

University of Georgia

Second crop transplant cabbage and squash response to Goal 2 XL and 4 F.

Trial ID: Veg27-07
Location: Ponder Farm

Study Dir.: Stanley Culpepper
Investigator: Stanley Culpepper

Reps: 4 Plots: 6 by 15 feet
Spray vol: 14.8 gal/ac Mix size: 1 liters (min .46301)

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	4
1	None									101	209	303	406
2	Goal	2		L	0.5	LB A/A	PRE	A	16.89 ml/mx	102	204	310	402
3	Goal	4		F	0.5	LB A/A	PRE	A	8.445 ml/mx	103	208	304	401
4	Goal	2		L	1	LB A/A	PRE	A	33.78 ml/mx	104	201	307	410
5	Goal	4		F	1	LB A/A	PRE	A	16.89 ml/mx	105	206	309	407
6	Goal	2		L	0.0625	LB A/A	2WAP	B	2.111 ml/mx	106	203	305	409
7	Goal	4		F	0.0625	LB A/A	2WAP	B	1.056 ml/mx	107	202	308	404
8	Goal	2		L	0.125	LB A/A	2WAP	B	4.223 ml/mx	108	205	306	403
9	Goal	4		F	0.125	LB A/A	2WAP	B	2.111 ml/mx	109	210	301	405
10	Goal	4		F	0.125	LB A/A	PRE	A	2.111 ml/mx	110	207	302	408
	Dual Magnum	7.62		L	12	OZ/A	2WAP	B	6.334 ml/mx				

Sort Order: Treatment

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

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
71.255	ml	Goal	2	L	
38.267	ml	Goal	4	F	
7.918	ml	Dual Magnum	7.62	L	

* 'Per area' calculations based on spray volume= 14.8 gal/ac, mix size= 1 liters (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

Trial Comments

OBJECTIVE: Determine impact of preplant and topical applications of Goal to squash and cabbage being planted into a second crop mulch.

Cabbage Response:

1. Preplant applications of Goal caused less than 5% stunting or leaf speckling throughout the crop.
2. POST applications of Goal did speckle cabbage foliage. Less injury was noted with the 4 F formulation.
3. Injury from POST applications was cosmetic but is not acceptable for recommendations if other management tactics are possible.
4. Dual POST did not impact the crop.
5. Crop heights and cabbage yields were not impacted by herbicide treatments.

Yellow Squash Response:

1. Preplant applications caused 10 to 14% stunting at 25 d after planting.
2. POST applications were devastating to the crop. Similar to cabbage, the 4 F formulation caused less injury.
3. Dual did not impact the squash crop.
4. Squash heights were taken just prior to frost. Compared to the non-treated control, the PRE Goal applications tended to reduce heights slightly while POST applications destroyed the crop.

CONCLUSIONS:

1. One of the greatest needs for weed control in all of vegetable production is a residual herbicide that can be applied over mulch prior to planting a second or third crop on mulch. This research shows applying Goal over the mulch prior to a cabbage crop is acceptable. The data also suggest that with a 7 to 14 day plant back interval (research needed), cucurbit crops may also be tolerant to a preplant application of Goal. This potential label would have a tremendous benefit for nearly all of Georgia's second and third crop on mulch.
2. Research on this project is extremely important.

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GENERAL COMMENTS:

1. PRE applications made 1 d prior to transplanting. At 2 day after transplanting, the crop was irrigated with 0.25 inch of irrigation.

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Trial ID: Veg27-07 Study Dir.: Stanley Culpepper
 Location: Ponder Farm Investigator: Stanley Culpepper

Weed Code	BRSOL	BRSOL	BRSOL	BRSOL	plant 1 BRSOL	plant 2 BRSOL	plant 3 BRSOL	plant 4 BRSOL			
Crop Code	injury	injury	injury	injury	ht	ht	ht	ht			
Rating Data Type	%	%	%	%	cm	cm	cm	cm			
Rating Unit											
Rating Date	Oct-04-06	Oct-07-06	Oct-25-06	Nov-03-06	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06			
Assessed By	SC	SC	SC	SC							
Trt-Eval Interval	4 DA-A	7 DA-A	25 DA-A	34 DA-A	47 DA-A	47 DA-A	47 DA-A	47 DA-A			
ARM Action Codes											
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7	8
1	None			0 a	0 a	0 a	0 d	34 a	30 a	30 a	28 a
2	Goal	0.5	LB A/A	1 a	0 a	0 a	0 d	33 a	30 a	33 a	31 a
3	Goal	0.5	LB A/A	2 a	0 a	0 a	0 d	30 a	32 a	32 a	26 a
4	Goal	1	LB A/A	0 a	0 a	1 a	5 d	20 b	25 a	20 b	31 a
5	Goal	1	LB A/A	1 a	0 a	1 a	1 d	29 a	29 a	32 a	29 a
6	Goal	0.0625	LB A/A	0 a	0 a	0 a	32 b	31 a	31 a	30 a	32 a
7	Goal	0.0625	LB A/A	0 a	0 a	0 a	14 c	30 a	28 a	32 a	32 a
8	Goal	0.125	LB A/A	0 a	1 a	0 a	49 a	28 ab	26 a	29 ab	23 a
9	Goal	0.125	LB A/A	0 a	0 a	0 a	15 c	31 a	27 a	32 a	30 a
10	Goal Dual Magnum	0.125 12 OZ/A	LB A/A	0 a	0 a	0 a	0 d	31 a	32 a	32 a	29 a
LSD (P=.05)				2.5	1.1	1.7	7.2	8.5	8.2	8.3	10.1
Standard Deviation				1.7	0.8	1.1	5.0	5.8	5.7	5.7	6.9
CV				387.74	632.46	455.42	42.97	19.77	19.56	19.13	24.0
Bartlett's X2				0.921	0.0	0.0	23.145	27.407	9.415	26.655	13.942
P(Bartlett's X2)				0.631	.	1.00	0.001*	0.001*	0.40	0.002*	0.124

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

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Weed Code	plant 5	plant 6	plant 7	plant 8	plant 9	plant 10	av plant	Harv 1	
Crop Code	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	
Rating Data Type	ht	ht	ht	ht	ht	ht	ht	# mature	
Rating Unit	cm	cm	cm	cm	cm	cm	cm	per plot	
Rating Date	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06	Jan-12-07	
Assessed By									
Trt-Eval Interval	47 DA-A	47 DA-A	47 DA-A	47 DA-A	47 DA-A	47 DA-A	47 DA-A		
ARM Action Codes							T1		
Trt Treatment	Rate								
No. Name	Rate Unit	9	10	11	12	13	14	15	16
1 None		30 a	30 a	31 a	30 a	31 a	29 ab	30 ab	1 a
2 Goal	0.5 LB A/A	32 a	31 a	31 a	34 a	34 a	32 ab	32 a	1 a
3 Goal	0.5 LB A/A	29 a	27 a	31 a	34 a	28 a	31 ab	30 ab	1 a
4 Goal	1 LB A/A	31 a	29 a	29 a	29 a	30 a	28 ab	27 b	2 a
5 Goal	1 LB A/A	30 a	27 a	29 a	29 a	27 a	29 ab	29 ab	2 a
6 Goal	0.0625 LB A/A	34 a	33 a	34 a	32 a	35 a	34 a	32 a	1 a
7 Goal	0.0625 LB A/A	32 a	33 a	25 a	29 a	31 a	29 ab	30 ab	1 a
8 Goal	0.125 LB A/A	32 a	30 a	27 a	31 a	32 a	23 b	28 ab	1 a
9 Goal	0.125 LB A/A	30 a	30 a	31 a	33 a	34 a	34 a	31 ab	2 a
10 Goal	0.125 LB A/A	31 a	27 a	26 a	29 a	28 a	30 ab	29 ab	1 a
	Dual Magnum 12 OZ/A								
LSD (P=.05)		4.6	8.5	10.3	7.6	6.8	8.8	3.8	2.3
Standard Deviation		3.2	5.8	7.1	5.2	4.7	6.0	2.6	1.6
CV		10.38	19.76	24.26	16.9	15.12	20.3	8.83	130.59
Bartlett's X2		4.399	29.862	21.683	9.779	6.872	22.087	16.53	13.971
P(Bartlett's X2)		0.883	0.001*	0.01*	0.369	0.65	0.009*	0.057	0.123

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

Column 15: T1 = @AVG([C5].[C14])

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Weed Code	Harv 1	Harv 2	Harv 2	Harv 3	Harv 3	Harv 4	Harv 4	4 harves	
Crop Code	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	BRSOL	
Rating Data Type	wt/lb	# mature	wt/lb	# mature	wt/lb	# mature	wt/lb	# mature	
Rating Unit	per plot	per plot	per plot	per plot	per plot	per plot	per plot	per plot	
Rating Date	Jan-12-07	Jan-19-07	Jan-19-07	Jan-25-07	Jan-25-07	Feb-02-07	Feb-02-07	Feb-02-07	
Assessed By									
Trt-Eval Interval									
ARM Action Codes								T2	
Trt Treatment	Rate								
No. Name	Rate Unit	17	18	19	20	21	22	23	24
1 None		4 a	3 a	9 a	2 ab	7 abc	2 a	5 a	8 a
2 Goal	0.5 LB A/A	4 a	3 a	9 a	3 ab	8 ab	1 a	4 a	8 a
3 Goal	0.5 LB A/A	4 a	3 a	10 a	2 ab	7 abc	1 a	4 a	7 a
4 Goal	1 LB A/A	7 a	1 a	5 a	1 b	4 c	2 a	6 a	6 a
5 Goal	1 LB A/A	6 a	2 a	6 a	3 ab	7 abc	2 a	6 a	8 a
6 Goal	0.0625 LB A/A	4 a	3 a	8 a	2 b	6 bc	2 a	8 a	7 a
7 Goal	0.0625 LB A/A	4 a	2 a	5 a	4 a	10 a	1 a	3 a	7 a
8 Goal	0.125 LB A/A	3 a	2 a	5 a	2 ab	7 abc	2 a	7 a	7 a
9 Goal	0.125 LB A/A	7 a	3 a	8 a	2 ab	7 abc	1 a	3 a	8 a
10 Goal	0.125 LB A/A	4 a	3 a	8 a	2 ab	7 abc	2 a	6 a	8 a
Dual Magnum	12 OZ/A								
LSD (P=.05)		6.9	2.2	5.9	1.6	3.2	1.7	4.1	2.4
Standard Deviation		4.7	1.5	4.1	1.1	2.2	1.2	2.8	1.7
CV		99.78	65.62	55.77	49.17	31.69	70.24	52.83	22.49
Bartlett's X2		5.718	7.588	13.703	9.123	6.037	10.123	5.53	10.756
P(Bartlett's X2)		0.768	0.475	0.133	0.426	0.736	0.341	0.786	0.293

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

Column 24: T2 = [C16]+[C18]+[C20]+[C22]

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Weed Code	4 harves BRSOL	Harv 4 BRSOL	Harv 4 BRSOL	CUUPE injury	CUUPE injury	CUUPE injury	CUUPE injury	plant 1 CUUPE			
Crop Code	wt/lb	# immature	wt/lb	%	%	%	%	ht			
Rating Data Type	per plot	per plot	per plot					cm			
Rating Unit	Feb-02-07	Feb-02-07	Feb-02-07	Oct-04-06	Oct-07-06	Oct-25-06	Nov-03-06	Nov-16-06			
Assessed By				SC	SC	SC	SC				
Trt-Eval Interval				4 DA-A	7 DA-A	25 DA-A	34 DA-A	47 DA-A			
ARM Action Codes	T3										
Trt No.	Treatment Name	Rate	Unit	25	26	27	28	29	30	31	32
1	None			25 a	2 a	5 a	0 a	0 a	0 b	0 d	16 a
2	Goal	0.5	LB A/A	26 a	2 a	4 a	0 a	1 a	10 a	1 d	15 a
3	Goal	0.5	LB A/A	25 a	3 a	5 a	0 a	0 a	12 a	3 d	17 a
4	Goal	1	LB A/A	22 a	3 a	4 a	0 a	0 a	14 a	11 d	12 ab
5	Goal	1	LB A/A	25 a	2 a	3 a	0 a	2 a	12 a	3 d	13 a
6	Goal	0.0625	LB A/A	26 a	3 a	5 a	0 a	0 a	0 b	88 ab	1 c
7	Goal	0.0625	LB A/A	23 a	2 a	4 a	0 a	0 a	0 b	76 c	9 abc
8	Goal	0.125	LB A/A	22 a	3 a	4 a	0 a	1 a	0 b	97 a	4 bc
9	Goal	0.125	LB A/A	26 a	2 a	4 a	0 a	0 a	0 b	78 bc	3 c
10	Goal Dual Magnum	0.125 12 OZ/A	LB A/A	25 a	2 a	5 a	0 a	0 a	0 b	6 d	14 a
LSD (P=.05)				6.1	2.7	3.3	0.0	1.9	5.3	10.0	7.9
Standard Deviation				4.2	1.9	2.3	0.0	1.3	3.6	6.9	5.5
CV				17.29	82.4	53.22	0.0	378.56	76.57	19.06	52.77
Bartlett's X2				12.273	8.194	14.525	0.0	1.311	7.11	18.798	18.847
P(Bartlett's X2)				0.198	0.515	0.105	.	0.519	0.068	0.016*	0.027*

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

Column 25: T3 = [C17]+[C19]+[C21]+[C23]

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Weed Code		plant 2	plant 3	plant 4	plant 5	Avg5plan		
Crop Code		CUUPE	CUUPE	CUUPE	CUUPE	CUUPE		
Rating Data Type		ht	ht	ht	ht	# mature		
Rating Unit		cm	cm	cm	cm	per plot		
Rating Date		Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06	Nov-16-06		
Assessed By								
Trt-Eval Interval		47 DA-A	47 DA-A	47 DA-A	47 DA-A	47 DA-A		
ARM Action Codes						T4		
Trt No.	Treatment Name	Rate	Unit	33	34	35	36	37
1	None			17 a	18 ab	16 ab	19 a	17 a
2	Goal	0.5	LB A/A	11 a	18 ab	17 ab	16 ab	15 a
3	Goal	0.5	LB A/A	15 a	17 ab	16 ab	16 ab	16 a
4	Goal	1	LB A/A	18 a	14 b	13 b	16 ab	14 a
5	Goal	1	LB A/A	14 a	15 b	15 ab	16 ab	15 a
6	Goal	0.0625	LB A/A	1 b	1 c	1 c	1 c	1 c
7	Goal	0.0625	LB A/A	11 a	4 c	10 b	10 b	9 b
8	Goal	0.125	LB A/A	0 b	0 c	0 c	0 c	1 c
9	Goal	0.125	LB A/A	2 b	5 c	3 c	3 c	3 c
10	Goal Dual Magnum	0.125 12	LB A/A OZ/A	17 a	23 a	21 a	20 a	19 a
LSD (P=.05)				7.0	6.2	5.9	5.5	4.5
Standard Deviation				4.8	4.3	4.1	3.8	3.1
CV				45.87	37.95	36.76	33.12	28.08
Bartlett's X2				20.522	12.691	8.201	12.147	10.094
P(Bartlett's X2)				0.009*	0.123	0.414	0.145	0.343

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

Column 37: T4 = @AVG([C32].[C36])

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Second crop transplant cabbage and squash response to Goal 2 XL and 4 F.

Trial ID: Veg27-07 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
Postal Code: 31794

TRIAL LOCATION

City: TyTy **Trial Status:** completed
State/Prov.: GA **Trial Reliability:** excellent
Postal Code: 31795 **Initiation Date:** Sep-30-06
Country: USA **Planned Completion Date:** _____
E-Longitude of LL Corner °: _____ **N-Latitude of LL Corner °:** _____
Altitude of LL Corner: _____ **Unit:** _____ **Angle y-axis to North °:** _____
Directions: _____

COOPERATOR/LANDOWNER

Cooperator: _____ **Country:** _____
Org: _____ **Phone No:** _____
Address 1: _____ **Fax No:** _____
Address 2: _____
City: _____
State/Prov: _____
Postal Code: _____

Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N
Guidelines: _____ **Guideline Description:** _____

Objective: _____

Conclusions: _____

CROP AND WEED DESCRIPTION			
Weed	Code	Common Name	Scientific Name
1.			

Crop 1: BRSOL cabbage **Variety:** Bravo
Planting Date: Oct-01-06 **Planting Method:** transplant
Rate: 1 ft **Depth:** 1 in **Perennial Age:** _____
Row Spacing: 15 inch **Spacing Within Row:** 12 inch **Seed Bed:** 2nd crop mulch
Soil Temperature: 81 F **Soil Moisture:** drip **Emergence Date:** _____

Crop 2: CUUPE yellow squash **Variety:** Enterprise
Planting Date: Oct-01-06 **Planting Method:** transplant
Rate: 1 ft **Depth:** 1 in **Perennial Age:** _____
Row Spacing: 15 inch **Spacing Within Row:** 12 inch **Seed Bed:** 2nd crop mulch
Soil Temperature: 81 F **Soil Moisture:** drip **Emergence Date:** _____

SITE AND DESIGN

Plot Width, Unit: 6 FT **Plot Length, Unit:** 15 FT **Reps:** 4
Site Type: Ponder farm 2nd crop mulch
Tillage Type: conventional **Study Design:** RANDOMIZED COMPLETE BLOCK

Trial Initiation Comments: _____

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	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: 92	% OM: 1.1	Texture: sand	
% Silt: 5	pH: 6.3	Soil Name: Tifton sandy loam	
% Clay: 3	CEC: 0.	Fert. Level: _____	

ADDITIONAL MEASURED ELEMENTS

Element	Quantity	Unit

MOISTURE CONDITIONS

	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

Overall Moisture Conditions: drip irrigation

Closest Weather Station: Ponder research farm

Distance: 250 Unit: yd

APPLICATION DESCRIPTION

	A	B
Application Date:	Sep-30-06	Oct-25-06
Time of Day:	8:00 am	12:00 pm
Application Method:	broadcast	broadcast
Application Timing:	preplant	POST
Applic. Placement:	over mulc	overtop
Air Temp., Unit:	77 F	64 F
% Relative Humidity:	34	48
Wind Velocity, Unit:	1 mph	1 mph
Dew Presence (Y/N):	Y	N
Water Hardness:		
Soil Temp., Unit:	78 F	68 F
Soil Moisture:	deep	moist
% Cloud Cover:	0	50

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	BRSOL preplant	BRSOL 2 WAP
Stage Scale:	not plant	8 lf
Height, Unit:	0 inch	8 in
Crop 2 Code, Stage:	CUUPE preplant	CUUPE 2 WAP
Stage Scale:	not plant	7 leaf
Height, Unit:	0 inch	6 inch

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WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:		
Stage Scale:		
Density, Unit:		

APPLICATION EQUIPMENT

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

Trt No	Treatment Application Comment