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Glyphosate-resistant Palmer amaranth response to Staple/Ignite systems.
Prot (USA-900 SE 2)

Trial ID: C5-08 Study Dir.: Stanley Culpepper
Location: Macon County Investigator: Stanley Culpepper

Reps: 4 Plots: 6 by 25 feet
Spray vol: 14.8 gal/ac Mix size: 1 liters (min .77168)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	Amt Product to Measure	Plot No. By Rep 1	2	3	4
1	Staple LX	3.2		L	2	OZ/A	PRE	A	1.056 ml/mx	101	203	301	406
	Direx	4		L	1.8	PT/A	PRE	A	15.2 ml/mx				
2	Staple LX	3.2		L	2	OZ/A	PRE	A	1.056 ml/mx	102	207	304	401
	Direx	4		L	1.8	PT/A	PRE	A	15.2 ml/mx				
	Staple	3.2		L	2.6	OZ/A	1"AMA	C	1.372 ml/mx				
	Ignite	2.34		L	26	OZ/A	1"AMA	C	13.72 ml/mx				
3	Staple	3.2		L	2.6	OZ/A	1"AMA	B	1.372 ml/mx	103	205	302	407
	Ignite	2.34		L	26	OZ/A	1"AMA	B	13.72 ml/mx				
	Ignite	2.34		L	26	OZ/A	1"AMA	D	13.72 ml/mx				
4	Ignite	2.34		L	26	OZ/A	1"AMA	B	13.72 ml/mx	104	201	303	402
	Ignite	2.34		L	26	OZ/A	1"AMA	D	13.72 ml/mx				
5	Non-treated									105	208	307	404
6	Direx	4		L	1.8	PT/A	PRE	A	15.2 ml/mx	106	202	305	408
	Staple	3.2		L	2.6	OZ/A	1"AMA	C	1.372 ml/mx				
	Ignite	2.34		L	26	OZ/A	1"AMA	C	13.72 ml/mx				
7	Reflex	4		L	1	PT/A	PRE	A	8.445 ml/mx	107	204	306	405
	Staple	3.2		L	2.6	OZ/A	1"AMA	C	1.372 ml/mx				
	Ignite	2.34		L	26	OZ/A	1"AMA	C	13.72 ml/mx				
8	Reflex	4		L	1	PT/A	PRE	A	8.445 ml/mx	108	206	308	403
	Direx	4		L	1.8	PT/A	PRE	A	15.2 ml/mx				
	Staple	3.2		L	2.6	OZ/A	1"AMA	C	1.372 ml/mx				
	Ignite	2.34		L	26	OZ/A	1"AMA	C	13.72 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
2.639	ml	Staple LX	3.2	L	
76.005	ml	Direx	4	L	
8.578	ml	Staple	3.2	L	
137.247	ml	Ignite	2.34	L	
21.113	ml	Reflex	4	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 crop response to Staple and Ignite programs.

Palmer Response:
1. PRE applications of Staple + Direx provided good to excellent control for 30 d.
2. Ignite applied topically provided good control of 2 inch or smaller Palmer amaranth; however, programs with a PRE followed by Ignite or Ignite + Staple (benefit from residual control) were more effective.
3. At 30 d after the final treatment, two programs 1) Reflex + Direx followed by Ignite + Staple and 2) Ignite + Staple followed by Ignite provided the greatest level of control.

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Cotton Response:
1. Widestrike cotton injury by a single Ignite application ranged from 12 to 18%. Sequential Ignite applications increased injury to 31 to 35%. The addition of Staple with Ignite in this trial only showed a slight tendency for increased injury.
2. PRE application of Direx or Reflex separately stunted cotton less than 4%; however, combinations of Staple + Direx or Reflex + Direx stunted early season cotton growth 11 to 13%. A one inch rainfall occurred shortly after planting.
3. Cotton recovered from all early-season herbicide injury by June 15.

CONCLUSIONS:
1. Ignite based programs are more effective in controlling glyphosate-resistant Palmer amaranth as compared to typical Roundup programs. These programs will be recommended heavily for adoption during 2009.

GENERAL COMMENTS:
1. Wheat was used for a cover crop. Roundup was applied on March 26 to kill 15 in tall wheat. Strip tillage operation and planting occurred on April 24. Paraquat was applied PRE over trial area.
2. Additional rainfall during times when herbicides were applied after planting.:

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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Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4	5	6	7
Weed Code				AMAPA	AMAPA	AMAPA	AMAPA	GOSHI	GOSHI	GOSHI
Crop Code										
Rating Data Type				control	control	control	control	injury	injury	injury
Rating Unit				%	%	%	%	%	%	%
Rating Date				May-13-08	May-21-08	May-30-08	Jun-26-08	May-13-08	May-21-08	May-30-08
Trt-Eval Interval				4 DA-B	8 DA-C	4 DA-D	31 DA-D	4 DA-B	8 DA-C	4 DA-D
1	Staple LX	2	OZ/A	100 a	88 b	68 d	49 e	13 a	3 c	6 bc
	Direx	1.8	PT/A							
2	Staple LX	2	OZ/A	72 b	97 a	79 c	54 de	12 a	17 a	8 bc
	Direx	1.8	PT/A							
	Staple	2.6	OZ/A							
	Ignite	26	OZ/A							
3	Staple	2.6	OZ/A	0 c	99 a	100 a	95 a	0 b	19 a	35 a
	Ignite	26	OZ/A							
	Ignite	26	OZ/A							
4	Ignite	26	OZ/A	0 c	90 b	100 a	87 ab	0 b	12 b	31 a
	Ignite	26	OZ/A							
5	Non-treated			0 c	0 c	0 e	0 f	0 b	0 c	3 c
6	Direx	1.8	PT/A	88 ab	99 a	79 c	65 cd	3 b	17 a	11 bc
	Staple	2.6	OZ/A							
	Ignite	26	OZ/A							
7	Reflex	1	PT/A	99 a	98 a	88 bc	75 bc	3 b	17 a	14 bc
	Staple	2.6	OZ/A							
	Ignite	26	OZ/A							
8	Reflex	1	PT/A	100 a	97 a	93 ab	90 a	11 a	17 a	16 b
	Direx	1.8	PT/A							
	Staple	2.6	OZ/A							
	Ignite	26	OZ/A							
LSD (P=.05)				24.9	4.2	10.7	12.6	4.8	3.6	11.0
Standard Deviation				16.9	2.9	7.3	8.5	3.2	2.5	7.5
CV				29.61	3.45	9.6	13.27	62.01	19.4	48.31
Bartlett's X2				61.535	12.138	5.288	17.262	0.59	15.205	10.859
P(Bartlett's X2)				0.001*	0.059	0.259	0.008*	0.964	0.01*	0.145

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

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Location: Macon County Investigator: Stanley Culpepper

GENERAL TRIAL INFORMATION

Study Director: Stanley Culpepper **Title:** Extension Weed Science
Affiliation: University of Georgia
Postal Code: 31794

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

TRIAL LOCATION

City: Macon Co **Trial Status:** completed
State/Prov.: GA **Trial Reliability:** good
Postal Code: 31068 **Initiation Date:** Apr-24-08
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:** 485 WRF
Planting Date: Apr-24-08 **Planting Method:** hill dropped
Rate: 2 8 in **Depth:** 0.5 in **Perennial Age:** ____ _____
Row Spacing: 36 in **Spacing Within Row:** 8.5 in **Seed Bed:** bedded
Soil Temperature: 85 F **Soil Moisture:** moist **Emergence Date:** Apr-29-08

SITE AND DESIGN

Plot Width, Unit: 6 FT **Plot Length, Unit:** 25 FT **Reps:** 4
Site Type: On farm
Tillage Type: Conservation Tillage **Study Design:** RANDOMIZED COMPLETE BLOCK

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:** 6.4 **Soil Name:** _____
% Clay: 4 **CEC:** _____ **Fert. Level:** _____

ADDITIONAL MEASURED ELEMENTS

Element	Quantity	Unit

MOISTURE CONDITIONS

	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

Overall Moisture Conditions: _____
Closest Weather Station: _____ **Distance:** _____ **Unit:** __

APPLICATION DESCRIPTION

	A	B	C	D
Application Date:	Apr-25-08	May-09-08	May-13-08	May-26-08
Time of Day:	2:00 pm	3:00 pm	6:00 pm	8:00 am
Application Method:	broadcast	broadcast	broadcast	broadcast
Application Timing:	PRE	1 in AMA	1 in AMA	1 in AMA
Applic. Placement:	on soil	overtop	overtop	overtop
Air Temp., Unit:	85 F	84 F	78 F	78 F
% Relative Humidity:	49	49	45	67
Wind Velocity, Unit:	5 mph	2 mph	0 mph	2 mph
Dew Presence (Y/N):	N	N	N	Y
Water Hardness:				
Soil Temp., Unit:	82 F	88 F	82 F	78 F
Soil Moisture:	moist	fair	moist	fair
% Cloud Cover:	30	0	100	0

CROP STAGE AT EACH APPLICATION

	A	B	C	D
Crop 1 Code, Stage:	GOSHI A	GOSHI B	GOSHI C	GOSHI D
Stage Scale:	PRE	1 leaf	2 leaf	5 leaf
Height, Unit:	0 in	1 in	2.5 in	5 in

WEED STAGE AT EACH APPLICATION

	A	B	C	D
Weed 1 Code, Stage:	AMAPA A	AMAPA B	AMAPA C	AMAPA D
Stage Scale:	0.5 in	2 in	1 in	2.5 in
Density, Unit:	0 ydsq	22 ydsq	25 ydsq	25 ydsq

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APPLICATION EQUIPMENT

	A	B	C	D
Appl. Equipment:	backpack	backpack	backpack	backpack
Operating Pressure:	24	24	24	24
Nozzle Type:	flat fan	flat fan	flat fan	flat fan
Nozzle Size:	11002	11002	11002	11002
Nozzle Spacing, Unit:	18 in	18 in	18 in	18 in
Nozzles/Row:	2	2	2	2
Band Width, Unit:				
Boom Length, Unit:	4.5 ft	4.5 ft	4.5 ft	4.5 ft
Boom Height, Unit:	15 in	15 in	15 in	15 in
Ground Speed, Unit:	3 mph	3 mph	3 mph	3 mph
Incorporation Equip.:				
Hours to Incorp.:				
Incorp. Depth, Unit:				
Carrier:	water	water	water	water
Spray Volume, Unit:	14.5 GPA	15 GPA	15 GPA	15 GPA
Spray pH:				
Propellant:	CO2	CO2	CO2	CO2
Tank Mix (Y/N):	y	y	y	y

Trt No	Treatment Application Comment