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Glyphosate-resistant Palmer amaranth response to 2,4-D, dicamba, and glufosinate

Trial ID: C17-07

Study Dir.: Culpepper, Davis

Location: Macon County

Investigator: Stanley Culpepper

Reps: 3

Plots: 6 by 25 feet

Spray vol: 14.8 gal/ac

Mix size: 1 liters (min .57876)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Grow Unit	Appl Stg	Appl Code	Amt Product to Measure	Plot No. By Rep		
										1	2	3
1	2,4-D 3inch Palmer	4	L	0.25	LB A/A	POST1	A	4.223 ml/mx	101	213	311	
2	2,4-D 6 inch Palmer	4	L	0.25	LB A/A	POST2	B	4.223 ml/mx	102	209	332	
3	2,4-D 12 inch Palmer	4	L	0.25	LB A/A	POST3	C	4.223 ml/mx	103	201	325	
4	2,4-D 3 inch Palmer	4	L	0.5	LB A/A	POST1	A	8.445 ml/mx	104	206	308	
5	2,4-D 6 inch Palmer	4	L	0.5	LB A/A	POST2	B	8.445 ml/mx	105	224	305	
6	2,4-D 12 inch Palmer	4	L	0.5	LB A/A	POST3	C	8.445 ml/mx	106	217	304	
7	2,4-D 3 inch Palmer	4	L	1.0	LB A/A	POST1	A	16.89 ml/mx	107	205	301	
8	2,4-D 6 inch Palmer	4	L	1.0	LB A/A	POST2	B	16.89 ml/mx	108	229	309	
9	2,4-D 12 inch Palmer	4	L	1.0	LB A/A	POST3	C	16.89 ml/mx	109	225	307	
10	2,4-D 3 inch Palmer	4	L	2.0	LB A/A	POST1	A	33.78 ml/mx	110	221	310	
11	2,4-D 6 inch Palmer	4	L	2.0	LB A/A	POST2	B	33.78 ml/mx	111	216	318	
12	2,4-D 12 inch Palmer	4	L	2.0	LB A/A	POST3	C	33.78 ml/mx	112	203	321	
13	Clarity 3 inch Palmer	4	L	4	OZ/A	POST1	A	2.111 ml/mx	113	207	315	
14	Clarity 6 inch Palmer	4	L	4	OZ/A	POST2	B	2.111 ml/mx	114	210	327	
15	Clarity 12 inch Palmer	4	L	4	OZ/A	POST3	C	2.111 ml/mx	115	220	313	
16	Clarity 3 inch Palmer	4	L	8	OZ/A	POST1	A	4.223 ml/mx	116	230	323	
17	Clarity 6 inch Palmer	4	L	8	OZ/A	POST2	B	4.223 ml/mx	117	227	329	
18	Clarity 12 inch Palmer	4	L	8	OZ/A	POST3	C	4.223 ml/mx	118	232	322	
19	Clarity 3 inch Palmer	4	L	12	OZ/A	POST1	A	6.334 ml/mx	119	222	319	
20	Clarity 6 inch Palmer	4	L	12	OZ/A	POST2	B	6.334 ml/mx	120	226	320	
21	Clarity 12 inch Palmer	4	L	12	OZ/A	POST3	C	6.334 ml/mx	121	212	328	
22	Clarity 3 inch Palmer	4	L	16	OZ/A	POST1	A	8.446 ml/mx	122	214	306	
23	Clarity 6 inch Palmer	4	L	16	OZ/A	POST2	B	8.446 ml/mx	123	215	312	
24	Clarity 12 inch Palmer	4	L	16	OZ/A	POST3	C	8.446 ml/mx	124	202	331	

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Reps: 3 Plots: 6 by 25 feet
 Spray vol: 14.8 gal/ac Mix size: 1 liters (min .57876)

Ttr 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
25	Ignite 3 inch Palmer	2.34		L	22	OZ/A	POST1	A	11.61 ml/mx	125	219	303
26	Ignite 6 inch Palmer	2.34		L	22	OZ/A	POST2	B	11.61 ml/mx	126	218	317
27	Ignite 12 inch Palmer	2.34		L	22	OZ/A	POST3	C	11.61 ml/mx	127	211	330
28	Ignite 3 inch Palmer	2.34		L	44	OZ/A	POST1	A	23.23 ml/mx	128	204	316
29	Ignite 6 inch Palmer	2.34		L	44	OZ/A	POST2	B	23.23 ml/mx	129	231	302
30	Ignite 12 inch Palmer	2.34		L	44	OZ/A	POST3	C	23.23 ml/mx	130	208	326
31	Non-treated									131	223	314
32	Non-treated									132	228	324

Sort Order: Treatment

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

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
258.630	ml	2,4-D	4	L	
79.181	ml	Clarity	4	L	
130.649	ml	Ignite	2.34	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 pigweed response to 2,4-D, dicamba, and Ignite.

Note: the trial was conducted in a fallow situation

Palmer response:

1. At approximately 17 days after each application:

- A. Complete control was only noted with Ignite applied to 3 inch Palmer amaranth.
- B. Control was between 71 and 79% with Clarity applied to 3 inch Palmer
- C. Control was 52, 69, 77, and 87% with 0.25, 0.5, and 2 lb of 2,4-D on 3 inch Palmer, respectively.
- D. No treatment provided acceptable control of Palmer over 3 inches.

Cotton Response:

- 1. Ignite provided complete control of 3 and 6 inch cotton.
- 2. 2,4-D and Clarity provided complete or near complete control of 3 inch cotton.
- 3. Pigweed was too large to determine much cotton response after the 6 inch timing.

GENERAL COMMENTS:

- 1. May 23, 2008 - Oversprayed trial with Roundup PowerMax (22 oz.) plus Parrlay (22 oz.)
- 2. Rainfall in Inches:

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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Trial ID: C17-07

Study Dir.: Culpepper, Davis

Location: Macon County

Investigator: Stanley Culpepper

Weed Code		AMAPA	AMAPA	AMAPA	GOSHI	
Crop Code					injury	
Rating Data Type		control	control	control	%	
Rating Unit		%	%	%	%	
Rating Date		May-31-08	Jun-09-08	Jun-19-08	May-30-08	
Trt No.	Treatment Name	Rate Unit	1	2	3	4
1	2,4-D 3inch Palmer	0.25 LB A/A	52 fgh	70 d-g	68 b-e	96 ab
2	2,4-D 6 inch Palmer	0.25 LB A/A	45 gh	45 jk	30 jk	77 d
3	2,4-D 12 inch Palmer	0.25 LB A/A	0 i	58 f-k	47 ghi	0 e
4	2,4-D 3 inch Palmer	0.5 LB A/A	69 c-f	84 a-e	72 bcd	96 ab
5	2,4-D 6 inch Palmer	0.5 LB A/A	48 gh	49 ijk	23 k	90 bc
6	2,4-D 12 inch Palmer	0.5 LB A/A	0 i	60 f-j	60 d-g	0 e
7	2,4-D 3 inch Palmer	1.0 LB A/A	77 bcd	87 abc	85 ab	98 a
8	2,4-D 6 inch Palmer	1.0 LB A/A	62 c-g	62 f-i	52 e-i	95 abc
9	2,4-D 12 inch Palmer	1.0 LB A/A	0 i	62 f-i	58 d-h	0 e
10	2,4-D 3 inch Palmer	2.0 LB A/A	87 ab	87 abc	85 ab	99 a
11	2,4-D 6 inch Palmer	2.0 LB A/A	60 d-h	68 efg	66 c-f	92 bc
12	2,4-D 12 inch Palmer	2.0 LB A/A	0 i	73 c-f	74 bcd	0 e
13	Clarity 3 inch Palmer	4 OZ/A	72 b-e	82 b-e	91 a	96 ab
14	Clarity 6 inch Palmer	4 OZ/A	43 h	50 h-k	50 f-i	90 c
15	Clarity 12 inch Palmer	4 OZ/A	0 i	43 k	50 f-i	0 e
16	Clarity 3 inch Palmer	8 OZ/A	78 bc	85 a-d	70 bcd	96 ab
17	Clarity 6 inch Palmer	8 OZ/A	52 fgh	52 h-k	61 d-g	90 bc
18	Clarity 12 inch Palmer	8 OZ/A	17 i	57 g-k	63 c-g	0 e
19	Clarity 3 inch Palmer	12 OZ/A	78 bc	90 ab	79 abc	99 a
20	Clarity 6 inch Palmer	12 OZ/A	55 e-h	68 efg	73 bcd	92 bc
21	Clarity 12 inch Palmer	12 OZ/A	0 i	70 d-g	73 bcd	0 e
22	Clarity 3 inch Palmer	16 OZ/A	79 bc	87 abc	92 a	99 a

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Weed Code	AMAPA	AMAPA	AMAPA	GOSHI			
Crop Code							
Rating Data Type	control	control	control	injury			
Rating Unit	%	%	%	%			
Rating Date	May-31-08	Jun-09-08	Jun-19-08	May-30-08			
Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4
23	Clarity 6 inch Palmer	16	OZ/A	50 gh	73 c-f	72 bcd	90 bc
24	Clarity 12 inch Palmer	16	OZ/A	0 i	60 f-j	63 c-g	0 e
25	Ignite 3 inch Palmer	22	OZ/A	99 a	99 a	95 a	99 a
26	Ignite 6 inch Palmer	22	OZ/A	50 gh	63 f-i	38 ijk	99 a
27	Ignite 12 inch Palmer	22	OZ/A	0 i	62 f-i	43 hij	0 e
28	Ignite 3 inch Palmer	44	OZ/A	99 a	98 a	95 a	99 a
29	Ignite 6 inch Palmer	44	OZ/A	53 fgh	65 fgh	57 d-h	99 a
30	Ignite 12 inch Palmer	44	OZ/A	0 i	72 c-g	65 c-f	0 e
31	Non-treated			0 i	0 l	0 l	0 e
32	Non-treated			0 i	0 l	0 l	0 e
LSD (P=.05)				15.2	13.5	14.4	5.1
Standard Deviation				9.3	8.3	8.8	3.1
CV				22.52	12.69	14.44	5.31
Bartlett's X2				29.399	39.085	47.794	8.959
P(Bartlett's X2)				0.031*	0.036*	0.008*	0.441

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

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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: 6.4	Texture: loamy sand
% Silt: 14	pH: 2	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: moist

Closest Weather Station: _____ Distance: _____ Unit: ____

APPLICATION DESCRIPTION

	A	B	C
Application Date:	May-14-08	May-23-08	May-30-08
Time of Day:	7:00 am	7:00 am	7:30 am
Application Method:	broadcast	broadcast	broadcast
Application Timing:	Post 1	POST 2	POST 3
Applic. Placement:	overtop	overtop	overtop
Air Temp., Unit:	66 F	75 F	75 F
% Relative Humidity:	58	70	68
Wind Velocity, Unit:	0 mph	0 mph	0 mph
Dew Presence (Y/N):	N	Y	Y
Water Hardness:			
Soil Temp., Unit:	64 F	75 F	80 F
Soil Moisture:	moist	moist	fair
% Cloud Cover:	70	100	100

CROP STAGE AT EACH APPLICATION

	A	B	C
Crop 1 Code, Stage:
Stage Scale:	.		
Height, Unit:			

WEED STAGE AT EACH APPLICATION

	A	B	C
Weed 1 Code, Stage:	AMAPA POST 1	AMAPA POST 2	AMAPA POST 3
Stage Scale:	2.5 in	6 in	12 in
Density, Unit:	10 ydsq	10 ydsq	10 ydsq
Weed 2 Code, Stage:	GOSHI POST 1	GOSHI POST 2	GOSHI POST 3
Stage Scale:	2 leaf	4 leaf	6 leaf
Density, Unit:	2.5 in	4 inch	7 in

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APPLICATION EQUIPMENT

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

Trt No	Treatment Application Comment