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**Large plot GR Palmer amaranth management systems.**

Trial ID: C15-2008  
 Location: Macon County

Study Dir.: Culpepper, Davis  
 Investigator: Stanley Culpepper

Reps: 4                      Plots: 24 by 50 feet  
 Spray vol: 14.8 gal/ac      Mix size: 3 gallons (min 1.6309)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Grow Unit	Stg	Appl Code	Amt Product to Measure	Plot No. By Rep			
										1	2	3	4
1	CONVENTIONAL									103	202	302	403
	Prowl H20	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Reflex	2		L	1	PT/A	PRE	C	95.9 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				
2	CONVENTIONAL cultivation									107	206	306	407
	Prowl H20	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Reflex	2		L	1	PT/A	PRE	C	95.9 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				
3	RYE									104	201	308	405
	Roundup PowerMax	4.5		L	22	OZ/A	preplant	A	131.9 ml/mx				
	Valor	51		DG	2	OZ/A	preplant	A	11.49 g/mx				
	Prowl H20 (BANDED)	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Cotoran (BANDED)	4		L	1	QT/A	PRE	C	191.8 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				
4	RYE									108	205	304	401
	Roundup PowerMax	4.5		L	22	OZ/A	preplant	A	131.9 ml/mx				
	Valor	51		DG	2	OZ/A	preplant	A	11.49 g/mx				
	Prowl H20	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				
5	WHEAT									101	208	305	404
	Roundup PowerMax	4.5		L	22	OZ/A	preplant	A	131.9 ml/mx				
	Valor	51		DG	2	OZ/A	preplant	A	11.49 g/mx				
	Prowl H20 (BANDED)	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Cotoran (BANDED)	4		L	1	QT/A	PRE	C	191.8 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				
6	WHEAT									105	204	301	408
	Roundup PowerMax	4.5		L	22	OZ/A	preplant	A	131.9 ml/mx				
	Valor	51		DG	2	OZ/A	preplant	A	11.49 g/mx				
	Prowl H20	3.8		L	2	PT/A	PRE	C	191.8 ml/mx				
	Roundup PowerMax	4.5		L	22	OZ/A	1-3 lf	D	131.9 ml/mx				
	Parrlay	8		L	1.3	PT/A	1-3 lf	D	124.7 ml/mx				
	Diuron	4		L	1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6		L	2.5	PT/A	12-16in	E	239.8 ml/mx				

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Reps: 4                      Plots: 24 by 50 feet  
 Spray vol: 14.8 gal/ac              Mix size: 3 gallons (min 1.6309)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Grow Unit	Appl Stg	Code	Amt Product to Measure	Plot No. By Rep			
										1	2	3	4
7	CONVENTIONAL									102	203	303	402
	Treflan	3.8	L		1.5	PT/A	PPI	B	143.9 ml/mx				
	Reflex	2	L		1	PT/A	PRE	C	95.9 ml/mx				
	Roundup PowerMax	4.5	L		22	OZ/A	1-2 lf	D	131.9 ml/mx				
	Parrlay	8	L		1.3	PT/A	1-2 lf	D	124.7 ml/mx				
	Diuron	4	L		1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6	L		2.5	PT/A	12-16in	E	239.8 ml/mx				
8	CONVENTIONAL									106	207	307	406
	Cultivation												
	Treflan	3.8	L		1.5	PT/A	PPI	B	143.9 ml/mx				
	Reflex	2	L		1	PT/A	PRE	C	95.9 ml/mx				
	Roundup PowerMax	4.5	L		22	OZ/A	1-2 lf	D	131.9 ml/mx				
	Parrlay	8	L		1.3	PT/A	1-2 lf	D	124.7 ml/mx				
	Diuron	4	L		1	QT/A	12-16in	E	191.8 ml/mx				
	MSMA	6	L		2.5	PT/A	12-16in	E	239.8 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
959.037	ml	Prowl H2O	3.8	L	
479.519	ml	Reflex	2	L	
1,978.228	ml	Roundup PowerMax	4.5	L	
1,246.748	ml	Parrlay	8	L	
1,918.075	ml	Diuron	4	L	
2,397.593	ml	MSMA	6	L	
57.465	g	Valor	51	DG	
479.519	ml	Prowl H2O (BANDED)	3.8	L	
479.519	ml	Cotoran (BANDED)	4	L	
359.639	ml	Treflan	3.8	L	

\* 'Per area' calculations based on spray volume= 14.8 gal/ac, mix size= 3 gallons (mix size basis).

\* Product amount calculations increased 25 % for overage adjustment.

### Trial Comments

OBJECTIVE: Determine the most effective program to control glyphosate-resistant Palmer amaranth in Roundup Ready cotton.

**VISUAL INJURY:**

1. No at plant herbicide caused injury.
2. Roundup plus Parrlay caused 6% spotting and necrosis on cotton but caused over twice that level of injury in conservation tillage because of weaker more sensitive plants at this time. Cotton recovered quickly.
3. Layby directed applications caused no relevant injury.

**GLYPHOSTE-RESISTANT PALMER AMARANTH:**

1. At the time of POST applications, the least effective programs were those in conservation tillage using wheat as the cover. Nearly complete control was noted in conventional programs using Treflan PPI.
2. Late in the season:
  - A. The least effective programs were in conservation tillage.
  - B. Control was better better with rye as compared to wheat.
  - C. Cotoran in conservation tillage had little impact, the product is simply not effective enough on pigweed.

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D. Rainfall occurred 3 d after application and Treflan PPI programs were still more effective than Prowl PRE programs when cultivation was not implemented.

E. Cultivation generally improved control 7 to 14%.

## SEED COTTON YIELD:

1. Yield followed trends noted with Palmer amaranth.
2. Palmer amaranth plants were removed from each plot prior to harvest, thus impact on harvesting was not measured.
3. Greatest cotton yield was noted when Treflan was applied PPI and cultivation occurred during the crop.
4. Lowest yields were noted in the conservation tillage wheat followed by conservation tillage rye.

## GENERAL COMMENTS:

1. April 25, 2008 - Firestorm 1 qt/A + 1 qt/A Crop Oil applied over the entire trial.
2. Seed cotton was harvested by picker from center two rows.
3. Rainfall that occurred during herbicide application timing was as follows:

Rainfall in Inches:

Apr 28	1 in
May 9	0.4 in
May 11	2.7 in
May 20	0.2 in
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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Weed Code	INJURY	INJURY	AMAPA	AMAPA	AMAPA	AMAPA	GOSHI	GOSHI	
Crop Code	GOSHI	GOSHI	AMAPA	AMAPA	AMAPA	AMAPA	GOSHI	GOSHI	
Rating Data Type	control	control	control	control	control	control	seed yld	YIELD	
Rating Unit	%	%	%	%	%	%	lb/plot	lb/acre	
Rating Date	May-22-08	May-26-08	May-22-08	Jun-26-08	Jul-14-08	Sep-09-08	Oct-17-08	Oct-17-08	
Trt-Eval Interval	27 DA-C	4 DA-D	35 DA-D	35 DA-D	18 DA-E	75 DA-E	175 DA-B	175 DA-B	
ARM Action Codes								TY1	
# Subsamples, Dec.								1	
Trt Treatment	Rate								
No. Name	Rate Unit	1	2	3	4	5	6	7	8
6 WHEAT		0 a	15 a	75 c	63 cd	53 d	50 e	9 e	1343.1 e
Roundup PowerMax	22 OZ/A								
Valor	2 OZ/A								
Prowl H20	2 PT/A								
Roundup PowerMax	22 OZ/A								
Parrlay	1.3 PT/A								
Diuron	1 QT/A								
MSMA	2.5 PT/A								
7 CONVENTIONAL		0 a	6 b	99 a	89 ab	90 ab	89 a	14 b	2051.0 b
Treflan	1.5 PT/A								
Reflex	1 PT/A								
Roundup PowerMax	22 OZ/A								
Parrlay	1.3 PT/A								
Diuron	1 QT/A								
MSMA	2.5 PT/A								
8 CONVENTIONAL		0 a	6 b	99 a	96 a	97 a	95 a	16 a	2276.0 a
Cultivation									
Treflan	1.5 PT/A								
Reflex	1 PT/A								
Roundup PowerMax	22 OZ/A								
Parrlay	1.3 PT/A								
Diuron	1 QT/A								
MSMA	2.5 PT/A								
LSD (P=.05)		0.0	0.9	6.6	8.9	11.1	8.0	1.4	198.86
Standard Deviation		0.0	0.6	4.5	6.1	7.6	5.4	0.9	135.21
CV		0.0	5.88	5.05	7.8	9.89	7.28	7.52	7.52
Bartlett's X2		0.0	0.0	9.388	15.197	22.78	6.48	5.223	5.223
P(Bartlett's X2)		.	0.001*	0.153	0.034*	0.002*	0.485	0.633	0.633

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

Column 8: TY1 = 145.2\*[7]



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## MAINTENANCE

Field Prep./Maintenance:

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

### SOIL DESCRIPTION

% Sand: 82	% OM: 2.0	Texture: loamy sand
% Silt: 14	pH: 6.4	Soil Name: _____
% Clay: 4	CEC: _____	Fert. Level: _____

### ADDITIONAL MEASURED ELEMENTS

Element	Quantity	Unit

### MOISTURE CONDITIONS

No.	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

Overall Moisture Conditions: \_\_\_\_\_

Closest Weather Station: \_\_\_\_\_ Distance: \_\_\_\_\_ Unit: \_\_\_\_\_

### APPLICATION DESCRIPTION

	A	B	C	D	E
<b>Application Date:</b>	Apr-11-08	Apr-25-08	Apr-25-08	May-22-08	Jun-26-08
<b>Time of Day:</b>	7:00 am	8:00 am	11:00am	6:00 pm	12:00 pm
<b>Application Method:</b>	broadcast	broadcast	broadcast	broadcast	broadcast
<b>Application Timing:</b>	preplant	PPI	PRE	POST	PD
<b>Applic. Placement:</b>	overtop	on soil	on soil	overtop	directed
<b>Air Temp., Unit:</b>	65 F	82 F	82 F	88 F	88 F
<b>% Relative Humidity:</b>	45	49	49	47	60
<b>Wind Velocity, Unit:</b>	0 mph	4 mph	4 mph	3 mph	4 mph
<b>Dew Presence (Y/N):</b>	Y	N	N	N	N
<b>Water Hardness:</b>					
<b>Soil Temp., Unit:</b>	68 F	74 F	74 F	84 F	88 F
<b>Soil Moisture:</b>	moist	moist	moist	moist	moist
<b>% Cloud Cover:</b>	20	30	30	100	15

### CROP STAGE AT EACH APPLICATION

	A	B	C	D	E
<b>Crop 1 Code, Stage:</b>	GOSHI A	GOSHI B	GOSHI C	GOSHI D	GOSHI E
<b>Stage Scale:</b>	preplant	PPI-notup	PRE-notup	3.5 leaf	12 leaf
<b>Height, Unit:</b>	0 in	0 in	0 inch	3.5 in	15 in

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## WEED STAGE AT EACH APPLICATION

	A	B	C	D	E
<b>Weed 1 Code, Stage:</b>	TRZAW A	TRZAW B	TRZAW C	TRZAW D	TRZAW E
<b>Stage Scale:</b>	3 ft	3 ft	75%cover	50%cover	33%cover
<b>Density, Unit:</b>	22 ft	22 ft	22 ft	22 ft	22 ft
<b>Weed 2 Code, Stage:</b>	SECCE A	SECCE B	SECCE C	SECCE	SECCE E
<b>Stage Scale:</b>	7 feet	7 feet	95%cover	80%cover	70%cover
<b>Density, Unit:</b>	22 ft	22 ft	22 ft	22 ft	22 ft
<b>Weed 3 Code, Stage:</b>	AMAPA A	AMAPA B	AMAPA C	AMAPA	AMAPA E
<b>Stage Scale:</b>	not up	not up	not up	4 in	14 in
<b>Density, Unit:</b>	0 ydsq	0 ydsq	0 ydsq	35 ydsq	40 ydsq

## APPLICATION EQUIPMENT

	A	B	C	D	E
<b>Appl. Equipment:</b>	backpack	tractor	backpack	backpack	layby rig
<b>Operating Pressure:</b>	24	24 psi	24	24	20
<b>Nozzle Type:</b>	flat fan	flat fan	flat fan	flat fan	flat fan
<b>Nozzle Size:</b>	11002	8002	11002	11002	11002
<b>Nozzle Spacing, Unit:</b>	18 in	18 in	18 in	18 in	11 in
<b>Nozzles/Row:</b>	2	2	2	2	3
<b>Band Width, Unit:</b>					
<b>Boom Length, Unit:</b>	4.5 ft	18 feet	4.5 ft	4.5 ft	24 inch
<b>Boom Height, Unit:</b>	15 in	20 inch	15 in	15 in	12 inch
<b>Ground Speed, Unit:</b>	3 mph	3 mph	3 mph	3 mph	3 mph
<b>Incorporation Equip.:</b>					
<b>Hours to Incorp.:</b>					
<b>Incorp. Depth, Unit:</b>					
<b>Carrier:</b>	water	water	water	water	water
<b>Spray Volume, Unit:</b>	14.5 GPA	14.8 GPA	14.8 GPA	14.8 GPA	14.8 GPA
<b>Spray pH:</b>					
<b>Propellant:</b>	CO2	CO2	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>					

Trt No	Treatment Application Comment