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## Impact of droplet size on Liberty, Clarity, and/or Weedar.

Trial ID: C21-14  
Location: Macon County

Study Dir.: Stanley Culpepper  
Investigator: Stanley Culpepper

Use 1.5 liters(s) per treatment mixture to spray 14.8 gal/ac  
Plots: 6 by 30 feet

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	Amt Product to Measure	Plot No. By Rep			
									1	2	3	4
1	No herbicide								101	205	306	411
2	Liberty DG1002XR	2.34	L	22	oz/a	POST	A	17.42 ml/mx	102	208	301	403
3	Liberty DG1002XR	2.34	L	33	oz/a	POST	A	26.13 ml/mx	103	214	309	406
4	Liberty AIXR 11002	2.34	L	22	oz/a	POST	A	17.42 ml/mx	104	212	302	412
5	Liberty AIXR 11002	2.34	L	33	oz/a	POST	A	26.13 ml/mx	105	204	305	414
6	Clarity AIXR 11002	4	L	1	pt/a	POST	A	12.67 ml/mx	106	201	307	410
7	Liberty Clarity AIXR 11002	2.34 4	L L	22 1	oz/a pt/a	POST POST	A A	17.42 ml/mx 12.67 ml/mx	107	213	314	405
8	Liberty Clarity AIXR 11002	2.34 4	L L	33 1	oz/a pt/a	POST POST	A A	26.13 ml/mx 12.67 ml/mx	108	206	313	402
9	Weedar AIXR 11002	3.8	L	1	qt/a	POST	A	25.34 ml/mx	109	210	312	408
10	Liberty Weedar AIXR 11002	2.34 3.8	L L	22 1	oz/a qt/a	POST POST	A A	17.42 ml/mx 25.34 ml/mx	110	203	308	409
11	Liberty Weedar AIXR 11002	2.34 3.8	L L	33 1	oz/a qt/a	POST POST	A A	26.13 ml/mx 25.34 ml/mx	111	207	304	401
12	Clarity TTI 11002	4	L	1	pt/a	POST	A	12.67 ml/mx	112	211	303	404
13	Liberty Clarity TTI 11002	2.34 4	L L	22 1	oz/a pt/a	POST POST	A A	17.42 ml/mx 12.67 ml/mx	113	209	311	413
14	Liberty Clarity TTI 11002	2.34 4	L L	33 1	oz/a pt/a	POST POST	A A	26.13 ml/mx 12.67 ml/mx	114	202	310	407

Sort Order: Treatment

### Trial Comments

**OBJECTIVE:** Determine Palmer (4-7 inch) response to Liberty, Weedar, and/or Clarity using various droplet sizes.

**PALMER RESPONSE:**

**1. At 6 DAT,**

- A. Liberty at 22 oz/A applied with XR tips controlled Palmer 44%; the use of AIXR tips or mixtures with 2,4-D or dicamba provided similar or better control.
- B. Liberty at 33 oz/A applied with XR tips controlled Palmer 59%; the use of AIXR tips or mixtures with 2,4-D or dicamba provided similar or better control.
- C. Clarity alone provided 44 to 46% with AIXR or TTI tips.
- D. 2,4-D provided 59% control with AIXR tips.

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## 2. At 12 DAT,

- A. Liberty at 22 oz/A applied with XR tips controlled Palmer 53%; the use of AIXR tips provided similar control at 46% while mixtures with 2,4-D or dicamba were more effective with 67 to 84% control noted.
- B. Liberty at 33 oz/A applied with XR tips controlled Palmer 63%; the use of AIXR tips provided similar control at 50% while mixtures with 2,4-D or dicamba were more effective with 77 to 86% control noted.
- C. Clarity alone provided 52 to 58% with AIXR or TTI tips.
- D. 2,4-D provided 64% control with AIXR tips.

## 3. By 21 DAT,

- A. Liberty at 22 oz/A applied with XR tips controlled Palmer 39%; the use of AIXR tips provided similar control at 34% while mixtures with 2,4-D or dicamba were more effective with 66 to 78% control noted.
- B. Liberty at 33 oz/A applied with XR tips controlled Palmer 63%; the use of AIXR tips provided similar control at 54% while mixtures with 2,4-D or dicamba were more effective with 74 to 76% control noted.
- C. Clarity alone provided 65 to 69% with AIXR or TTI tips.
- D. 2,4-D provided 68% control with AIXR tips.

## CONCLUSIONS:

1. No treatment adequately controlled emerged Palmer amaranth.
2. Mixtures of auxins and Liberty were better than Liberty alone and usually better the respective auxin alone.
3. There is a need to revisit Liberty + Weedar applications applied using UC drops when surrounded by a sound weed management program to further reduce the potential for drift of 2,4-D.

## GENERAL COMMENTS:

1. Application made with 3 different spray tips: DG11002XR at 26 PSI (fine/med drop), AIXR 11002 at 26 PSI (C to VC drop), TTI 11002 at 38 PSI (UC drop).
2. Rainfall:

Rainfall Dates	Rainfall Amount (inches)
April 18	3.06
April 22	0.12
April 29	2.1
May 3	0.3

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May 14	1.5
May 21	0.3
May 27	0.5
May 30	0.5
June 7	0.35
June 8	0.1
June 11	0.3
June 20	0.1
June 21	0.8
June 23	0.1
June 28	0.4
June 29	0.3
June 30	0.4

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Weed Code	AMAPA	AMAPA	AMAPA
Rating Data Type	CONTROL	CONTROL	CONTROL
Rating Unit	%	%	%
Rating Date	6/13/2014	6/18/2014	6/27/2014
Assessed By	SC	SC	JS
Trt-Eval Interval	7 DA-A	12 DA-A	21 DA-A

Trt No.	Treatment Name	Rate	Unit	1	2	3	
1	No herbicide			0.0	d 0.0	g 0.0	f
2	Liberty DG1002XR	22	oz/a	43.8	c 52.5	ef 38.8	e
3	Liberty DG1002XR	33	oz/a	58.8	b 62.5	cd 62.5	cd
4	Liberty AIXR 11002	22	oz/a	46.3	c 46.3	f 33.8	e
5	Liberty AIXR 11002	33	oz/a	60.8	b 50.0	ef 53.8	d
6	Clarity AIXR 11002	1	pt/a	46.3	c 52.5	ef 65.5	bc
7	Liberty Clarity AIXR 11002	22 1	oz/a pt/a	60.0	b 67.5	bcd 66.3	bc
8	Liberty Clarity AIXR 11002	33 1	oz/a pt/a	82.3	a 77.0	ab 75.3	ab
9	Weedar AIXR 11002	1	qt/a	58.8	b 63.8	cd 68.3	abc
10	Liberty Weedar AIXR 11002	22 1	oz/a qt/a	85.0	a 84.3	a 78.0	a
11	Liberty Weedar AIXR 11002	33 1	oz/a qt/a	85.5	a 85.8	a 77.3	a
12	Clarity TTI 11002	1	pt/a	43.8	c 58.3	de 69.0	abc
13	Liberty Clarity TTI 11002	22 1	oz/a pt/a	62.5	b 70.0	bc 67.0	bc
14	Liberty Clarity TTI 11002	33 1	oz/a pt/a	79.5	a 77.0	ab 73.8	ab
LSD (P=.05)				12.34	9.62	9.85	
Standard Deviation				8.63	6.73	6.89	
CV				14.86	11.13	11.64	
Bartlett's X2				29.816	17.322	9.913	
P(Bartlett's X2)				0.003*	0.138	0.624	
Replicate F				1.578	2.289	1.063	
Replicate Prob(F)				0.2100	0.0935	0.3760	
Treatment F				27.313	40.759	39.434	
Treatment Prob(F)				0.0001	0.0001	0.0001	

Means followed by same letter do not significantly differ (P=.05, LSD)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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 Location: Macon County              Investigator: Stanley Culpepper

### GENERAL TRIAL INFORMATION

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

### TRIAL LOCATION

**City:** Ideal                      **Trial Status:** COMPLETED  
**State/Prov.:** GA                      **Trial Reliability:** GOOD  
**Postal Code:** 31041                      **Initiation Date:** 6/6/2014  
**Country:** USA

**Conducted Under GLP (Y/N):** N                      **Conducted Under GEP (Y/N):** N

### CROP AND WEED DESCRIPTION

Weed Code	Common Name	Scientific Name
1. AMAPA	Palmer Amaranth	Amaranthus palmeri

### SITE AND DESIGN

**Plot Width, Unit:** 6 FT                      **Plot Length, Unit:** 30 FT                      **Reps:** 4  
**Site Type:** Macon County  
**Tillage Type:** CONVENTIONAL                      **Study Design:** RANDOMIZED COMPLETE BLOCK

### SOIL DESCRIPTION

**% Sand:** 82                      **% OM:** 1.9                      **Texture:** LOAMY SAND  
**% Silt:** 14                      **pH:** 6.3  
**% Clay:** 4

**Overall Moisture Conditions:** see comments

**Closest Weather Station:** rainfall taken on site                      **Distance:** 250                      **Unit:** yd

### APPLICATION DESCRIPTION

**A**  
**Application Date:** 6/6/2014  
**Time of Day:** 8:30am  
**Application Method:** BROADCAST  
**Application Timing:** POST  
**Applic. Placement:** OVERTOP  
**Air Temp., Unit:** 80 F  
**% Relative Humidity:** 65  
**Wind Velocity, Unit:** 0 MPH  
**Dew Presence (Y/N):** Y  
**Soil Temp., Unit:** 80 F  
**Soil Moisture:** FAIR  
**% Cloud Cover:** 5

### WEED STAGE AT EACH APPLICATION

**A**  
**Weed 1 Code, Stage:** AMAPA  
**Stage Scale:** 4-7 IN  
**Density, Unit:** 1500 plot

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## APPLICATION EQUIPMENT

**A**

<b>Appl. Equipment:</b>	BACKPACK
<b>Operating Pressure:</b>	26
<b>Nozzle Type:</b>	COMMENTS
<b>Nozzle Size:</b>	COMMENTS
<b>Nozzle Spacing, Unit:</b>	18 IN
<b>Nozzles/Row:</b>	4
<b>Boom Length, Unit:</b>	4.5 FT
<b>Boom Height, Unit:</b>	16 IN
<b>Ground Speed, Unit:</b>	3 MPH
<b>Carrier:</b>	WATER
<b>Spray Volume, Unit:</b>	15 GPA
<b>Propellant:</b>	CO2
<b>Tank Mix (Y/N):</b>	Y