

University of Georgia

Cotton response to possible allelopathic effects of wild radish.

Trial ID: C4-03

Study Dir.:

Location: Ponder farm (5131)

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: 31794

Initiation Date: Apr-02-03

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.	RAPRA	wild radish	

Crop 1: GOSHI cotton

Variety: DP 555 B/RR

Planting Date: May-01-03

Planting Method: strip tillage

Rate: 3.5 seed/ft

Depth: 0.5 in

Row Spacing: 36 inch

Spacing Within Row: 0. .

Seed Bed: slight bed

Soil Temperature: 74 F

Soil Moisture: moist

Emergence Date: May-05-03

SITE AND DESIGN

Plot Width, Unit: 6 FT

Plot Length, Unit: 25 FT

Reps: 4

Site Type: research station

Tillage Type: strip tillage

Study Design: FACTORIAL

SOIL DESCRIPTION

% Sand: 94

% OM: 1.1

Texture: sand

% Silt: 2

pH: 5.7

Soil Name: Tifton sandy loam

% Clay: 4

APPLICATION DESCRIPTION

	A	B	C	D	E
Application Date:	Apr-02-03	Apr-11-03	Apr-16-03	Apr-26-03	May-01-03
Time of Day:	8:30am	9:00am	10:00 am	10:00am	9:00am
Application Method:	Broadcast	Broadcast	Broadcast	Broadcast	Broadcast
Application Timing:	28 DBP	21 DBP	14 DBP	7 DBP	0 DBP
Applic. Placement:	burndown	burndown	burndown	burndown	burndown
Air Temp., Unit:	65 F	64 F	68 F	71 F	74 f
% Relative Humidity:	45	48	55	59	50
Wind Velocity, Unit:	1 mph	1 mph	1 mph	3 mph	1 mph
Dew Presence (Y/N):	y	y	y	y	y
Soil Temp., Unit:	62 F	60 F	62 F	68 F	80 F
Soil Moisture:	fair	moist	moist	moist	moist
% Cloud Cover:	0	10	10	0	20

CROP STAGE AT EACH APPLICATION

	A	B	C	D
Crop 1 Code, Stage:	GOSHI PRE	GOSHI PRE	GOSHI PRE	GOSHI PRE
Stage Scale:
Height, Unit:	0. .	0. .	0. .	0. .

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	E
Crop 1 Code, Stage:	GOSHI PRE
Stage Scale:	.
Height, Unit:	0. .

WEED STAGE AT EACH APPLICATION

	A	B	C	D
Weed 1 Code, Stage:	RAPRA 28 DBP	RAPRA 21 DBP	RAPRA 14 DBP	RAPRA 7 DBP
Stage Scale:	24-30"blo	fullbloom	25% pods	50% pods
Density, Unit:	45 ydsq	45 ydsq	45 ydsq	45 ydsq
	E			
Weed 1 Code, Stage:	RAPRA 0 DBP			
Stage Scale:	80% pods			
Density, Unit:	45 ydsq			

APPLICATION EQUIPMENT

	A	B	C	D	E
Appl. Equipment:	backpack	backpack	backpack	backpack	backpack
Operating Pressure:	23	23	23	23	23
Nozzle Type:	flat fan	flat fan	flat fan	flat fan	flat fan
Nozzle Size:	11002	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 inch	18 inch	18 inch	18 inch	18 inch
Nozzles/Row:	2	2	2	2	2
Boom Length, Unit:	4.5 feet	4.5 feet	4.5 feet	4.5 feet	4.5 feet
Boom Height, Unit:	15 inch	15 inch	15 inch	15 inch	15 inch
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph	3 mph
Carrier:	water	water	water	water	water
Spray Volume, Unit:	14.8 GPA	14.8 GPA	14.8 GPA	14.8 GPA	14.8 GPA
Propellant:	CO2	CO2	CO2	CO2	CO2
Tank Mix (Y/N):	Y	Y	Y	Y	Y

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	ARM Action Codes	# Subsamples, Dec.	Visual GOSHI stand loss percnet May-19-03	GOSHI standcounts #/7ft May-06-03 61 DA-A	GOSHI standcounts #/7ft May-14-03 61 DA-A	GOSHI standcounts #/7ft Jun-02-03 61 DA-A	plant1 GOSHI shoot ht cm May-23-03	plant2 GOSHI shoot ht cm May-23-03	plant3 GOSHI shoot ht cm May-23-03
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7				
1	4 WBP WeatherMax	21	oz/a	1.5	20.3	21.5	19.5	15.3	15.5	12.6				
2	4 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	1.5	19.8	20.0	19.8	14.8	13.5	12.4				
3	3 WBP WeatherMax	21	oz/a	4.8	20.3	19.8	19.0	16.8	15.4	17.5				
4	3 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	4.0	19.0	19.5	20.3	14.0	16.6	16.8				
5	2 WBP WeatherMax	21	oz/a	7.8	20.0	19.3	17.5	16.0	16.8	15.3				
6	2 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	4.3	20.8	21.5	18.3	14.0	15.5	14.3				
7	1 WBP WeatherMax	21	oz/a	12.5	18.3	19.3	15.3	14.3	15.5	16.4				
8	1 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	12.5	19.0	18.5	14.8	14.0	14.5	14.3				
9	PRE WeatherMax	21	oz/a	11.5	20.8	19.0	16.8	15.6	15.5	15.3				
10	PRE WeatherMax Harmony Extra	21 0.5	oz/a oz/a	12.5	19.3	21.0	15.8	14.0	16.0	15.1				
11	Non-treated			9.0	21.8	21.0	18.3	16.5	15.6	14.0				
12	Weed free			0.0	20.8	20.0	20.3	16.4	12.5	16.0				
	LSD (P=.05)			4.11	3.01	3.06	1.78	3.76	4.55	4.12				
	Standard Deviation			2.84	2.09	2.12	1.23	2.60	3.15	2.86				
	CV			41.76	10.44	10.57	6.86	17.22	20.66	19.07				
	Bartlett's X2			18.254	7.717	11.876	5.501	6.287	8.166	3.703				
	P(Bartlett's X2)			0.051	0.656	0.373	0.904	0.854	0.698	0.978				

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

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Weed Code	plant4 GOSHI shoot ht cm May-23-03	plant5 GOSHI shoot ht cm May-23-03	Average GOSHI shoot ht cm May-23-03	plant1 GOSHI shoot wt grams May-23-03	plant2 GOSHI shoot wt grams May-23-03	plant3 GOSHI shoot wt grams May-23-03	plant4 GOSHI shoot wt grams May-23-03	plant5 GOSHI shoot wt grams May-23-03
Crop Code								
Rating Data Type								
Rating Unit								
Rating Date								
Trt-Eval Interval								
ARM Action Codes			T1					
# Subsamples, Dec.								
Trt No.								
Treatment Name								
Rate								
Unit								
	8	9	10	11	12	13	14	15
1 4 WBP WeatherMax	16.8	16.8	15.4	3.0	2.9	3.1	3.6	3.8
2 4 WBP WeatherMax Harmony Extra	15.0	15.5	14.2	2.5	2.5	3.5	3.3	3.8
3 3 WBP WeatherMax	17.4	15.4	16.5	3.8	3.2	3.1	4.2	2.5
4 3 WBP WeatherMax Harmony Extra	11.4	12.8	14.3	2.6	3.4	3.5	1.8	2.3
5 2 WBP WeatherMax	15.4	14.1	15.5	2.8	3.3	3.0	3.4	2.2
6 2 WBP WeatherMax Harmony Extra	17.1	16.6	15.5	2.7	2.9	2.9	3.4	3.0
7 1 WBP WeatherMax	15.4	14.1	15.1	2.8	2.7	3.1	2.7	2.9
8 1 WBP WeatherMax Harmony Extra	16.5	16.3	15.1	3.0	3.3	3.2	3.6	3.2
9 PRE WeatherMax	14.0	13.0	14.7	2.9	2.5	2.5	2.5	2.0
10 PRE WeatherMax Harmony Extra	14.9	15.1	15.0	2.7	3.4	3.0	2.3	3.1
11 Non-treated	18.0	15.4	15.9	2.7	3.0	1.9	3.5	2.4
12 Weed free	13.9	14.9	14.7	3.3	1.9	3.3	2.5	2.6
LSD (P=.05)	4.17	4.01	2.31	1.51	1.46	1.31	1.45	1.20
Standard Deviation	2.89	2.78	1.60	1.05	1.01	0.91	1.01	0.83
CV	18.69	18.55	10.53	36.19	34.71	30.14	32.79	29.32
Bartlett's X2	7.862	5.645	3.397	18.007	8.993	13.52	7.697	13.653
P(Bartlett's X2)	0.726	0.896	0.984	0.081	0.623	0.261	0.74	0.253

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

Column 10: T1 = ((C5)+(C6)+(C7)+(C8)+(C9))/5

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Weed Code	Average GOSHI shoot wt grams	plant1 GOSHI root ht cm	plant2 GOSHI root ht cm	plant3 GOSHI root ht cm	plant4 GOSHI root ht cm	plant5 GOSHI root ht cm	Average GOSHI root length cm	plant1 GOSHI root wt grams			
Crop Code											
Rating Data Type											
Rating Unit											
Rating Date	May-23-03	May-23-03	May-23-03	May-23-03	May-23-03	May-23-03	May-23-03	May-23-03			
Trt-Eval Interval											
ARM Action Codes	T2						T3				
# Subsamples, Dec.											
Trt No.	Treatment Name	Rate	Unit	16	17	18	19	20	21	22	23
1	4 WBP WeatherMax	21	oz/a	3.3	12.8	12.3	11.0	12.1	15.1	12.7	0.5
2	4 WBP WeatherMax Harmony Extra	21	oz/a	3.1	11.6	10.0	12.3	14.3	13.6	12.4	0.4
		0.5	oz/a								
3	3 WBP WeatherMax	21	oz/a	3.4	12.4	12.5	12.6	13.1	11.0	12.3	0.5
4	3 WBP WeatherMax Harmony Extra	21	oz/a	2.7	13.5	13.8	13.3	13.0	11.8	13.1	0.4
		0.5	oz/a								
5	2 WBP WeatherMax	21	oz/a	2.9	11.8	11.6	10.8	10.4	9.6	10.8	0.4
6	2 WBP WeatherMax Harmony Extra	21	oz/a	3.0	13.3	12.8	12.3	11.4	13.0	12.5	0.5
		0.5	oz/a								
7	1 WBP WeatherMax	21	oz/a	2.8	11.0	11.3	13.8	13.0	12.6	12.3	0.5
8	1 WBP WeatherMax Harmony Extra	21	oz/a	3.2	12.0	11.3	13.4	13.4	13.3	12.7	0.4
		0.5	oz/a								
9	PRE WeatherMax	21	oz/a	2.5	13.0	12.9	12.8	12.4	10.3	12.3	0.5
10	PRE WeatherMax Harmony Extra	21	oz/a	2.9	12.0	11.1	11.0	11.5	10.8	11.3	0.5
		0.5	oz/a								
11	Non-treated			2.7	11.8	11.9	11.5	10.8	11.5	11.5	0.6
12	Weed free			2.7	11.0	8.8	13.6	11.6	11.4	11.3	0.4
LSD (P=.05)				0.85	3.66	3.66	4.23	4.34	4.56	2.65	0.22
Standard Deviation				0.59	2.53	2.53	2.93	3.01	3.16	1.83	0.15
CV				20.02	20.82	21.71	23.75	24.55	26.34	15.17	32.25
Bartlett's X2				11.372	22.122	13.866	11.722	21.13	21.167	19.87	6.633
P(Bartlett's X2)				0.413	0.023*	0.241	0.385	0.032*	0.032*	0.047*	0.828

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

Column 16: T2 = $([C11]+[C12]+[C13]+[C14]+[C15])/5$

Column 22: T3 = $([C17]+[C18]+[C19]+[C20]+[C21])/5$

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Weed Code	plant2	plant3	plant4	plant5	Average	seed	seed			
Crop Code	GOSHI	GOSHI	GOSHI	GOSHI	GOSHI	yield	yield			
Rating Data Type	root wt	root wt	root wt	root wt	root wt	weight	weight			
Rating Unit	grams	grams	grams	grams	grams	lb/plot	lb/A			
Rating Date	May-23-03	May-23-03	May-23-03	May-23-03	May-23-03	Sep-15-03	Sep-15-03			
Trt-Eval Interval										
ARM Action Codes					T4		TY5			
# Subsamples, Dec.							1			
Trt No.	Treatment Name	Rate	Unit	24	25	26	27	28	29	30
1	4 WBP WeatherMax	21	oz/a	0.5	0.4	0.5	0.5	0.5	12.1	3499.3
2	4 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	0.3	0.4	0.5	0.6	0.5	12.2	3534.2
3	3 WBP WeatherMax	21	oz/a	0.4	0.5	0.5	0.4	0.5	11.4	3323.6
4	3 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	0.6	0.5	0.4	0.5	0.5	12.0	3481.9
5	2 WBP WeatherMax	21	oz/a	0.6	0.5	0.5	0.3	0.5	11.4	3306.2
6	2 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	0.6	0.4	0.5	0.5	0.5	11.5	3330.9
7	1 WBP WeatherMax	21	oz/a	0.4	0.6	0.5	0.4	0.5	12.2	3550.1
8	1 WBP WeatherMax Harmony Extra	21 0.5	oz/a oz/a	0.5	0.5	0.6	0.5	0.5	9.9	2867.7
9	PRE WeatherMax	21	oz/a	0.4	0.3	0.4	0.3	0.4	10.4	3017.3
10	PRE WeatherMax Harmony Extra	21 0.5	oz/a oz/a	0.5	0.4	0.5	0.5	0.5	11.0	3188.6
11	Non-treated			0.5	0.4	0.5	0.4	0.5	11.3	3288.8
12	Weed free			0.3	0.5	0.4	0.5	0.4	10.5	3041.9
LSD (P=.05)				0.16	0.16	0.17	0.18	0.09	1.56	454.47
Standard Deviation				0.11	0.11	0.12	0.12	0.06	1.08	314.75
CV				24.07	24.98	25.5	28.53	13.45	9.58	9.58
Bartlett's X2				9.216	18.085	13.337	16.176	8.953	13.182	13.182
P(Bartlett's X2)				0.602	0.08	0.272	0.135	0.626	0.282	0.282

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

Column 28: T4 = ([C23]+[C24]+[C25]+[C26]+[C27])/5

Column 30: TY5 = 290.4*[C29]

Trial Comments

OBJECTIVE: Determine cotton response to planting into wild radish at varying levels of radish control.

RESULTS AND DISCUSSION:

Visual estimates of stand loss (14 day after emergence):

1. Applying either herbicide treatment at 2, 3, or 4 WBP provided less than an estimated 8% loss in stand compared to the weed free control.
2. Applying these herbicide treatments 1 WBP, 0 WBP, or not all caused a 9 to 12% stand loss compared to the weed free control.

Stand counts (per seven row feet):

1. At 1 day after emergence stand counts were similar and ranged from 18 to 20 plants. Thus, radish trash did not physically affect plant stand.
2. At 9 d after emergence, plant stands were still similar among treatments ranging from 18 to 21 plants per seven row feet. However, some plants did not appear healthy.
3. At 27 d after emergence, plant stands were negatively impacted when treatments were applied 1 WBP, 0 WBP, or no treatment when compared to the weed free control. No clue why stand loss is generally greatest with the 1 WBP treatment.

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Shoot height measurements (averaged over 5 plants per plot):

1. Treatments had no effects.

Shoot weights (averaged over 5 plants per plot):

1. Treatments had no effects.

Root height measurements (averaged over 5 plants per plot)

1. Treatments had no effects.

Root weights (averaged over 5 plants per plot)

1. Treatments had no effects.

COTTON YIELD:

1. Treatments had no effects.

CONCLUSIONS:

1. Stand counts were affected by wild radish present at time of planting. Dont know if loss of stand was because of seedling disease or alleopathic affects????
2. Other variables were not affected and plant stand loss would not expect to affect yields during this growing season.

GENERAL COMMENTS:

1. Applications applied 4 WBP provided greater than 95% control at planting.
2. Application applied 3 WBP provided greater than 95% control at planting.
3. Applications applied 2 WBP provided 70 to 88% control at planting.
4. Applications applied 1 WBP provided 30 to 60% control at planting.