

# University of Georgia

Cotton and weed response to ET751 directed in Roundup Ready cotton.

Trial ID: C22-03  
Location: Ponder farm

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 LOCATION

**City:** TyTy **Trial Status:** completed  
**State/Prov.:** Ga **Trial Reliability:** good  
**Postal Code:** 31795 **Initiation Date:** May-01-03  
**Country:** U.S.A.

Conducted Under GLP (Y/N): N

Conducted Under GEP (Y/N): N

## CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	IAQTA	smallflower morningglory	
2.	RCHSC	Florida pusley	
3.	DEDTO	Florida beggarweed	
4.	RAPRA	Wild radish	

**Crop 1:** GOSHI cotton **Variety:** DP 555 B/RR  
**Planting Date:** May-01-03 **Planting Method:** conventional  
**Rate:** 3 per foot **Depth:** 0.75 in  
**Row Spacing:** 36 inch **Spacing Within Row:** 4 inch **Seed Bed:** bedded  
**Soil Temperature:** 78 F **Soil Moisture:** moist

## SITE AND DESIGN

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

## SOIL DESCRIPTION

**% Sand:** 94 **% OM:** 1.0 **Texture:** sand  
**% Silt:** 2 **pH:** 5.8 **Soil Name:** Tifton sandy loam  
**% Clay:** 4

Overall Moisture Conditions: .

## APPLICATION DESCRIPTION

	A
<b>Application Date:</b>	Jun-11-03
<b>Time of Day:</b>	11 am
<b>Application Method:</b>	Broadcast
<b>Application Timing:</b>	LPD
<b>Applic. Placement:</b>	directed
<b>Air Temp., Unit:</b>	85 F
<b>% Relative Humidity:</b>	59
<b>Wind Velocity, Unit:</b>	1 mph
<b>Dew Presence (Y/N):</b>	N
<b>Soil Temp., Unit:</b>	87 F
<b>Soil Moisture:</b>	perfect
<b>% Cloud Cover:</b>	30

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## CROP STAGE AT EACH APPLICATION

A	
Crop 1 Code, Stage:	GOSHI LPD
Stage Scale:	V10-V11
Height, Unit:	17 inch

## WEED STAGE AT EACH APPLICATION

A	
Weed 1 Code, Stage:	IAQTA LPD
Stage Scale:	2-4 inch
Density, Unit:	3 ydsq
Weed 2 Code, Stage:	RCHSC LPD
Stage Scale:	1 inch
Density, Unit:	25 ydsq
Weed 3 Code, Stage:	DEDTO LPD
Stage Scale:	2-3 inch
Density, Unit:	2 ydsq
Weed 4 Code, Stage:	RAPRA LPD
Stage Scale:	4-6 inch
Density, Unit:	5 ydsq

## APPLICATION EQUIPMENT

A	
Appl. Equipment:	backpack
Operating Pressure:	18
Nozzle Type:	flat fan
Nozzle Size:	11002
Nozzle Spacing, Unit:	12 inch
Nozzles/Row:	3
Boom Length, Unit:	24 inch
Boom Height, Unit:	15 inch
Ground Speed, Unit:	3 mph
Carrier:	water
Spray Volume, Unit:	14.8 GPA
Propellant:	CO2
Tank Mix (Y/N):	Y

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Weed Code		GOSHI	GOSHI	GOSHI	RCHSC	RCHSC	RCHSC	DEDTO
Crop Code		injury	injury	injury	control	control	control	control
Rating Data Type		percent	percent	percent	percent	percent	percent	percent
Rating Unit		Jun-15-03	Jun-23-03	Jun-23-03	Jun-15-03	Jun-23-03	Aug-25-03	Jun-15-03
Rating Date		4 DA-A	12 DA-A	12 DA-A	4 DA-A	12 DA-A	4 DA-A	4 DA-A
Trt-Eval Interval								
ARM Action Codes								
# Subsamples, Dec.								
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate	Rate
		Unit	Unit	Unit	Unit	Unit	Unit	Unit
			1	2	3	4	5	6
			1	2	3	4	5	6
1	Non-treated		0.0	0.0	0.0	0.0	0.0	0.0
2	ET751 COC	1 oz/a 1 % v/v	8.5	10.3	0.0	72.8	79.8	62.5
3	ET751 COC	2 oz/a 1 % v/v	14.5	14.8	0.0	79.0	88.0	79.8
4	ET751 Roundup WeatherMax	0.5 oz/a 16 oz/a	6.3	0.3	0.0	90.0	93.3	77.3
5	ET751 Roundup WeatherMax	1 oz/a 16 oz/a	9.8	3.0	0.0	91.0	91.8	73.8
6	ET751 MSMA	0.5 oz/a 2.5 pt/a	5.3	4.3	0.0	91.8	90.3	78.5
7	ET751 MSMA	1 oz/a 2.5 pt/a	7.8	7.8	0.0	83.0	84.3	69.8
8	Roundup WeatherMax	16 oz/a	0.0	0.8	0.0	67.5	84.5	72.0
9	MSMA	2.5 pt/a	5.0	0.0	0.0	60.0	55.0	74.5
LSD (P=.05)			5.21	5.87	0.00	9.09	10.28	12.71
Standard Deviation			3.57	4.02	0.00	6.23	7.04	8.71
CV			56.35	88.34	0.0	8.83	9.5	13.33
Bartlett's X2			13.156	18.487	0.0	9.224	38.137	3.777
P(Bartlett's X2)			0.022*	0.005*	.	0.237	0.001*	0.805

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

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Weed Code		DEDTO	DEDTO	IAQTA	IAQTA	IAQTA	RAPRA	RAPRA
Crop Code								
Rating Data Type		control	control	control	control	control	control	control
Rating Unit		percent	percent	percent	percent	percent	percent	percent
Rating Date		Jun-23-03	Aug-25-03	Jun-15-03	Jun-23-03	Aug-25-03	Jun-15-03	Jun-23-03
Trt-Eval Interval		12 DA-A	12 DA-A	4 DA-A	12 DA-A	12 DA-A	4 DA-A	12 DA-A
ARM Action Codes								
# Subsamples, Dec.								
Trt Treatment	Rate							
No. Name	Rate Unit	8	9	10	11	12	13	14
1 Non-treated		0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 ET751	1 oz/a	99.0	97.0	99.0	99.0	84.0	46.3	67.5
	COC 1 % v/v							
3 ET751	2 oz/a	99.0	94.5	99.0	99.0	98.0	60.8	77.0
	COC 1 % v/v							
4 ET751	0.5 oz/a	99.0	98.0	99.0	99.0	98.5	78.0	98.0
	Roundup WeatherMax 16 oz/a							
5 ET751	1 oz/a	99.0	97.0	99.0	99.0	98.0	78.0	99.0
	Roundup WeatherMax 16 oz/a							
6 ET751	0.5 oz/a	99.0	93.5	99.0	95.0	85.3	91.8	98.3
	MSMA 2.5 pt/a							
7 ET751	1 oz/a	99.0	98.0	99.0	89.3	99.0	88.8	99.0
	MSMA 2.5 pt/a							
8 Roundup WeatherMax	16 oz/a	99.0	98.0	67.5	85.3	90.0	73.3	99.0
9 MSMA	2.5 pt/a	99.0	98.0	63.8	67.0	84.3	74.0	97.5
LSD (P=.05)		0.00	4.72	9.77	14.83	9.02	13.12	5.16
Standard Deviation		0.00	3.24	6.69	10.16	6.18	8.99	3.53
CV		0.0	3.76	8.31	12.49	7.55	13.7	4.32
Bartlett's X2		0.0	23.382	4.142	11.547	39.296	6.552	10.469
P(Bartlett's X2)		.	0.001*	0.042*	0.009*	0.001*	0.477	0.033*

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

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Weed Code		seed	seed
Crop Code		GOSHI	GOSHI
Rating Data Type		yield	yield
Rating Unit		lb/plot	lb/A
Rating Date		Sep-24-03	Sep-24-03
Trt-Eval Interval		105 DA-A	105 DA-A
ARM Action Codes			TY1
# Subsamples, Dec.			1
Trt No.	Treatment Name	Rate	Unit
		15	16
1	Non-treated	7.4	2339.0
2	ET751 COC	1 oz/a 1 % v/v	8.9 2795.9
3	ET751 COC	2 oz/a 1 % v/v	9.9 3126.5
4	ET751 Roundup WeatherMax	0.5 oz/a 16 oz/a	9.7 3058.7
5	ET751 Roundup WeatherMax	1 oz/a 16 oz/a	10.7 3383.8
6	ET751 MSMA	0.5 oz/a 2.5 pt/a	9.9 3115.5
7	ET751 MSMA	1 oz/a 2.5 pt/a	8.8 2762.0
8	Roundup WeatherMax	16 oz/a	9.6 3028.7
9	MSMA	2.5 pt/a	9.4 2981.3
LSD (P=.05)		1.16	365.77
Standard Deviation		0.79	250.62
CV		8.48	8.48
Bartlett's X2		12.628	12.627
P(Bartlett's X2)		0.125	0.125

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

Column 16: TY1 = 315.6522\*[15]

## Trial Comments

GENERAL COMMENTS: Evaluate ET751 at layby in cotton. Trial was treated with Prowl PRE and glyphosate overtop when cotton was in the four leaf stage of growth.

Cotton Injury when applied topically to extra cotton (single strip treatment):

Trt 1 = 0  
 Trt 2 = 70  
 Trt 3 = 80  
 Trt 4 = 65  
 Trt 5 = 75  
 Trt 6 = 60  
 Trt 7 = 65  
 Trt 8 = 0  
 Trt 9 = 20

### RESULTS:

#### Cotton Injury:

- 1) ET751 injured cotton plants by causing stem necrosis. Cotton should probably be at least 16 inches tall with a barky stem prior to a directed application.
- 2) Injury ranged from 5 to 14% and was correlated with rate of ET 751.
- 3) No injury was noted late in the season.

#### Weed Control:

#### Florida pusley:

- 1) ET controlled pusley 73 to 79% at 1 to 2 oz/A when applied alone. Mixing glyphosate or MSMA with 1 oz of ET improved control by at least 17% at 4 DAT and 10% at 12 DAT.

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- 2) Glyphosate controlled pusley 84% at 12 DAT and mixing ET751 with glyphosate did not improve control.
- 3) By late-season, pusley continued to emerge and control was reduced as no treatment provided residual activity.
- 4) MSMA was far less effective than glyphosate.

#### Beggarweed:

- 1) All treatments provided excellent control.

#### Smallflower morningglory:

- 1) Control was excellent with all treatments containing ET751.
- 2) MSMA was less effective than glyphosate when applied alone.

#### Wild Radish:

- 1) ET751 alone provided poor to fair control at best.
- 2) MSMA or glyphosate alone provided excellent control by 12 DAT.
- 3) Mixing ET 751 with MSMA did improve control at 4 DAT but not at 12 DAT when compared to MSMA applied alone.
- 4) Radish eventually died out prior to a late season rating.

#### Yield:

- 1) Surprisingly, differences in yield were detected. Normally if adequate weed control is noted through early season as was the case in this trial, there are few differences in yield.
- 2) All systems including a layby yielded higher than the no-layby control.
- 3) A trend for lower yields with ET (1oz/A) alone or mixed with MSMA was noted.