0.5 in
Row Spacing: 36 inch **Seed Bed:** bedded
Soil Temperature: 79 F **Soil Moisture:** moist **Emergence Date:** May-10-03

Crop 2: GOSHI cotton **Variety:** DP 555 B/RR **Planting Date:** May-05-03
Planting Method: conventional **Rate:** 3.75 seed/ft **Depth:** 0.5 in
Row Spacing: 36 inch **Seed Bed:** bedded
Soil Temperature: 79 F **Soil Moisture:** moist **Emergence Date:** May-10-03

Plot Width, Unit: 6 FT **Plot Length, Unit:** 23 FT **Reps:** 4
Site Type: research station
Tillage Type: strip tillage **Study Design:** SPLIT-PLOT

SOIL DESCRIPTION

Texture: sand **% OM:** 1.3 **% Sand:** 94 **% Silt:** 2 **% Clay:** 4
pH: 5.6 **Soil Name:** Tifton sandy loa

Overall Moisture Conditions: wet

APPLICATION DESCRIPTION

	A	B	C	D	E	F
Application Date:	May-05-03	May-19-03	Jun-04-03	Jun-12-03		
Time of Day:	7 pm	9 am	11 am	10 am		
Application Method:	Broadcast	Broadcast	Broadcast	Broadcast		
Application Timing:	PRE	2-leaf	6-leaf	10-leaf		
Applic. Placement:	on soil	overtop	overtop	overtop		
Air Temp., Unit:	82 F	72 F	85 F	80 F		
% Relative Humidity:	57	75	44	75		
Wind Velocity, Unit:	7 mph	1 mph	0 mph	1 mph		
Dew Presence (Y/N):	n	y	n	n		
Soil Temp., Unit:	84 F	73 F	87 F	82 F		
Soil Moisture:	perfect	moist	wet	moist		
% Cloud Cover:	25	100	35	25		

CROP STAGE AT EACH APPLICATION

	A	B	C	D	E	F
Crop 1 GOSHI Stage:	PRE	POST 1	POST 2	POST 3		
Stage Scale:	.	V1-V2	V6	V10		
Height, Unit:	0. .	3 in	9 inch	15 inch		
Crop 2 GOSHI Stage:	PRE	POST 1	POST 2	POST 3		
Stage Scale:	.	V1-V2	V6	V10		
Height, Unit:	0. .	3 in	9 inch	15 inch		

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		WEED STAGE AT EACH APPLICATION					
		A	B	C	D	E	F
Weed 1	Stage: .						
	Stage Scale: .						
	Density, Unit: . .						

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

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Control of volunteer RR cotton with Liberty and volunteer LL cotton with Roundup

Trial ID: C27-03

Study Dir.: Stanley Culpepper

Location: Ponder farm

Investigator: Stanley Culpepper

Crop Code			GOSHI injury percent	GOSHI injury percent	GOSHI injury percent	GOSHI injury percent	GOSHI injury percent	GOSHI injury percent	GOSHI plants #/16'
Rating Data Type			May-26-03	Jun-08-03	Jun-15-03	Jun-23-03	Jul-05-03	Aug-12-03	Aug-14-03
Rating Unit			21 DA-A	34 DA-A	41 DA-A	49 DA-A	61 DA-A	61 DA-A	101 DA-A
Rating Date									
Trt-Eval Interval									
Trt No.	Treatment Name	Rate Unit	1	2	3	4	5	6	7
1	Deltapine 555 B/RR Prowl Cotoran Liberty 2-leaf cotton	2 pt/a 1.5 pt/a 28 oz/a	99.0	99.8	100.0	99.3	99.8	98.8	0.0
2	Deltapine 555 B/RR Prowl Cotoran Liberty 6-leaf cotton	2 pt/a 1.5 pt/a 28 oz/a	0.0	86.5	100.0	99.3	100.0	98.0	0.0
3	Deltapine 555 B/RR Prowl Cotoran Liberty 10-leaf cotton	2 pt/a 1.5 pt/a 28 oz/a	0.0	0.0	41.8	60.0	32.5	0.0	43.8
4	Deltapine 555 B/RR Prowl Cotoran Liberty 2-leaf cotton	2 pt/a 1.5 pt/a 42 oz/a	98.3	99.8	100.0	99.5	98.8	97.8	0.0
5	Deltapine 555 B/RR Prowl Cotoran Liberty 6-leaf cotton	2 pt/a 1.5 pt/a 42 oz/a	0.0	87.8	100.0	99.5	99.8	98.8	0.0
6	Deltapine 555 B/RR Prowl Cotoran Liberty 10-leaf cotton	2 pt/a 1.5 pt/a 42 oz/a	0.0	0.0	47.5	77.5	40.0	25.0	43.0
7	FiberMax FM 966 LL Prowl Cotoran WeatherMax 2-leaf cotton	2 pt/a 1.5 pt/a 22 oz/a	78.3	92.3	88.3	90.5	84.0	85.0	2.8
8	FiberMax FM 966 LL Prowl Cotoran WeatherMax 6-leaf cotton	2 pt/a 1.5 pt/a 22 oz/a	0.0	62.5	79.8	84.8	87.5	89.8	1.8
9	FiberMax FM 966 LL Prowl Cotoran WeatherMax 10-leaf cotton	2 pt/a 1.5 pt/a 22 oz/a	0.0	0.0	12.3	46.3	41.3	37.5	57.5
10	FiberMax FM 966 LL Prowl Cotoran WeatherMax 2-leaf cotton	2 pt/a 1.5 pt/a 33 oz/a	82.3	95.0	96.5	94.0	95.5	96.5	0.0

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Crop Code			GOSHI	GOSHI	GOSHI	GOSHI	GOSHI	GOSHI	GOSHI
Rating Data Type			injury	injury	injury	injury	injury	injury	plants
Rating Unit			percent	percent	percent	percent	percent	percent	#/16'
Rating Date			May-26-03	Jun-08-03	Jun-15-03	Jun-23-03	Jul-05-03	Aug-12-03	Aug-14-03
Trt-Eval Interval			21 DA-A	34 DA-A	41 DA-A	49 DA-A	61 DA-A	61 DA-A	101 DA-A
Trt No.	Treatment Name	Rate Unit	1	2	3	4	5	6	7
11	FiberMax FM 966 LL Prowl Cotoran WeatherMax 6-leaf cotton	2 pt/a 1.5 pt/a 33 oz/a	0.0	60.8	82.8	88.8	95.0	98.3	0.0
12	FiberMax FM 966 LL Prowl Cotoran WeatherMax 10-leaf cotton	2 pt/a 1.5 pt/a 33 oz/a	0.0	0.0	16.8	60.0	47.5	56.3	54.3
13	Deltapine 555 B/RR Prowl Cotoran Roundup WeatherMax (RR Check)	2 pt/a 1.5 pt/a 22 fl oz/a	0.0	0.0	0.0	0.0	0.0	0.0	45.5
14	FiberMax FM 966 LL Prowl Cotoran Liberty (LL Check)	2 pt/a 1.5 pt/a 28 fl oz/a	0.0	0.0	0.0	0.0	0.0	0.0	57.3
LSD (P=.05)			2.17	5.18	5.86	6.89	6.90	9.72	8.89
Standard Deviation			1.52	3.63	4.10	4.82	4.82	6.80	6.22
CV			5.95	7.42	6.63	6.76	7.33	10.8	28.47
Bartlett's X2			1.54	33.139	28.339	45.752	35.571	54.204	30.408
P(Bartlett's X2)			0.673	0.001*	0.001*	0.001*	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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Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval				GOSHI biomass lbs Aug-14-03	GOSHI bolls # Aug-14-03	GOSHI squares # Aug-14-03	GOSHI boll bio lbs Aug-14-03	GOSHI squa bio grams Aug-14-03
Trt No.	Treatment Name	Rate Rate	Unit Unit	8	9	10	11	12
1	Deltapine 555 B/RR Prowl Cotoran Liberty 2-leaf cotton	2 1.5 28	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0
2	Deltapine 555 B/RR Prowl Cotoran Liberty 6-leaf cotton	2 1.5 28	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0
3	Deltapine 555 B/RR Prowl Cotoran Liberty 10-leaf cotton	2 1.5 28	pt/a pt/a oz/a	40.6	352.0	132.8	12.4	204.8
4	Deltapine 555 B/RR Prowl Cotoran Liberty 2-leaf cotton	2 1.5 42	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0
5	Deltapine 555 B/RR Prowl Cotoran Liberty 6-leaf cotton	2 1.5 42	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0
6	Deltapine 555 B/RR Prowl Cotoran Liberty 10-leaf cotton	2 1.5 42	pt/a pt/a oz/a	35.2	246.8	98.3	9.3	155.5
7	FiberMax FM 966 LL Prowl Cotoran WeatherMax 2-leaf cotton	2 1.5 22	pt/a pt/a oz/a	3.1	24.8	19.0	1.3	13.3
8	FiberMax FM 966 LL Prowl Cotoran WeatherMax 6-leaf cotton	2 1.5 22	pt/a pt/a oz/a	2.2	24.5	4.0	1.0	5.8
9	FiberMax FM 966 LL Prowl Cotoran WeatherMax 10-leaf cotton	2 1.5 22	pt/a pt/a oz/a	32.6	185.3	39.3	4.5	32.0
10	FiberMax FM 966 LL Prowl Cotoran WeatherMax 2-leaf cotton	2 1.5 33	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0
11	FiberMax FM 966 LL Prowl Cotoran WeatherMax 6-leaf cotton	2 1.5 33	pt/a pt/a oz/a	0.0	0.0	0.0	0.0	0.0

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Crop Code			GOSHI	GOSHI	GOSHI	GOSHI	GOSHI
Rating Data Type			biomass	bolls	squares	boll bio	squa bio
Rating Unit			lbs	#	#	lbs	grams
Rating Date			Aug-14-03	Aug-14-03	Aug-14-03	Aug-14-03	Aug-14-03
Trt-Eval Interval							
Trt No.	Treatment Name	Rate Unit	8	9	10	11	12
12	FiberMax FM 966 LL		14.0	193.5	53.3	5.2	34.8
	Prowl	2 pt/a					
	Cotoran	1.5 pt/a					
	WeatherMax	33 oz/a					
	10-leaf cotton						
13	Deltapine 555 B/RR		55.3	359.8	26.3	18.9	25.0
	Prowl	2 pt/a					
	Cotoran	1.5 pt/a					
	Roundup WeatherMax	22 fl oz/a					
	(RR Check)						
14	FiberMax FM 966 LL		50.1	485.3	0.8	16.6	0.5
	Prowl	2 pt/a					
	Cotoran	1.5 pt/a					
	Liberty	28 fl oz/a					
	(LL Check)						
LSD (P=.05)			9.27	120.99	26.34	4.32	52.31
Standard Deviation			6.48	84.66	18.43	3.02	36.60
CV			38.93	63.32	69.08	61.33	108.69
Bartlett's X2			16.326	24.862	28.175	19.054	54.149
P(Bartlett's X2)			0.022*	0.001*	0.001*	0.008*	0.001*

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

Trial Comments

OBJECTIVE: Evaluate the effect of Liberty on RR cotton and Roundup on LL cotton.

VISUAL CROP RESPONSE (late season control):

- 1) Applying Liberty to 2-leaf RR cotton provided complete control, regardless of rate.
- 2) Applying Liberty to 6-leaf RR cotton provided complete control, regardless of rate.
- 3) Applying Liberty to 10-leaf RR cotton provided only 0 to 25% control, regardless of rate.
- 4) Applying Roundup to 2-leaf LL cotton provided 84 to 88% at 22 oz of WeatherMax per acre and 94 to 96% at 33 oz/A late in the season.
- 5) Applying Roundup to 6-leaf LL cotton provided 88 to 98% control. Control was statistically similar among rates.
- 6) Applying Roundup to 10-leaf LL cotton provided only 38 to 56% control.

PLANT POPULATIONS (Measurements made on 8 feet of each of the middle two rows):

- 1) Liberty applied to 2-leaf RR cotton killed all plants.
- 2) Liberty applied to 6-leaf RR cotton killed all plants.
- 3) Liberty applied to 10-leaf RR cotton had little effect in reducing the plant population.
- 4) Applying Roundup to 2-leaf LL cotton reduced plant populations at least 95%.
- 5) Applying Roundup to 6-leaf LL cotton reduced plant populations at least 96%.
- 6) Applying Roundup to 10-leaf LL cotton did not affect plant populations.

PLANT BIOMASS (Measurements made on 8 feet of each of the middle two rows):

- 1) Liberty applied to 2-leaf RR eliminated biomass.
- 2) Liberty applied to 6-leaf RR eliminated biomass.
- 3) Liberty applied to 10-leaf RR cotton reduced biomass 25 to 37%.
- 4) Applying Roundup to 2-leaf LL cotton reduced biomass at least 96%.
- 5) Applying Roundup to 6-leaf LL cotton reduced biomass atleast 96%.
- 6) Applying Roundup to 10-leaf LL cotton reduced biomass 34 to 72%.

SQUARES AND BOLLS:

- 1) Liberty applied to 2-leaf RR eliminated squares and bolls.
- 2) Liberty applied to 6-leaf RR eliminated squares and bolls.
- 3) Liberty applied to 10-leaf RR cotton had little effect on the development on squares and bolls.

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- 4) Applying 22 oz/a of WetherMax to 2-leaf LL cotton reduced boll numbers by 95% and increased square numbers by a factor of 19. Boll weights were reduced by 95% and square weights were increased from essentially 0 grams (non-treated) to 13 grams. Increasing the rate of WetherMax to 33 oz/A eliminated all bolls and squares.
- 5) Applying 22 oz/a of WetherMax to 6-leaf LL cotton reduced boll numbers by 95% and increased square numbers by a factor of 6. Boll weights were reduced by 95% and square weights were increased from essentially 0 grams (non-treated) to 4 grams. Increasing the rate of WeatherMax to 33 oz/A eliminated all bolls and squares.
- 6) Applying WeatherMax at 22 or 33 oz/A to 10-leaf LL reduced the number of bolls by 60 to 61%, increased the number of squares by a factor of 26 to 39, reduced boll weights by 67%, and increased weight of squares by a factor of 32 to 35.

CONCLUSION:

- 1) Liberty applied to 2- or 6-leaf RR cotton was completely effective. Cotton larger than 6-leaf was not controlled.
- 2) Liberty applied to 2- or 6-leaf RR cotton eliminated all fruiting sites. Little impact was seen on cotton treated at the 10-leaf stage.
- 3) WeatherMax applied at 22 oz/A provided excellent control of 2- and 6-leaf LL cotton but fruit was still produced, thus control was not acceptable.
- 4) WeatherMax applied at 33 oz/A provided complete control of 2- and 6-leaf LL cotton and fruit was eliminated.
- 5) WeatherMax applied to 10-leaf LL cotton was not effective.
- 6) Growing conditions were ideal in this study because of natural rainfall. Question if this level of control would be noted in dry conditions.