

# University of Georgia

## Impact of cover crop on managing glyphosate-resistant Palmer amaranth.

Trial ID: C1-08  
Location: Macon County

Protocol ID:  
Study Director: Kichler, Sosnoskie, Culpepper  
Investigator: Stanley Culpepper

Reps: 3                      Plots: 12 by 30 feet  
Spray vol: 14.8 gal/ac      Mix size: 1.5 liters (min 1.389)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Growth Unit	Appl Stage	Amt Product to Measure	Plot No. By Rep			
									1	2	3	
1	Wheat 4 WBP No herbicide								102	208	302	
2	Wheat 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L		2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	110	216	310
3	Wheat 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	3.8 2 2.34 7.64 4 6	L L L L L L		2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 18.21 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	118	224	318
4	Wheat 2 WBP No herbicide								101	207	301	
5	Wheat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L		2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	109	215	309
6	Wheat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	3.8 2 2.34 7.64 4 6	L L L L L L		2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 18.21 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	117	223	317
7	Rye 4 WBP No herbicide								103	205	303	
8	Rye 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L		2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	111	213	311

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Reps: 3

Plots: 12 by 30 feet

Spray vol: 14.8 gal/ac

Mix size: 1.5 liters (min 1.389)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Amt Product to Measure	Plot No. By Rep		
										1	2	3
9	Rye 4 WBP									119	221	319
	Prowl H20	3.8	L		2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2	L		1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34	L		23	OZ/A	POST	B	18.21 ml/mx			
	Dual Magnum	7.64	L		1	PT/A	POST	B	12.67 ml/mx			
	Direx	4	L		2	PT/A	PD	C	25.34 ml/mx			
	MSMA	6	L		2	LB A/A	PD	C	33.78 ml/mx			
10	Rye 2 WBP No herbicide									104	206	304
11	Rye 2 WBP									112	214	312
	Prowl H20	3.8	L		2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2	L		1	PT/A	PRE	A	12.67 ml/mx			
	Roudup WeatherMax	4.5	L		22	OZ/A	POST	B	17.42 ml/mx			
	Dual Magnum	7.64	L		1	PT/A	POST	B	12.67 ml/mx			
	Direx	4	L		2	PT/A	PD	C	25.34 ml/mx			
	MSMA	6	L		2	LB A/A	PD	C	33.78 ml/mx			
12	Rye 2 WBP									120	222	320
	Prowl H20	3.8	L		2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2	L		1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34	L		23	OZ/A	POST	B	18.21 ml/mx			
	Dual Magnum	7.64	L		1	PT/A	POST	B	12.67 ml/mx			
	Direx	4	L		2	PT/A	PD	C	25.34 ml/mx			
	MSMA	6	L		2	LB A/A	PD	C	33.78 ml/mx			
13	Oat 4 WBP No herbicide									106	204	306
14	Oat 4 WBP									114	212	314
	Prowl H20	3.8	L		2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2	L		1	PT/A	PRE	A	12.67 ml/mx			
	Roudup WeatherMax	4.5	L		22	OZ/A	POST	B	17.42 ml/mx			
	Dual Magnum	7.64	L		1	PT/A	POST	B	12.67 ml/mx			
	Direx	4	L		2	PT/A	PD	C	25.34 ml/mx			
	MSMA	6	L		2	LB A/A	PD	C	33.78 ml/mx			
15	Oat 4 WBP									122	220	322
	Prowl H20	3.8	L		2.1	PT/A	PRE	A	26.6 ml/mx			
	Reflex	2	L		1	PT/A	PRE	A	12.67 ml/mx			
	Ignite	2.34	L		23	OZ/A	POST	B	18.21 ml/mx			
	Dual Magnum	7.64	L		1	PT/A	POST	B	12.67 ml/mx			
	Direx	4	L		2	PT/A	PD	C	25.34 ml/mx			
	MSMA	6	L		2	LB A/A	PD	C	33.78 ml/mx			
16	Oat 2 WBP No herbicide									105	203	305

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Reps: 3

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Mix size: 1.5 liters (min 1.389)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Growth Unit	Appl Stage	Appl Code	Amt Product to Measure	Plot No. By Rep		
										1	2	3
17	Oat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L	L L L L L L	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	113	211	313
18	Oat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	3.8 2 2.34 7.64 4 6	L L L L L L	L L L L L L	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 18.21 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	121	219	321
19	No cover 4 WBP No herbicide									107	201	307
20	No cover 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L	L L L L L L	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	115	209	315
21	No cover 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	3.8 2 2.34 7.64 4 6	L L L L L L	L L L L L L	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 18.21 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	123	217	323
22	No cover 2 WBP No herbicide									108	202	308
23	No cover 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	3.8 2 4.5 7.64 4 6	L L L L L L	L L L L L L	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 17.42 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	116	210	316
24	No cover 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	3.8 2 2.34 7.64 4 6	L L L L L L	L L L L L L	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	PRE PRE POST POST PD PD	A A B B C C	26.6 ml/mx 12.67 ml/mx 18.21 ml/mx 12.67 ml/mx 25.34 ml/mx 33.78 ml/mx	124	218	324

Sort Order: Treatment

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Reps: 3                      Plots: 12 by 30 feet  
 Spray vol: 14.8 gal/ac      Mix size: 1.5 liters (min 1.389)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Rate	Form Type	Rate Stage	Growth Code	Appl to Measure	Amt Product 1	Product 2	Plot No. 3	By Rep
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Product quantities required for listed treatments and applications in one trial:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
532.038	ml	Prowl H20	3.8	L	
253.352	ml	Reflex	2	L	
174.198	ml	Roudup WeatherMax	4.5	L	
253.352	ml	Dual Magnum	7.64	L	
506.703	ml	Direx	4	L	
675.604	ml	MSMA	6	L	
182.116	ml	Ignite	2.34	L	

\* 'Per area' calculations based on spray volume= 14.8 gal/ac, mix size= 1.5 liters (mix size basis).  
 \* Product amount calculations increased 25 % for overage adjustment.

### Trial Comments

**OBJECTIVE:** Determine the most effective system in conservation tillage to control glyphosate-resistant Palmer amaranth.

**Visual Injury:**

1. Pre herbicides caused no visual injury.
2. Roundup + Dual Magnum injured cotton approximately 15% at the most injourious point.
3. Ignite + Dual Magnum injured cotton up to 30% at the most injourious point.
4. Cotton recovered within 2 weeks of POST treatments.
5. PD applications caused little to no visual injury.

**Palmer response:**

1. The highest level of cover crop residue generally provided the greatest level of Palmer suppression.
2. Controlling cover crops 2 WBP was more effective than controlling them 4 WBP, again because of the greater level of residue being generated.
3. Ignite based programs were often 20 to 30% more effective than glyphosate-based programs at harvest.
4. Greater than 90% control was noted at harvest with Ignite based programs when the following cover crops and control tactics were used: 1: wheat controlled 4 WBP; 2) rye controlled 2 or 4 WBP; 3) oats controlled 2 or 4 WBP; and 4) no cover.

**Cotton Yield:**

1. Yield followed trends in Palmer control.
2. Greatest yields were noted with Ignite based programs when the following cover crops and control tactics were used: 1: wheat controlled 4 WBP; 2) rye controlled 2 or 4 WBP; 3) oats controlled 2 or 4 WBP; and 4) no cover.

**GENERAL COMMENTS:**

1. On Nov 12, Wrens rye was seeded at 83 lb/A; wheat was seeded at 96 lb/A and Coker 227 oat was seeded at 80 lb/A.
2. Cover crops were controlled as follows: 4 WBP on March 29 and 2 WBP on April 11.
3. On May 5, 2008 moisture levels in the cover crops were as follows:  
 Early rye - 8.3% moisture  
 Early Wheat - 9.5% moisture  
 Late Wheat - 7.2% moisture  
 Early oats - 5% moisture  
 Late rye - 6% moisture  
 Late oats - 7% moisture
4. Rainfall that occurred early in the season is as follows:  
 Apr 28 1 in  
 May 9 0.4 in  
 May 11 2.7 in  
 May 20 0.2 in

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May 24	0.3 in
Jun 11	0.9 in
Jun 17	0.6 in
Jun 22	1 in
Jul 5	0.5 in
Jul 21	1 in

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 Location: Macon County

Protocol ID:  
 Study Director: Kichler, Sosnoskie, Culpepper  
 Investigator: Stanley Culpepper

Pest Type					W Weed	W Weed	W Weed			
Pest Code	INJURY	INJURY	INJURY	INJURY	AMAPA	AMAPA	AMAPA			
Crop Code	GOSHI	GOSHI	GOSHI	GOSHI						
BBCH Scale	BCOT	BCOT	BCOT	BCOT						
Rating Date	May-22-08	May-26-08	May-30-08	Jun-07-08	May-22-08	May-30-08	Jun-25-08			
Rating Data Type	control	control	control	control	control	control	control			
Rating Unit	%	%	%	%	%	%	%			
Pest Stage										
Days After First/Last Applic.	0	4	8	16	0	8	34			
ARM Action Codes										
Number of Decimals										
Trt No.	Treatment Name	Rate	Unit							
				1	2	3	4			
				5	6	7				
1	Wheat 4 WBP No herbicide			0 a	0 c	0 c	0 b	18 h	18 h	7 hi
2	Wheat 4 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Roudup WeatherMax 22 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A			0 a	15 b	12 b	0 b	82 cd	73 e	60 ef
3	Wheat 4 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Ignite 23 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A			0 a	30 a	23 a	4 a	78 d	98 a	94 a
4	Wheat 2 WBP No herbicide			0 a	0 c	0 c	0 b	35 fg	27 gh	28 g
5	Wheat 2 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Roudup WeatherMax 22 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A			0 a	15 b	12 b	0 b	94 ab	84 cd	76 cd
6	Wheat 2 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Ignite 23 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A			0 a	30 a	25 a	6 a	95 a	100 a	98 a
7	Rye 4 WBP No herbicide			0 a	0 c	0 c	0 b	33 g	27 gh	30 g

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Pest Type					W Weed AMAPA	W Weed AMAPA	W Weed AMAPA			
Pest Code		INJURY GOSHI	INJURY GOSHI	INJURY GOSHI	INJURY GOSHI					
Crop Code		BCOT	BCOT	BCOT	BCOT					
BBCH Scale										
Rating Date		May-22-08	May-26-08	May-30-08	Jun-07-08	May-22-08	May-30-08	Jun-25-08		
Rating Data Type		control	control	control	control	control	control	control		
Rating Unit		%	%	%	%	%	%	%		
Pest Stage										
Days After First/Last Applic.		0	4	8	16	0	8	34		
ARM Action Codes										
Number of Decimals										
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7
8	Rye 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	0 a	15 b	13 b	5 a	90 ab	83 cd	83 a-d
9	Rye 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	0 a	30 a	23 a	0 b	90 ab	100 a	95 a
10	Rye 2 WBP No herbicide			0 a	0 c	0 c	5 a	42 ef	40 f	33 g
11	Rye 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	0 a	15 b	13 b	0 b	93 ab	89 bc	87 abc
12	Rye 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	0 a	30 a	23 a	5 a	95 a	100 a	98 a
13	Oat 4 WBP No herbicide			0 a	0 c	0 c	0 b	30 g	28 g	18 gh
14	Oat 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A	0 a	15 b	12 b	0 b	87 bc	85 cd	72 de

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Pest Type					W Weed AMAPA	W Weed AMAPA	W Weed AMAPA			
Pest Code		INJURY	INJURY	INJURY	INJURY					
Crop Code		GOSHI	GOSHI	GOSHI	GOSHI					
BBCH Scale		BCOT	BCOT	BCOT	BCOT					
Rating Date		May-22-08	May-26-08	May-30-08	Jun-07-08	May-22-08	May-30-08	Jun-25-08		
Rating Data Type		control	control	control	control	control	control	control		
Rating Unit		%	%	%	%	%	%	%		
Pest Stage										
Days After First/Last Applic.		0	4	8	16	0	8	34		
ARM Action Codes										
Number of Decimals										
Trt No.	Treatment Name	Rate	Unit	1	2	3	4	5	6	7
15	Oat 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA			0 a	30 a	23 a	4 a	87 bc	100 a	92 ab
		2.1	PT/A							
		1	PT/A							
		23	OZ/A							
		1	PT/A							
		2	PT/A							
		2	LB A/A							
16	Oat 2 WBP No herbicide			0 a	0 c	0 c	0 b	45 e	37 f	27 g
17	Oat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA			0 a	15 b	12 b	0 b	92 ab	88 bc	77 bcd
		2.1	PT/A							
		1	PT/A							
		22	OZ/A							
		1	PT/A							
		2	PT/A							
		2	LB A/A							
18	Oat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA			0 a	30 a	23 a	4 a	93 ab	100 a	96 a
		2.1	PT/A							
		1	PT/A							
		23	OZ/A							
		1	PT/A							
		2	PT/A							
		2	LB A/A							
19	No cover 4 WBP No herbicide			0 a	0 c	0 c	0 b	0 i	0 i	0 i
20	No cover 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA			0 a	15 b	13 b	0 b	78 d	77 de	55 f
		2.1	PT/A							
		1	PT/A							
		22	OZ/A							
		1	PT/A							
		2	PT/A							
		2	LB A/A							
21	No cover 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA			0 a	30 a	23 a	5 a	78 d	98 a	95 a
		2.1	PT/A							
		1	PT/A							
		23	OZ/A							
		1	PT/A							
		2	PT/A							
		2	LB A/A							

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Pest Type								
Pest Code		INJURY	INJURY	INJURY	INJURY	W Weed	W Weed	W Weed
Crop Code		GOSHI	GOSHI	GOSHI	GOSHI	AMAPA	AMAPA	AMAPA
BBCH Scale		BCOT	BCOT	BCOT	BCOT			
Rating Date		May-22-08	May-26-08	May-30-08	Jun-07-08	May-22-08	May-30-08	Jun-25-08
Rating Data Type		control	control	control	control	control	control	control
Rating Unit		%	%	%	%	%	%	%
Pest Stage								
Days After First/Last Applic.		0	4	8	16	0	8	34
ARM Action Codes								
Number of Decimals								
Trt Treatment	Rate							
No. Name	Rate Unit	1	2	3	4	5	6	7
22 No cover		0 a	0 c	0 c	0 b	0 i	0 i	0 i
2 WBP								
No herbicide								
23 No cover		0 a	15 b	12 b	0 b	78 d	78 de	52 f
2 WBP								
Prowl H20	2.1 PT/A							
Reflex	1 PT/A							
Roudup WeatherMax	22 OZ/A							
Dual Magnum	1 PT/A							
Direx	2 PT/A							
MSMA	2 LB A/A							
24 No cover		0 a	30 a	23 a	5 a	80 cd	97 ab	92 ab
2 WBP								
Prowl H20	2.1 PT/A							
Reflex	1 PT/A							
Ignite	23 OZ/A							
Dual Magnum	1 PT/A							
Direx	2 PT/A							
MSMA	2 LB A/A							
LSD (P=.05)		0.0	0.0	4.2	1.8	6.9	8.3	13.7
Standard Deviation		0.0	0.0	2.5	1.1	4.2	5.0	8.3
CV		0.0	0.0	21.21	60.36	6.28	7.38	13.59
Bartlett's X2		0.0	0.0	1.415	5.216	8.226	18.711	39.035
P(Bartlett's X2)		.	.	1.00	0.734	0.914	0.227	0.004*

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

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Pest Type	W Weed			W Weed	W Weed	W Weed	MULCH	
Pest Code	AMAPA			AMAPA	AMAPA	AMAPA		
Crop Code		GOSHI	GOSHI					
BBCH Scale		BCOT	BCOT					
Rating Date	Sep-09-08	Oct-17-08	Oct-17-08	May-13-08	Jun-25-08	Sep-25-08	May-13-08	
Rating Data Type	control	seed yld	seed yld	Number	Number	Number	Mass	
Rating Unit	%	lb/plot	lb/acre	m^2	m^2	m^2	g	
Pest Stage				3 WAP	Layby	Harvest		
Days After First/Last Applic.	75	113	113	18	34	91	18	
ARM Action Codes			TY1					
Number of Decimals			1					
Trt Treatment	Rate							
No. Name	Rate Unit	8	9	10	11	12	13	
1 Wheat 4 WBP No herbicide		0 g	0 h	0.0 h	112 c	86 bc	42 bc	68 cde
2 Wheat 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	50 f	2 g	968.0 g	0 d	4 d	2 d	106 a-e
3 Wheat 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	88 ab	3 bcd	1771.4 bcd	0 d	0 d	0 d	68 cde
4 Wheat 2 WBP No herbicide		0 g	0 h	0.0 h	94 c	80 bc	42 bc	159 a-d
5 Wheat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	73 cd	3 c-f	1481.0 c-f	0 d	1 d	6 d	212 a
6 Wheat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	95 a	4 a	2352.2 a	0 d	1 d	0 d	166 abc
7 Rye 4 WBP No herbicide		0 g	0 h	0.0 h	81 c	93 bc	37 c	91 b-e

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Pest Type	W Weed			W Weed	W Weed	W Weed	MULCH		
Pest Code	AMAPA			AMAPA	AMAPA	AMAPA			
Crop Code		GOSHI	GOSHI						
BBCH Scale		BCOT	BCOT						
Rating Date	Sep-09-08	Oct-17-08	Oct-17-08	May-13-08	Jun-25-08	Sep-25-08	May-13-08		
Rating Data Type	control	seed yld	seed yld	Number	Number	Number	Mass		
Rating Unit	%	lb/plot	lb/acre	m^2	m^2	m^2	g		
Pest Stage				3 WAP	Layby	Harvest			
Days After First/Last Applic.	75	113	113	18	34	91	18		
ARM Action Codes			TY1						
Number of Decimals			1						
Trt No.	Treatment Name	Rate							
		Rate Unit							
8	Rye 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	74 cd 2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	8	9	10	11	12	13	14
			74 cd	3 c-f	1481.0 c-f	0 d	2 d	2 d	166 abc
9	Rye 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	91 a 2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	91 a	4 ab	2187.7 ab	0 d	0 d	1 d	181 ab
10	Rye 2 WBP No herbicide	0 g	0 g	0 h	0.0 h	66 c	72 c	35 c	204 a
11	Rye 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	77 bcd 2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	77 bcd	3 cde	1587.5 cde	0 d	0 d	1 d	204 a
12	Rye 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	97 a 2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	97 a	4 a	2400.6 a	0 d	0 d	0 d	189 ab
13	Oat 4 WBP No herbicide	0 g	0 g	0 h	0.0 h	114 c	120 abc	38 c	53 de
14	Oat 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	63 de 2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	63 de	2 efg	1316.5 efg	0 d	1 d	1 d	113 a-d

# University of Georgia

Pest Type	W Weed			W Weed	W Weed	W Weed			
Pest Code	AMAPA			AMAPA	AMAPA	AMAPA	MULCH		
Crop Code		GOSHI	GOSHI						
BBCH Scale		BCOT	BCOT						
Rating Date	Sep-09-08	Oct-17-08	Oct-17-08	May-13-08	Jun-25-08	Sep-25-08	May-13-08		
Rating Data Type	control	seed yld	seed yld	Number	Number	Number	Mass		
Rating Unit	%	lb/plot	lb/acre	m^2	m^2	m^2	g		
Pest Stage				3 WAP	Layby	Harvest			
Days After First/Last Applic.	75	113	113	18	34	91	18		
ARM Action Codes			TY1						
Number of Decimals			1						
Trt No.	Treatment Name	Rate							
		Rate Unit	8	9	10	11	12	13	14
15	Oat 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	  2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	86 abc	3 bc	1868.2 bc	0 d	0 d	1 d	83 b-e
16	Oat 2 WBP No herbicide		0 g	0 h	0.0 h	89 c	100 bc	33 c	166 abc
17	Oat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	  2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	67 d	2 d-g	1364.9 d-g	0 d	2 d	1 d	136 a-d
18	Oat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	  2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	98 a	4 ab	2139.3 ab	0 d	0 d	0 d	181 ab
19	No cover 4 WBP No herbicide		0 g	0 h	0.0 h	282 b	124 ab	47 ab	0 e
20	No cover 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	  2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	52 ef	2 fg	1074.5 fg	0 d	2 d	2 d	0 e
21	No cover 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	  2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	96 a	3 ab	2023.1 ab	0 d	0 d	0 d	0 e

# University of Georgia

Pest Type Pest Code Crop Code BBCH Scale Rating Date Rating Data Type Rating Unit Pest Stage Days After First/Last Applic. ARM Action Codes Number of Decimals	W Weed AMAPA	GOSHI BCOT	GOSHI BCOT	W Weed AMAPA	W Weed AMAPA	W Weed AMAPA	MULCH
	Sep-09-08	Oct-17-08	Oct-17-08	May-13-08	Jun-25-08	Sep-25-08	May-13-08
	control	seed yld	seed yld	Number	Number	Number	Mass
	%	lb/plot	lb/acre	m^2	m^2	m^2	g
	75	113	113	3 WAP 18	Layby 34	Harvest 91	18
			TY1				
			1				
Trt Treatment No. Name Rate Rate Unit	8	9	10	11	12	13	14
22 No cover 2 WBP No herbicide	0 g	0 h	0.0 h	381 a	159 a	53 a	0 e
23 No cover 2 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Roudup WeatherMax 22 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A	66 d	2 g	1055.1 g	0 d	5 d	3 d	0 e
24 No cover 2 WBP Prowl H20 2.1 PT/A Reflex 1 PT/A Ignite 23 OZ/A Dual Magnum 1 PT/A Direx 2 PT/A MSMA 2 LB A/A	93 a	3 ab	2003.8 ab	0 d	0 d	1 d	0 e
LSD (P=.05)	12.4	0.7	377.84	48.3	43.4	7.9	91.6
Standard Deviation	7.5	0.4	228.97	29.2	26.3	4.8	55.5
CV	14.28	20.3	20.3	57.43	73.97	32.93	52.31
Bartlett's X2	33.765	20.101	20.101	85.458	107.765	60.981	10.185
P(Bartlett's X2)	0.004*	0.168	0.168	0.001*	0.001*	0.001*	0.896

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

Column 10: TY1 = 580.8\*[C9]

# University of Georgia

Pest Type			
Pest Code			MULCH
Crop Code			
BBCH Scale			
Rating Date			May-13-08
Rating Data Type			MAI
Rating Unit			
Pest Stage			
Days After First/Last Applic.			18
ARM Action Codes			
Number of Decimals			
Trt No.	Treatment Name	Rate	Unit
			15
1	Wheat 4 WBP No herbicide		0 c-f
2	Wheat 4 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A
3	Wheat 4 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A
4	Wheat 2 WBP No herbicide		0 b-f
5	Wheat 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 1 22 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A
6	Wheat 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 1 23 1 2 2	PT/A PT/A OZ/A PT/A PT/A LB A/A
7	Rye 4 WBP No herbicide		0 c-f

# University of Georgia

Pest Type			
Pest Code			MULCH
Crop Code			
BBCH Scale			
Rating Date			May-13-08
Rating Data Type			MAI
Rating Unit			
Pest Stage			
Days After First/Last Applic.			18
ARM Action Codes			
Number of Decimals			
Trt No.	Treatment Name	Rate	Unit
			15
8	Rye		1 a-e
	4 WBP		
	Prowl H20	2.1	PT/A
	Reflex	1	PT/A
	Roudup WeatherMax	22	OZ/A
	Dual Magnum	1	PT/A
	Direx	2	PT/A
	MSMA	2	LB A/A
9	Rye		1 ab
	4 WBP		
	Prowl H20	2.1	PT/A
	Reflex	1	PT/A
	Ignite	23	OZ/A
	Dual Magnum	1	PT/A
	Direx	2	PT/A
	MSMA	2	LB A/A
10	Rye		1 abc
	2 WBP		
	No herbicide		
11	Rye		1 a
	2 WBP		
	Prowl H20	2.1	PT/A
	Reflex	1	PT/A
	Roudup WeatherMax	22	OZ/A
	Dual Magnum	1	PT/A
	Direx	2	PT/A
	MSMA	2	LB A/A
12	Rye		1 a-e
	2 WBP		
	Prowl H20	2.1	PT/A
	Reflex	1	PT/A
	Ignite	23	OZ/A
	Dual Magnum	1	PT/A
	Direx	2	PT/A
	MSMA	2	LB A/A
13	Oat		0 ef
	4 WBP		
	No herbicide		
14	Oat		0 b-e
	4 WBP		
	Prowl H20	2.1	PT/A
	Reflex	1	PT/A
	Roudup WeatherMax	22	OZ/A
	Dual Magnum	1	PT/A
	Direx	2	PT/A
	MSMA	2	LB A/A

# University of Georgia

Pest Type				
Pest Code				MULCH
Crop Code				
BBCH Scale				
Rating Date				May-13-08
Rating Data Type				MAI
Rating Unit				
Pest Stage				
Days After First/Last Applic.				18
ARM Action Codes				
Number of Decimals				
Trt No.	Treatment Name	Rate	Unit	
				15
15	Oat			0 b-f
	4 WBP			
	Prowl H20	2.1	PT/A	
	Reflex	1	PT/A	
	Ignite	23	OZ/A	
	Dual Magnum	1	PT/A	
	Direx	2	PT/A	
	MSMA	2	LB A/A	
16	Oat			1 a-e
	2 WBP			
	No herbicide			
17	Oat			1 a-e
	2 WBP			
	Prowl H20	2.1	PT/A	
	Reflex	1	PT/A	
	Roudup WeatherMax	22	OZ/A	
	Dual Magnum	1	PT/A	
	Direx	2	PT/A	
	MSMA	2	LB A/A	
18	Oat			1 a-d
	2 WBP			
	Prowl H20	2.1	PT/A	
	Reflex	1	PT/A	
	Ignite	23	OZ/A	
	Dual Magnum	1	PT/A	
	Direx	2	PT/A	
	MSMA	2	LB A/A	
19	No cover			0 f
	4 WBP			
	No herbicide			
20	No cover			0 f
	4 WBP			
	Prowl H20	2.1	PT/A	
	Reflex	1	PT/A	
	Roudup WeatherMax	22	OZ/A	
	Dual Magnum	1	PT/A	
	Direx	2	PT/A	
	MSMA	2	LB A/A	
21	No cover			0 f
	4 WBP			
	Prowl H20	2.1	PT/A	
	Reflex	1	PT/A	
	Ignite	23	OZ/A	
	Dual Magnum	1	PT/A	
	Direx	2	PT/A	
	MSMA	2	LB A/A	

# University of Georgia

Pest Type			
Pest Code			MULCH
Crop Code			
BBCH Scale			
Rating Date			May-13-08
Rating Data Type			MAI
Rating Unit			
Pest Stage			
Days After First/Last Applic.			18
ARM Action Codes			
Number of Decimals			
Trt No.	Treatment Name	Rate	
		Rate Unit	15
22	No cover 2 WBP No herbicide		0 f
23	No cover 2 WBP Prowl H20 Reflex Roudup WeatherMax Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 22 OZ/A 1 PT/A 2 PT/A 2 LB A/A	0 f
24	No cover 2 WBP Prowl H20 Reflex Ignite Dual Magnum Direx MSMA	2.1 PT/A 1 PT/A 23 OZ/A 1 PT/A 2 PT/A 2 LB A/A	0 f
	LSD (P=.05)		0.4
	Standard Deviation		0.2
	CV		61.54
	Bartlett's X2		13.646
	P(Bartlett's X2)		0.692

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

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# University of Georgia

Impact of cover crop on managing glyphosate-resistant Palmer amaranth.

Trial ID: C1-08  
Location: Macon County

Protocol ID:  
Study Director: Kichler, Sosnoskie, Culpepper  
Investigator: Stanley Culpepper

### General Trial Information

**Study Director:** Kichler, Sosnoskie, Culpepper      **Title:** Ext. Weed Science  
**Affiliation:** Univ. of Georgia  
**Postal Code:** 31795      **E-mail:** \_\_\_\_\_

**Investigator:** Stanley Culpepper      **Title:** Ext. Weed Science  
**Affiliation:** Univ. of Georgia  
**Postal Code:** 31795      **E-mail:** \_\_\_\_\_

**Keywords:**

### Trial Location

**City:** Macon Co.      **Trial Status:** completed  
**State/Prov.:** GA      **Trial Reliability:** excellent  
**Postal Code:** 31068      **Initiation Date:** Nov-12-07  
**Country:** USA      **Planned Completion Date:** \_\_\_\_\_  
\_ -Latitude of LL Corner °: \_\_\_\_\_      \_ -Longitude of LL Corner °: \_\_\_\_\_  
**Altitude of LL Corner:** \_\_\_\_\_ **Unit:** \_\_\_\_\_ **Angle y-axis to North °:** \_\_\_\_\_  
**Map Reference:** \_\_\_\_\_  
**Directions:**

**Conducted Under GLP:** \_      **Official Trial Code:** \_\_\_\_\_  
**Conducted Under GEP:** \_      **Other Trial Code:** \_\_\_\_\_

	Guideline	Description
1.		

Objectives:

Conclusions:

### Cooperator/Landowner

**Cooperator:** \_\_\_\_\_ **Country:** \_\_\_\_\_  
**Organization:** \_\_\_\_\_ **Phone No:** \_\_\_\_\_  
**Address 1:** \_\_\_\_\_ **Fax No:** \_\_\_\_\_  
**Address 2:** \_\_\_\_\_  
**City:** \_\_\_\_\_  
**State/Prov:** \_\_\_\_\_  
**Postal Code:** \_\_\_\_\_ **E-mail:** \_\_\_\_\_

# University of Georgia

Crop Description	
Crop 1: GOSHI <i>Gossypium hirsutum</i>	Cotton, American upland
Variety: see plot plan	Description: _____
BBCH Scale: BCOT	Planting Date: Apr-24-08
Planting Method: hill dropped	Rate, Unit: 2 8 in
Depth, Unit: 0.5 in	Perennial Age, Unit: _____
Row Spacing, Unit: 36 in	Spacing Within Row, Unit: 8.5 in
Seed Bed: flat	Soil Temperature, Unit: 82 F
Soil Moisture: good	Emergence Date: _____
Harvest Date: _____	Harvest Equipment: _____
Harvested Width, Unit: _____	Harvested Length, Unit: _____
% Standard Moisture: _____	Moisture Meter: _____
Weighing Equipment: _____	

Pest Description	
Pest 1 Type: W Code: AMAPA <i>Amaranth, Palmer</i>	
Common Name: <i>Amaranthus palmeri</i>	
Description: _____	

Site and Design			
Plot Width, Unit: 12	FT	Site Type: On farm	
Plot Length, Unit: 30	FT	Tillage Type: Conventional/StripTil	
Replications: 3		Study Design: Factorial	
% Slope: _____		Soil Drainage: _ _____	

Trial Initiation Comments:

	Previous Crops	Previous Pesticides	Year
1.			

Maintenance								
No.	Date	Maintenance Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Tank Mix
1.								

Comment:

Field Prep./Maintenance:

Soil Description			
Description Name: _____			
% Sand: 82	% OM: 2	Texture: loamy sand	
% Silt: 14	pH: 6.4	Soil Name: _____	
% Clay: 4	CEC: _____	Fert. Level: _____	
Analyzed By: _____			

Additional Measured Elements		
Element	Quantity	Unit

Moisture Conditions		
Overall Moisture Conditions: see comments		
Closest Weather Station: _____	Distance: _____	Unit: _____

# University of Georgia

	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

### Application Description

	A	B	C
Application Date:	Apr-25-08	May-22-08	Jun-26-08
Time of Day:	2:00 pm	6:00 pm	12:00 pm
Application Method:	broadcast	broadcast	broadcast
Application Timing:	PRE	POST	PD
Application Placement:	on soil	overtop	directed
Applied By:			
Air Temperature, Unit:	85 F	87 F	88 F
% Relative Humidity:	49	3	60
Wind Velocity, Unit:	5 mph	2 mph	4 mph
Wind Direction:			
Dew Presence (Y/N):	N	N	N
Water Hardness:			
Soil Temperature, Unit:	82 F	8 F	88 F
Soil Moisture:	moist	moist	moist
% Cloud Cover:	30	100	15
Next Rain Occurred On:			

### Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT
Stage Scale Used:	BBCH	BBCH	BBCH
Stage Majority, Percent:	0 100	4 leaf 90	12 leaf 90
Stage Minimum, Percent:		3 leaf 5	11 leaf 5
Stage Maximum, Percent:		5 leaf 5	13 leaf 5
Diameter, Unit:			
Height, Unit:	0 in	4 in	15 in
Height Minimum, Maximum:	0 0	3.5 4.5	13 17

### Pest Stage At Each Application

	A	B	C
Pest 1 Code, Disc., Scale:	AMAPA W PRE	AMAPA W POST	AMAPA W PD
Stage Majority, Percent:	0 100	4 leaf 100	
Stage Minimum, Percent:		4 leaf	
Stage Maximum, Percent:		4 leaf	
Diameter, Unit:			
Height, Unit:		1.5 in	5 in
Height Minimum, Maximum:	0 0	1.5 1.5	4 7
Density, Unit:		20 ydsq	20 ydsq
Coverage, Unit:		100 %	90 %

# University of Georgia

## Application Equipment

	A	B	C
<b>Appl. Equipment:</b>	backpack	backpack	backpack
<b>Operating Pressure, Unit:</b>	24 PSI	24 PSI	21 PSI
<b>Nozzle Type:</b>	flat fan	flat fan	flat fan
<b>Nozzle Size:</b>	11002	11002	11002
<b>Nozzle Spacing, Unit:</b>	18 in	18 in	12 in
<b>Nozzles/Row:</b>	2	2	3
<b>Nozzle Calibration, Unit:</b>			
<b>Band Width, Unit:</b>			
<b>Boom ID:</b>			
<b>Boom Length, Unit:</b>	4.5 ft	4.5 ft	
<b>Boom Height, Unit:</b>	15 in	15 in	15 in
<b>Ground Speed, Unit:</b>	3 mph	3 mph	3 mph
<b>Incorporation Equip.:</b>			
<b>Hours to Incorp.:</b>			
<b>Incorp. Depth, Unit:</b>			
<b>Carrier:</b>			
<b>Spray Volume, Unit:</b>	15 GPA	15 GPA	15 GPA
<b>Mix Size, Unit:</b>			
<b>Spray pH:</b>			
<b>Propellant:</b>	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>	y	y	y

Equipment Comment:

Trt No    Treatment Application Comment

\_\_\_\_\_

Date                      By                      Notes

\_\_\_\_\_

Date                      By                      Deviations

\_\_\_\_\_

Reasons: