

# Purdue University Weed Science

## Comparison of Fierce tank-mixes on burndown of GR Palmer Amaranth

Trial ID: 13S-CCP-CTF-03      Location: Cass County      Trial Year: 2013  
 Protocol ID: 13S-CCP-CTF-03      Investigator: Dr. Bill Johnson  
 Project ID: 64.02      Study Director: Joe Ikley  
 Sponsor Contact: Valent - Eric Ott

### General Trial Information

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Investigator:** Dr. Bill Johnson      **Title:** Professor

**Discipline:** H herbicide  
**Trial Status:** F one-year/final      **Trial Reliability:** HIGH  
**Initiation Date:** 6/3/2013  
**Completion Date:** 7/1/2013

### Trial Location

**City:** 12 Mile      **Country:** USA United States  
**State/Prov.:** Indiana

### Contacts

**Study Director:** Joe Ikley      **Title:** Research Associate  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-0891  
**City+State/Prov:** West Lafayette      **Mobile No.:** 410-596-9091  
**Postal Code:** 47907      **E-mail:** jikley@purdue.edu

**Investigator:** Dr. Bill Johnson      **Title:** Professor  
**Organization:** Purdue University  
**Address:** 915 West State Street      **Phone No.:** 765-494-4656  
**City+State/Prov:** West Lafayette      **Mobile No.:** 765-404-9801  
**Postal Code:** 47907      **E-mail:** wgj@purdue.edu

### Crop Description

**Crop 1:** N/A

### Pest Description

**Pest 1 Type:** W      **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth  
**Description:** GLY-RES

### Site and Design

**Treated Plot Width:** 10 FT      **Site Type:** FIELD field  
**Treated Plot Length:** 30 FT      **Experimental Unit:** 1 PLOT plot  
**Treated Plot Area:** 300 FT<sup>2</sup>      **Treatments:** 14      **Tillage Type:** CONTIL conventional-till  
**Replications:** 4      **Study Design:** RAOBL Randomized Complete Block (RCB)

### Soil Description

**Description Name:** Bloomfield Loamy Fine Sand  
**Texture:** LFS loamy fine sand  
**Soil Name:** Bloomfield Loamy Fine Sand  
**Soil Drainage:** E excellent

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## Application Description

	A
Application Date:	6/3/2013
Appl. Start Time:	14:00
Appl. Stop Time:	15:30
Application Method:	SPRAY
Application Timing:	POSPOS
Application Placement:	BROADC
Applied By:	Spaunhorst
Air Temperature, Unit:	72.5 F
% Relative Humidity:	60
Wind Velocity, Unit:	2 MPH
Wind Direction:	NNE
Dew Presence (Y/N):	N no
Soil Temperature, Unit:	76 F
Soil Moisture:	SLIWET
% Cloud Cover:	0

## Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	N/A

## Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	AMAPA W
Stage Majority, Percent:	33
Height, Unit:	3.5 IN
Height Minimum, Maximum:	2 4.5
Density, Unit:	200 YD2

## Application Equipment

	A
Appl. Equipment:	CO2 Backpack
Equipment Type:	SPRBAC
Operation Pressure, Unit:	18 PSI
Nozzle Type:	Flat Fan
Nozzle Size:	XR11002
Nozzle Spacing, Unit:	15 IN
Nozzles/Row:	8
Boom Length, Unit:	10 FT
Boom Height, Unit:	18 IN
Ground Speed, Unit:	3 MPH
Carrier:	H2O
Water Hardness (ppm CaCO3):	150
Spray Volume, Unit:	15 GAL/AC
Mix Size, Unit:	1.8 Liters
Propellant:	CO2
Tank Mix (Y/N):	N no

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Trial Comments

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Reps: 4      Plots: 10 by 30 feet  
 Spray vol: 15 gal/ac      Mix size: 1.8 liters (min 1.5642)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Other Rate	Other Unit	Appl Code	Amt to Measure	Rep 1	2	3	4
1	Untreated Check							A		101	301	607	801
2	Roundup Powermax N-Pak AMS	4.5 LBAE/GAL 3.4 LBA/GAL	SL SL	SL	1260 g ai/ha 4.9 % v/v	32 fl oz/a 2.5 lb ai/a		A A	29.93 ml/mx 88.2 ml/mx	102	401	507	806
3	Roundup Powermax Sharpen N-Pak AMS MSO	4.5 LBAE/GAL 2.85 LB/GAL 3.4 LBA/GAL 100 %	SL L SL L	SL	1260 g ai/ha 25 g ai/ha 4.9 % v/v 1 % v/v	32 fl oz/a 1 fl oz/a 2.5 lb ai/a 1 % v/v		A A A A	29.93 ml/mx 0.9378 ml/mx 88.2 ml/mx 18.0 ml/mx	103	406	501	805
4	Roundup Powermax Engenia Fierce N-Pak AMS	4.5 LBAE/GAL 600 GA/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 280 g ai/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.25 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 5.987 ml/mx 2.701 g/mx 88.2 ml/mx	104	405	601	802
5	Roundup Powermax Engenia N-Pak AMS	4.5 LBAE/GAL 600 GA/L 3.4 LBA/GAL	SL SL SL	SL	1260 g ai/ha 560 g ai/ha 4.9 % v/v	32 fl oz/a 0.5 lb ai/a 2.5 lb ai/a		A A A	29.93 ml/mx 11.97 ml/mx 88.2 ml/mx	105	302	506	707
6	Roundup Powermax Engenia Fierce N-Pak AMS	4.5 LBAE/GAL 600 GA/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 560 g ai/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.5 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 11.97 ml/mx 2.701 g/mx 88.2 ml/mx	106	304	504	705
7	Roundup Powermax Engenia Fierce N-Pak AMS	4.5 LBAE/GAL 600 GA/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 840 g ai/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.75 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 17.96 ml/mx 2.701 g/mx 88.2 ml/mx	107	404	602	706
8	Roundup Powermax Engenia Fierce N-Pak AMS	4.5 LBAE/GAL 600 GA/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 1120 g ai/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 1 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 23.95 ml/mx 2.701 g/mx 88.2 ml/mx	201	402	606	807
9	Roundup Powermax 2,4-D Choline Fierce N-Pak AMS	4.5 LBAE/GAL 456 GAE/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 280 g ae/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.25 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 7.877 ml/mx 2.701 g/mx 88.2 ml/mx	202	303	502	703
10	Roundup Powermax 2,4-D Choline N-Pak AMS	4.5 LBAE/GAL 456 GAE/L 3.4 LBA/GAL	SL SL SL	SL	1260 g ai/ha 560 g ae/ha 4.9 % v/v	32 fl oz/a 0.5 lb ai/a 2.5 lb ai/a		A A A	29.93 ml/mx 15.75 ml/mx 88.2 ml/mx	203	403	603	803
11	Roundup Powermax 2,4-D Choline Fierce N-Pak AMS	4.5 LBAE/GAL 456 GAE/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 560 g ae/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.5 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 15.75 ml/mx 2.701 g/mx 88.2 ml/mx	204	305	605	804
12	Roundup Powermax 2,4-D Choline Fierce N-Pak AMS	4.5 LBAE/GAL 456 GAE/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 840 g ae/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 0.75 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 23.63 ml/mx 2.701 g/mx 88.2 ml/mx	205	407	505	701
13	Roundup Powermax 2,4-D Choline Fierce N-Pak AMS	4.5 LBAE/GAL 456 GAE/L 76 % 3.4 LBA/GAL	SL SL WG SL	SL	1260 g ai/ha 1120 g ae/ha 160 g ai/ha 4.9 % v/v	32 fl oz/a 1 lb ai/a 3 oz/a 2.5 lb ai/a		A A A A	29.93 ml/mx 31.51 ml/mx 2.701 g/mx 88.2 ml/mx	206	307	503	702
14	Untreated Check									207	306	604	704

Sort Order: Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
359.204	ml	Roundup Powermax	4.5	SL	
1,058.400	ml	N-Pak AMS	3.4	SL	

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Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Type	Lot Code
0.938	ml	Sharpen	2.85	L	
18.000	ml	MSO	100	L	
71.841	ml	Engenia	600	SL	
21.606	g	Fierce	76	WG	
94.527	ml	2,4-D Choline	456	SL	

\* 'Per area' calculations based on spray volume= 15 gal/ac, mix size= 1.8 liters (mix size basis).

\* 'Per volume' calculations use spray volume= 15 gal/ac, mix size= 1.8 liters.



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Pest Type	W Weed	W Weed	W Weed
Pest Code	AMAPA	AMAPA	AMAPA
Pest Scientific Name	Amaranthus pal>	Amaranthus pal>	Amaranthus pal>
Pest Name	Palmer amaranth	Palmer amaranth	Palmer amaranth
Part Rated	PLOT P	PLOT P	PLOT P
Rating Date	6/11/2013	6/18/2013	7/1/2013
Rating Type	CONTRO	CONTRO	CONTRO
Rating Unit	%	%	%
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT
Days After First/Last Applic.	8 8	15 15	28 28
Trt-Eval Interval	8 DA-A	15 DA-A	28 DA-A
ARM Action Codes	P	P	P
Number of Decimals	0	0	0
Trt Treatment	Rate	Appl	
No. Name	Rate Unit	Code	
		1	2
13 Roundup Powermax	1260 g ai/ha A	91 a	99 a
2,4-D Choline	1120 g ae/ha A		
Fierce	160 g ai/ha A		
N-Pak AMS	4.9 % v/v A		
14 Untreated Check		0 d	0 d
LSD (P=.05)	13.4	13.3	11.9
Standard Deviation	9.3	9.3	8.3
CV	15.13	13.05	11.96
Bartlett's X2	13.614	33.134	39.336
P(Bartlett's X2)	0.255	0.001*	0.001*
Skewness	-0.7295*	-1.0626*	-0.9942*
Kurtosis	-1.17	-0.6973	-0.7734

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Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/11/2013 CONTRO % 1 PLOT 8  
 8 8 DA-A P 0 (Data Column 1)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	55	78071.428571			
Replicate	3	492.857143	164.285714	1.881	0.1488
Treatment	13	74171.428571	5705.494505	65.308	0.0001
Error	39	3407.142857	87.362637		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 6/18/2013 CONTRO % 1 PLOT 15  
 15 15 DA-A P 0 (Data Column 2)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	55	84785.714286			
Replicate	3	1100.000000	366.666667	4.221	0.0112
Treatment	13	80298.214286	6176.785714	71.113	0.0001
Error	39	3387.500000	86.858974		

Randomized Complete Block (RCB) AOV For W Weed AMAPA Amaranthus palmeri Palmer amaranth PLOT P 7/1/2013 CONTRO % 1 PLOT 28  
 28 28 DA-A P 0 (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	55	82942.857143			
Replicate	3	1598.714286	532.904762	7.745	0.0004
Treatment	13	78660.857143	6050.835165	87.945	0.0001
Error	39	2683.285714	68.802198		

Pest Type  
 W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Part Rated  
 PLOT = plot  
 P = Pest is Part Rated

Rating Type  
 CONTRO = control / burndown or knockdown

Rating Unit  
 % = percent

PLOT = total plot  
ARM Action Codes  
 P = Rating scale of 0 to 100 (e.g. % control or injury)