

Effect of Nozzles on Palmer Amaranth Control with Liberty Tank-Mixed with Dicamba or 2,4-D.

Trial ID: 16-9B-S130 Location: Belleville Res. Center Trial Year: 2016  
Investigator: Karla L. Gage, Ph.D.**Trial Status:** F one-year/final  
**Initiation Date:** 6-9-16  
**Completion Date:** 7-21-16**Trial Location****City:** Belleville **Country:** USA  
**State/Prov.:** Illinois IL  
**Postal Code:** 62221**Objectives:**

Evaluate the efficacy of Liberty when using low drift nozzles on Palmer amaranth.

**Contacts****Study Director:** Karla Gage, Ph.D. **Title:** Assistant Professor of Weed Science  
**Organization:** Southern Illinois University Carbondale  
**Address:** 1205 Lincoln Drive MC 4415 **Phone No.:** 618-453-7679  
**City+State/Prov:** Carbondale, IL  
**Postal Code:** 62901 **E-mail:** kgage@siu.edu  
**Country:** USA**Crop Description****Crop 1:** NONE - Non-crop \_  
**Variety:** NON-CROP  
**Description:** NA**Planting Method:** NA**Pest Description****Pest 1 Type:** W **Code:** AMAPA **Amaranthus palmeri** S.Wats.  
**Common Name:** amaranth, Palmer**Site and Design****Treated Plot Width:** 7.5 FT **Total Plot Width:** 10 FT **Site Type:** FIELD  
**Treated Plot Length:** 25 FT **Total Plot Length:** 25 FT **Experimental Unit:** 1 PLOT  
**Tillage Type:** REDTIL reduced-till  
**Replications:** 4 **Study Design:** RACOB L Randomized Complete Block (RCB)  
**Untreated Arrangement:** INCLUDED single control randomized in each block

No.	Previous Crop	Year
1.	NONCROP	2015

**Maintenance**

No.	Maintenance Product Name
1.	N 0 LB/A, P2O5 0 LB/A, K2O 150 LB/A

**Soil Description****Description Name:** 09B\_2013  
**% OM:** 2.9 **Texture:** SIL silt loam  
**pH:** 6.2 **Soil Name:** Bethalto  
**CEC:** 11**Additional Measured Elements**

Element	Quantity	Unit
P1	72	lb/A
K	275	lb/A

**Moisture and Weather Conditions****Overall Moisture Conditions:** NORMAL  
**Closest Weather Station:** ICN - Belleville IL **Distance, Unit:** 0.5 MI

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No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-1-16					7	DAY	32	75	F
2.	4-6-16	0.49	IN	RAIN	rain	1	DAY			
3.	4-8-16					7	DAY	28	71	F
4.	4-10-16	0.97	IN	RAIN	rain	2	DAY			
5.	4-15-16					7	DAY	48	81	F
6.	4-20-16	0.45	IN	RAIN	rain	3	DAY			
7.	4-22-16					7	DAY	47	85	F
8.	4-26-16	1.74	IN	RAIN	rain	2	DAY			
9.	4-29-16					7	DAY	46	75	F
10.	4-29-16	1.94	IN	RAIN	rain	2	DAY			
11.	5-4-16	0.02	IN	RAIN	rain	1	DAY			
12.	5-6-16					7	DAY	44	87	F
13.	5-7-16	0.07	IN	RAIN	rain	1	DAY			
14.	5-9-16	2.12	IN	RAIN	rain	5	DAY			
15.	5-13-16					7	DAY	41	76	F
16.	5-16-16	1.06	IN	RAIN	rain	2	DAY			
17.	5-20-16					7	DAY	51	83	F
18.	5-20-16	0.06	IN	RAIN	rain	1	DAY			
19.	5-25-16	0.68	IN	RAIN	rain	3	DAY			
20.	5-27-16					7	DAY	62	88	F
21.	5-31-16	0.03	IN	RAIN	rain	2	DAY			
22.	6-3-16					7	DAY	55	89	F
23.	6-3-16	0.01	IN	RAIN	rain	1	DAY			
24.	6-4-16	0.72	IN	RAIN	rain	1	DAY			
25.	6-10-16					7	DAY	65	96	F
26.	6-13-16	0.03	IN	RAIN	rain	1	DAY			
27.	6-17-16					7	DAY	67	97	F
28.	6-21-16	0.01	IN	RAIN	rain	1	DAY			
29.	6-24-16					7	DAY	57	95	F
30.	6-25-16	0.02	IN	RAIN	rain	1	DAY			
31.	6-30-16	0.03	IN	RAIN	rain	1	DAY			
32.	7-1-16					7	DAY	60	91	F
33.	7-1-16	2.26	IN	RAIN	rain	4	DAY			
34.	7-6-16	0.32	IN	RAIN	rain	3	DAY			
35.	7-8-16					7	DAY	67	93	F
36.	7-13-16	0.49	IN	RAIN	rain	2	DAY			
37.	7-15-16					7	DAY	68	93	F
38.	7-17-16	0.02	IN	RAIN	rain	1	DAY			
39.	7-19-16	1.47	IN	RAIN	rain	2	DAY			
40.	7-22-16					7	DAY	72	94	F
41.	7-25-16	0.1	IN	RAIN	rain	1	DAY			
42.	7-29-16					7	DAY	69	91	F

**Comment:**

Rainfall was recorded on station and provided by Illinois Climate Network.  
Air temperature was recorded at Scott Air Force Base 2.5 miles north and provided by NOAA's National Centers for Environmental Information.  
Air temperatures given are summarized as weekly high and low, detailed weather data is available on request.

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## Application Description

	A	B
Application Date:	6-23-16	6-23-16
Appl. Start Time:	6:00	6:00
Appl. Stop Time:	7:00	7:00
Application Method:	Spray	Spray
Application Timing:	3-5"W	3-5"W
Application Placement:	BROFOL	BROFOL
Applied By:	BD	BD
Air Temperature, Unit:	85 F	85 F
% Relative Humidity:	72	72
Wind Velocity, Unit:	5 MPH	5 MPH
Wind Direction:	WSW	WSW
Dew Presence (Y/N):	N	N
Soil Temperature, Unit:	81 F	81 F
Soil Moisture:	BELNOR	BELNOR
% Cloud Cover:	25	25
Next Moisture Occurred On:	6-30-16	6-30-16
Time to Next Moisture, Unit:	7 DAY	7 DAY

## Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	NONE	NONE
Stage Scale Used:	DESC	DESC
Stage Majority, Percent:	NA	NA

## Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	AMAPA W	AMAPA W
Stage Majority, Percent:	10+	10+
Stage Minimum, Percent:	10+	10+
Stage Maximum, Percent:	10+	10+
Height, Unit:	6 IN	6 IN
Height Minimum, Maximum:	3 6	3 6
Density, Unit:	8 FT2	8 FT2

## Application Equipment

	A	B
Appl. Equipment:	CO2 sprayer	CO2 sprayer
Equipment Type:	BACSPR	BACSPR
Operation Pressure, Unit:	30 PSI	30 PSI
Nozzle Type:	TTI	XR
Nozzle Size:	11002	8002
Boom Length, Unit:	7.5 FT	7.5 FT
Spray Volume, Unit:	15 GPA	15 GPA

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Pest Code								AMAPA	AMAPA
Crop Code								7-7-16	7-21-16
Rating Date								Control	Control
Rating Type								Percent	Percent
Rating Unit								14 DA-A	28 DA-A
Rating Timing									
Trt-Eval Interval									
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code
1	NONTREATED								
2	TTI 11002 NOZZLES DICAMBA DGA	4	SL	0.5 lb ae/a		16 fl oz/a		3-5"W	A
3	TTI 11002 NOZZLES 2,4-D AMINE 4	3.8	SL	0.71 lb ae/a		24 fl oz/a		3-5"W	A
4	XR 8002 NOZZLES LIBERTY 280 AMS - LIQUID	2.34 100	EC SL	0.58 lb ai/a 5 % v/v		31.7 fl oz/a 5 % v/v		3-5"W 3-5"W	B B
5	TTI 11002 NOZZLES LIBERTY 280 AMS - LIQUID	2.34 100	EC SL	0.58 lb ai/a 5 % v/v		31.7 fl oz/a 5 % v/v		3-5"W 3-5"W	A A
6	TTI 11002 NOZZLES LIBERTY 280	2.34	EC	0.58 lb ai/a		31.7 fl oz/a		3-5"W	A
7	TTI 11002 NOZZLES LIBERTY 280 DICAMBA DGA	2.34 4	EC SL	0.58 lb ai/a 0.5 lb ae/a		31.7 fl oz/a 16 fl oz/a		3-5"W 3-5"W	A A
8	TTI 11002 NOZZLES LIBERTY 280 DICAMBA DGA AMS - LIQUID	2.34 4 100	EC SL SL	0.58 lb ai/a 0.5 lb ae/a 5 % v/v		31.7 fl oz/a 16 fl oz/a 5 % v/v		3-5"W 3-5"W 3-5"W	A A A
9	TTI 11002 NOZZLES LIBERTY 280 2,4-D AMINE 4	2.34 3.8	EC SL	0.58 lb ai/a 0.71 lb ae/a		31.7 fl oz/a 24 fl oz/a		3-5"W 3-5"W	A A
10	TTI 11002 NOZZLES LIBERTY 280 2,4-D AMINE 4 AMS - LIQUID	2.34 3.8 100	EC SL SL	0.58 lb ai/a 0.71 lb ae/a 5 % v/v		31.7 fl oz/a 24 fl oz/a 5 % v/v		3-5"W 3-5"W 3-5"W	A A A
11	XR 8002 NOZZLES LIBERTY 280	2.34	EC	0.58 lb ai/a		31.7 fl oz/a		3-5"W	B
LSD P=.05								1.8	3.1
Standard Deviation								1.2	2.1
CV								1.3	2.23
Replicate F								1.714	0.976
Replicate Prob(F)								0.1877	0.4186
Treatment F								39.286	8.401
Treatment Prob(F)								0.0001	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Trial Comments

1. Protocol: SIU/RFK.
2. Ratings:  
CI none non-crop.  
WC 14, 28, and 56 DA-A+B, rate all plots in the same column.
3. No yield, non-crop.
4. Photos not requested.
5. Applications A and B use different nozzles, spray A and B on the same day.  
Rainfall following the 3-5"W applications A+B was 2.61 inch over 9 days beginning 7 days later.
6. Not harvested, non-crop.