

University of Georgia

Tomato tolerance to sulfentrazone.

Trial ID: veg11-03
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:** excellent
Postal Code: 31794 **Initiation Date:** Feb-20-03
Country: USA

Conducted Under GLP (Y/N): N

Conducted Under GEP (Y/N): N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	.		

Crop 1: LYPES TOMATO **Variety:** Amelia
Planting Date: Mar-18-03 **Planting Method:** transplant
Rate: 1 18" **Depth:** 1.5 "
Row Spacing: 6 feet **Spacing Within Row:** 18 inch **Seed Bed:** plastic
Soil Temperature: 74 F **Soil Moisture:** drip

SITE AND DESIGN

Plot Width, Unit: 6 FT **Plot Length, Unit:** 30 FT **Reps:** 4
Site Type: research station
Tillage Type: conventional **Study Design:** RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand: 94 **% OM:** 1.1 **Texture:** sand
% Silt: 4 **pH:** 5.9 **Soil Name:** Tifton sandy loma
% Clay: 2

Overall Moisture Conditions: drip

APPLICATION DESCRIPTION

	A
Application Date:	Feb-20-03
Time of Day:	11:00am
Application Method:	Broadcast
Application Timing:	PRE
Applic. Placement:	under pla
Air Temp., Unit:	68 F
% Relative Humidity:	45
Wind Velocity, Unit:	2 mph
Dew Presence (Y/N):	N
Soil Temp., Unit:	66 F
Soil Moisture:	moist
% Cloud Cover:	100

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	LYPES PRE
Stage Scale:	.
Height, Unit:	0. .

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WEED STAGE AT EACH APPLICATION

	A
	.
Stage Scale:	.
Density, Unit:	. .

APPLICATION EQUIPMENT

	A
Appl. Equipment:	super-bed
Operating Pressure:	25
Nozzle Type:	flat fan
Nozzle Size:	11002
Nozzle Spacing, Unit:	12 inch
Nozzles/Row:	5
Boom Length, Unit:	6 feet
Boom Height, Unit:	12 inch
Ground Speed, Unit:	3 mph
Carrier:	water
Spray Volume, Unit:	25 GPA
Propellant:	CO2
Tank Mix (Y/N):	Y

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Weed Code	LYCES stunting percent	LYCES stunting percent	LYCES stunting percent	LYCES stunting percent	Average LYCES height inch	LYCES number jumbo	LYCES weight lb jumbo	LYCES number large			
Crop Code	Apr-21-03	May-02-03	May-20-03	May-26-03	Apr-21-03	Jun-16-03	Jun-16-03	Jun-16-03			
Rating Data Type	60 DA-A	71 DA-A	89 DA-A	95 DA-A	60 DA-A	116 DA-A	116 DA-A	116 DA-A			
Rating Unit					T1						
Rating Date											
Trt-Eval Interval											
ARM Action Codes											
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7	8
1	non-treated			0.0	0.0	0.0	0.0	13.7	87.3	52.9	34.3
2	sulfentrazone	0.125	lb ai/a	2.5	2.5	1.3	0.0	13.3	94.3	54.4	39.5
3	sulfentrazone	0.175	lb ai/a	1.3	0.0	0.0	0.0	13.1	104.5	57.9	35.8
4	sulfentrazone	0.225	lb ai/a	6.3	5.0	1.3	0.0	12.9	110.5	65.7	37.3
5	sulfentrazone	0.35	lb ai/a	13.8	11.5	5.0	3.8	11.1	101.5	55.9	36.5
LSD (P=.05)				3.65	3.81	2.11	2.06	1.50	18.72	13.76	12.23
Standard Deviation				2.37	2.47	1.37	1.34	0.97	12.15	8.93	7.94
CV				49.93	65.0	91.29	178.06	7.58	12.2	15.57	21.66
Bartlett's X2				0.09	0.323	0.0	0.0	7.61	6.233	4.33	0.699
P(Bartlett's X2)				0.993	0.57	1.00	.	0.107	0.182	0.363	0.951

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

Column 5: T1 = ([C18]+[C19]+[C20]+[C21]+[C22]+[C23]+[C24]+[C25]+[C26]+[C27])/10

University of Georgia

Weed Code								Plant 1
Crop Code	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES
Rating Data Type	weight lb	number	weight lb	number	weight lb	number	weight lb	height
Rating Unit	large	medium	medium	small	small	cull	cull	in
Rating Date	Jun-16-03	Jun-16-03	Jun-16-03	Jun-16-03	Jun-16-03	Jun-16-03	Jun-16-03	Apr-21-03
Trt-Eval Interval	116 DA-A	116 DA-A	116 DA-A	116 DA-A	116 DA-A	116 DA-A	116 DA-A	42 DA-A
ARM Action Codes								
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate	Rate
		Unit	Unit	Unit	Unit	Unit	Unit	Unit
1	non-treated							
		12.0	17.8	4.1	52.8	5.2	17.8	10.1
2	sulfentrazone	0.125 lb ai/a	13.6	19.8	4.6	40.3	4.0	17.5
3	sulfentrazone	0.175 lb ai/a	14.7	18.0	3.9	46.0	4.4	27.8
4	sulfentrazone	0.225 lb ai/a	12.4	13.0	2.9	28.0	2.7	18.3
5	sulfentrazone	0.35 lb ai/a	12.1	17.5	3.8	37.3	3.2	20.3
	LSD (P=.05)	5.32	5.09	1.36	32.32	3.05	13.26	8.13
	Standard Deviation	3.45	3.30	0.88	20.98	1.98	8.61	5.28
	CV	26.65	19.2	22.85	51.35	51.06	42.41	49.94
	Bartlett's X2	1.49	2.898	4.178	1.773	2.489	9.536	10.871
	P(Bartlett's X2)	0.828	0.575	0.382	0.778	0.647	0.049*	0.028*

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

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Weed Code	Plant 2	Plant 3	Plant 4	Plant 5	Plant 6	Plant 7	Plant 8	Plant 9			
Crop Code	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES	LYCES			
Rating Data Type	height	height	height	height	height	height	height	height			
Rating Unit	in	in	in	in	in	in	in	in			
Rating Date	Apr-21-03	Apr-21-03	Apr-21-03	Apr-21-03	Apr-21-03	Apr-21-03	Apr-21-03	Apr-21-03			
Trt-Eval Interval	42 DA-A	42 DA-A	42 DA-A	42 DA-A	42 DA-A	42 DA-A	42 DA-A	42 DA-A			
ARM Action Codes											
Trt No.	Treatment Name	Rate	Rate Unit	19	20	21	22	23	24	25	26
1	non-treated			12.5	12.8	13.3	15.0	12.8	14.3	13.5	14.0
2	sulfentrazone	0.125	lb ai/a	12.8	13.3	12.8	12.8	13.5	14.0	13.5	13.8
3	sulfentrazone	0.175	lb ai/a	12.8	14.0	13.0	13.5	13.0	13.3	12.3	13.3
4	sulfentrazone	0.225	lb ai/a	13.3	13.3	12.0	11.3	12.8	13.3	14.8	13.3
5	sulfentrazone	0.35	lb ai/a	11.3	10.3	11.0	11.3	11.8	10.8	12.0	11.0
LSD (P=.05)				2.63	2.12	1.86	1.96	2.19	2.55	1.98	2.29
Standard Deviation				1.71	1.38	1.21	1.27	1.42	1.65	1.29	1.49
CV				13.66	10.85	9.74	10.0	11.16	12.62	9.76	11.39
Bartlett's X2				12.095	0.369	2.771	4.799	5.265	7.894	0.443	4.197
P(Bartlett's X2)				0.017*	0.985	0.25	0.309	0.261	0.096	0.931	0.241

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

University of Georgia

Weed Code	Plant 10			
Crop Code	LYCES			
Rating Data Type	height			
Rating Unit	in			
Rating Date	Apr-21-03			
Trt-Eval Interval	42 DA-A			
ARM Action Codes				
Trt No.	Treatment Name	Rate	Unit	27
1	non-treated			14.3
2	sulfentrazone	0.125 lb ai/a		13.5
3	sulfentrazone	0.175 lb ai/a		12.3
4	sulfentrazone	0.225 lb ai/a		13.3
5	sulfentrazone	0.35 lb ai/a		11.0
LSD (P=.05)				2.59
Standard Deviation				1.68
CV				13.08
Bartlett's X2				0.65
P(Bartlett's X2)				0.885

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

Trial Comments

GENERAL COMMENTS: Telone C35 at 26 GPA applied on Feb 3. Plastic laid on Feb. 20. Herbicides applied on Feb. 20. Tomato (Amelia) planted on March 18.

TOMATO RESPONSE:

- 1) Visual stunting was noted with sulfentrazone at 0.225 lb ai (6%) and 0.35 lb ai (14%) at 4 weeks after transplanting.
- 2) At 6 and 8 wk after transplanting injury was less than 12 and 5%, respectively, with rates of sulfentrazone.

PLANT HEIGHT (averaged over 10 plants per plot):

- 1) Sulfentrazone reduced tomato height by 21% only at 0.35 lb ai/A at 4 weeks after transplanting.

YIELD (a once over harvest was conducted as to evaluate effect on fruit maturity more precisely):

Jumbo:

- 1) No rate of sulfentrazone negatively impacted tomato fruit number or weight.

Large:

- 1) No rate of sulfentrazone negatively impacted tomato fruit number or weight.

Medium:

- 1) No rate of sulfentrazone negatively impacted tomato fruit number or weight.

Small:

- 1) No rate of sulfentrazone negatively impacted tomato fruit number or weight.

Culls:

- 1) No rate of sulfentrazone negatively impacted tomato fruit number or weight.

CONCLUSIONS:

- 1) Tomato has excellent tolerance to sulfentrazone applied PRE to a preformed bed prior to laying black plastic.
- 2) IR-4 should move forward with residue work with this potential usage.
- 3) The trial needs to be conducted again with a 7 day window between application and planting.