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**Glyphosate-resistant Palmer amaranth response to Staple/glyphosate mixtures at various sizes of growth.**

Trial ID: C32-06 Study Dir.: Kichler and Culpepper  
 Location: Macon Co. Investigator: Stanley Culpepper

Reps: 4 Plots: 12 by 22 feet  
 Spray vol: 14.8 gal/ac Mix size: 1.5 liters (min 1.3582)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Grow Unit	Stg	Appl Code	Amt Product to Measure	Plot No. By Rep			
										1	2	3	4
1	POST 1						0.5" AMA	A		101	202	304	404
	WeatherMax	4.5	L		22 OZ/A			A	17.42 ml/mx				
	Staple	3.2	L		1.7 OZ/A			A	1.346 ml/mx				
2	POST 1						0.5" AMA	A		102	208	301	401
	WeatherMax	4.5	L		22 OZ/A			A	17.42 ml/mx				
	Staple	3.2	L		2.55 OZ/A			A	2.019 ml/mx				
3	POST 2						3" AMA	B		103	207	306	406
	WeatherMax	4.5	L		22 OZ/A			B	17.42 ml/mx				
	Staple	3.2	L		1.7 OZ/A			B	1.346 ml/mx				
4	POST 2						3" AMA	B		104	203	307	407
	WeatherMax	4.5	L		22 OZ/A			B	17.42 ml/mx				
	Staple	3.2	L		2.55 OZ/A			B	2.019 ml/mx				
5	POST 3						8" AMA	C		105	206	303	403
	WeatherMax	4.5	L		22 OZ/A			C	17.42 ml/mx				
	Staple	3.2	L		1.7 OZ/A			C	1.346 ml/mx				
6	POST 3						8" AMA	C		106	205	302	402
	WeatherMax	4.5	L		22 OZ/A			C	17.42 ml/mx				
	Staple	3.2	L		2.55 OZ/A			C	2.019 ml/mx				
7	WeatherMax	4.5	L		22 OZ/A		3" AMA	B	17.42 ml/mx	107	201	308	408
8	WeatherMax	4.5	L		22 OZ/A		3" AMA	B	17.42 ml/mx	108	204	305	405
	Staple	3.2	L		1.7 OZ/A		3" AMA	B	1.346 ml/mx				
	Cotoran	4	L		1 PT/A		3" AMA	B	12.67 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
174.198	ml	WeatherMax	4.5	L	
14.302	ml	Staple	3.2	L	
15.834	ml	Cotoran	4	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: Screen glyphosate-resistant Palmer amaranth that has been tolerating grower applications of Staple.

**VISUAL COTTON INJURY:**

1. Staple/glyphosate mixtures caused typical leaf necrosis/chlorosis and recovered quickly.
2. The addition of 1 pt of Cotoran had little impact on cotton injury.

**PALMER AMARANTH CONTROL:**

1. WeatherMax provided less than 5% control of the population.
2. Mixing Staple with glyphosate and applying to Palmer at 0.5" in height removed 77 to 78% of the population. As the surviving weeds grew, control decreased.
3. Mixing Staple with glyphosate and applying to Palmer at 3" in height removed about 60% of the population. As the surviving weeds grew, control decreased.

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4. Little control was noted with applications being made to 8 inch Palmer.
5. The addition of Cotoran at 1 pt had little impact on control of 3- to 4-inch Palmer.

**GENERAL COMMENTS:**

1. Moisture conditions were ideal for the 0.5 inch and 3 inch timing. Conditions were getting dry by time of the 8 inch application.
2. Nearly all of the Palmer that emerged in this trial emerged at planting as it did not rain after the first two weeks of planting.

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Study Dir.: Kichler and Culpepper

Location: Macon Co.

Investigator: Stanley Culpepper

Weed Code	GOSHI	GOSHI	AMAPA	AMAPA	AMAPA	AMAPA	AMAPA		
Crop Code	injury	injury	GOSHI	GOSHI	GOSHI	GOSHI	GOSHI		
Rating Data Type			control	control	control	control	control		
Rating Unit	%	%	%	%	%	%	%		
Rating Date	Jun-01-06	Jun-08-06	Jun-01-06	Jun-08-06	Jun-20-06	Jul-09-06	Jul-21-06		
Assessed By	AD	SC	AD	SC	SC	SC	SC		
Trt-Eval Interval	11 DA-A	11 DA-A	11 DA-A	18 DA-A	30 DA-A	49 DA-A	61 DA-A		
Trt No.	Treatment Name	Rate	Rate	Rate	Rate	Rate	Rate		
		Unit	1	2	3	4	5		
1	POST 1 WeatherMax Staple	22 OZ/A 1.7 OZ/A	13 b	0 c	78 a	69 ab	26 bc	23 ab	0 a
2	POST 1 WeatherMax Staple	22 OZ/A 2.55 OZ/A	10 bc	0 c	79 a	71 ab	37 ab	21 b	0 a
3	POST 2 WeatherMax Staple	22 OZ/A 1.7 OZ/A	18 ab	2 b	56 b	61 b	18 c	19 b	0 a
4	POST 2 WeatherMax Staple	22 OZ/A 2.55 OZ/A	24 a	4 a	56 b	64 ab	20 c	24 ab	0 a
5	POST 3 WeatherMax Staple	22 OZ/A 1.7 OZ/A	0 c	0 c	0 c	0 c	0 d	34 a	0 a
6	POST 3 WeatherMax Staple	22 OZ/A 2.55 OZ/A	0 c	0 c	0 c	0 c	0 d	28 ab	0 a
7	WeatherMax	22 OZ/A	0 c	0 c	5 c	0 c	0 d	3 c	0 a
8	WeatherMax Staple Cotoran	22 OZ/A 1.7 OZ/A 1 PT/A	26 a	0 c	71 a	73 a	42 a	22 ab	0 a
LSD (P=.05)			9.5	1.7	9.1	11.0	12.4	10.9	0.0
Standard Deviation			6.5	1.2	6.2	7.5	8.4	7.4	0.0
CV			57.58	165.34	14.37	17.71	47.32	34.36	0.0
Bartlett's X2			10.476	0.001	10.245	0.698	4.328	14.098	0.0
P(Bartlett's X2)			0.033*	0.972	0.069	0.952	0.363	0.049*	.

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

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at various sizes of growth.**

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 Location: Macon Co. Investigator: Stanley Culpepper

**GENERAL TRIAL INFORMATION**

**Study Director:** Kichler and Culpepper **Title:** Co. Agent & Ext. Weed  
**Affiliation:** University of Georgia  
**Postal Code:** 31794

**Investigator:** Stanley Culpepper **Title:** Ext. Weed Science  
**Affiliation:** University of Georgia  
**Postal Code:** 31794

**TRIAL LOCATION**

**City:** Macon Co. **Trial Status:** completed  
**State/Prov.:** GA **Trial Reliability:** excellent  
**Postal Code:** \_\_\_\_\_ **Initiation Date:** May-01-06  
**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.	AMAPA	Amaranth, Palmer	Amaranthus palmeri

**Crop 1:** GOSHI COTTON, SHORT STAPLE **Variety:** DP 555 BRR  
**Planting Date:** May-01-06 **Planting Method:** seedeed  
**Rate:** 3 ft **Depth:** 0.5 in **Perennial Age:** \_\_\_\_\_  
**Row Spacing:** 36 in **Spacing Within Row:** 4 in **Seed Bed:** bedded,clean  
**Soil Temperature:** \_\_\_\_\_ **Soil Moisture:** great **Emergence Date:** May-06-06

**SITE AND DESIGN**

**Plot Width, Unit:** 12 FT **Plot Length, Unit:** 22 FT **Reps:** 4  
**Site Type:** Sutton Farms  
**Tillage Type:** Conventional **Study Design:** FACTORIAL

**Trial Initiation Comments:**

	Previous Crops	Previous Pesticides	Year
1.			

**MAINTENANCE**

**Field Prep./Maintenance:**

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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: 6.3      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
Application Date:	May-21-06	May-26-06	Jun-21-06
Time of Day:	9:00 am	8:00 am	12:00 pm
Application Method:	Broadcast	Broadcast	Broadcast
Application Timing:	0.5"	3"	8"
Applic. Placement:	overtop	overtop	overtop
Air Temp., Unit:	82 F	88 F	94 F
% Relative Humidity:	64	50	49
Wind Velocity, Unit:	0 mph	3 mph	3 mph
Dew Presence (Y/N):	n	y	n
Water Hardness:			
Soil Temp., Unit:	89 F	92 F	100 F
Soil Moisture:	great	good	poor-fair
% Cloud Cover:	0	5	15

**CROP STAGE AT EACH APPLICATION**

	A	B	C
Crop 1 Code, Stage:	GOSHI 0.5"	GOSHI 3"	GOSHI 8"
Stage Scale:	1 leaf	3-4 leaf	10 leaf
Height, Unit:	1 inch	3 inch	11 inch

**WEED STAGE AT EACH APPLICATION**

	A	B	C
Weed 1 Code, Stage:	AMAPA 0.5"	AMAPA 3"	AMAPA 8"
Stage Scale:	< 0.5"	3-4 inch	8 to 12"
Density, Unit:	50 ydsq	50 ydsq	50 ydsq

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## APPLICATION EQUIPMENT

	A	B	C
<b>Appl. Equipment:</b>	backpack	backpack	backpack
<b>Operating Pressure:</b>	24	24	24
<b>Nozzle Type:</b>	flat fan	flat fan	flat fan
<b>Nozzle Size:</b>	11002	11002	11002
<b>Nozzle Spacing, Unit:</b>	18 inch	18 inch	18 inch
<b>Nozzles/Row:</b>	2	2	2
<b>Band Width, Unit:</b>			
<b>Boom Length, Unit:</b>	4.5 ft	4.5 ft	4.5 ft
<b>Boom Height, Unit:</b>	15 inch	15 inch	15 inch
<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>	water	water	water
<b>Spray Volume, Unit:</b>	14.8 GPA	14.8 GPA	14.8 GPA
<b>Spray pH:</b>			
<b>Propellant:</b>	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>	Y	Y	Y

Trt No	Treatment Application Comment