

Wisconsin Crop Weed Science Research Report 2014



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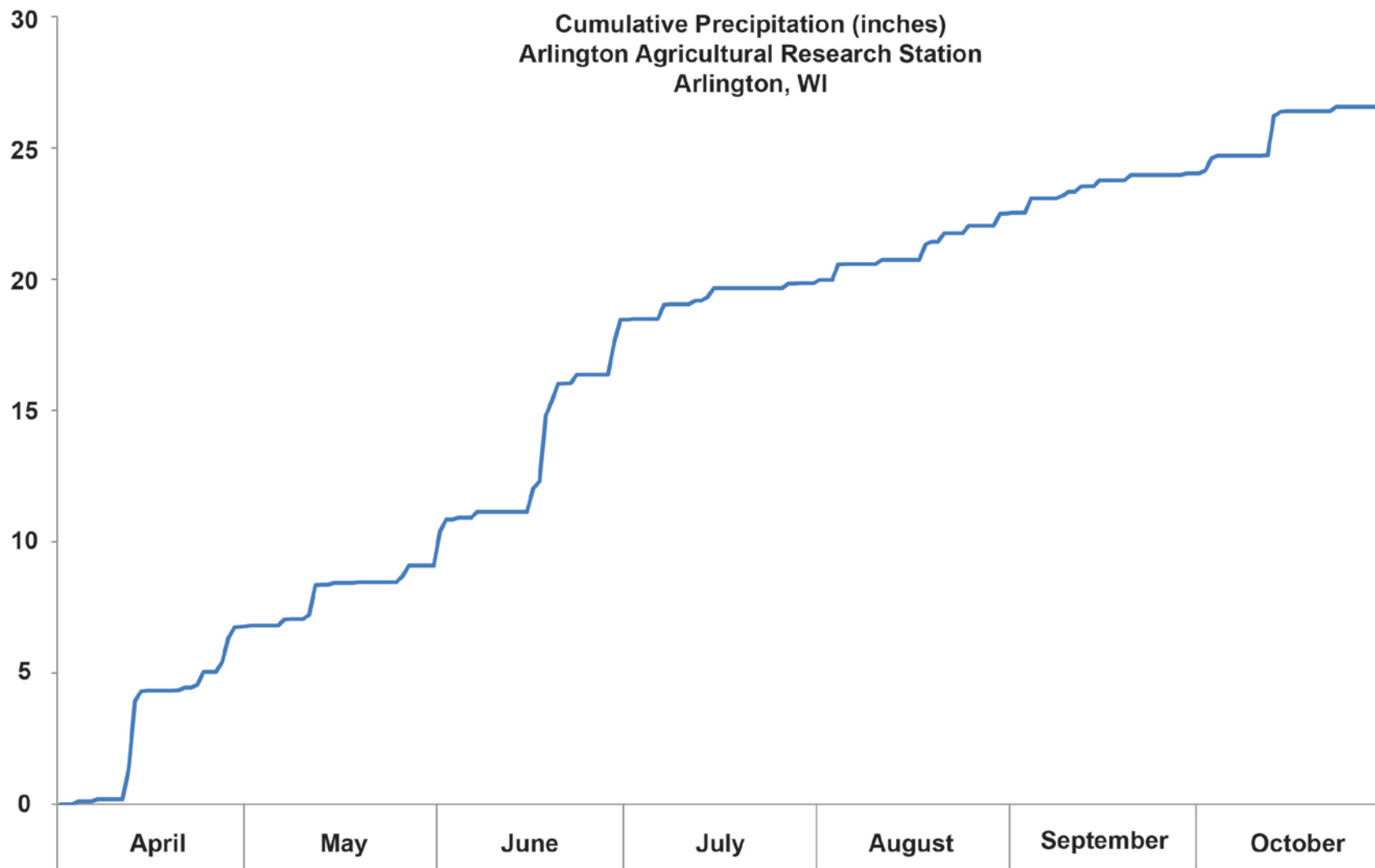
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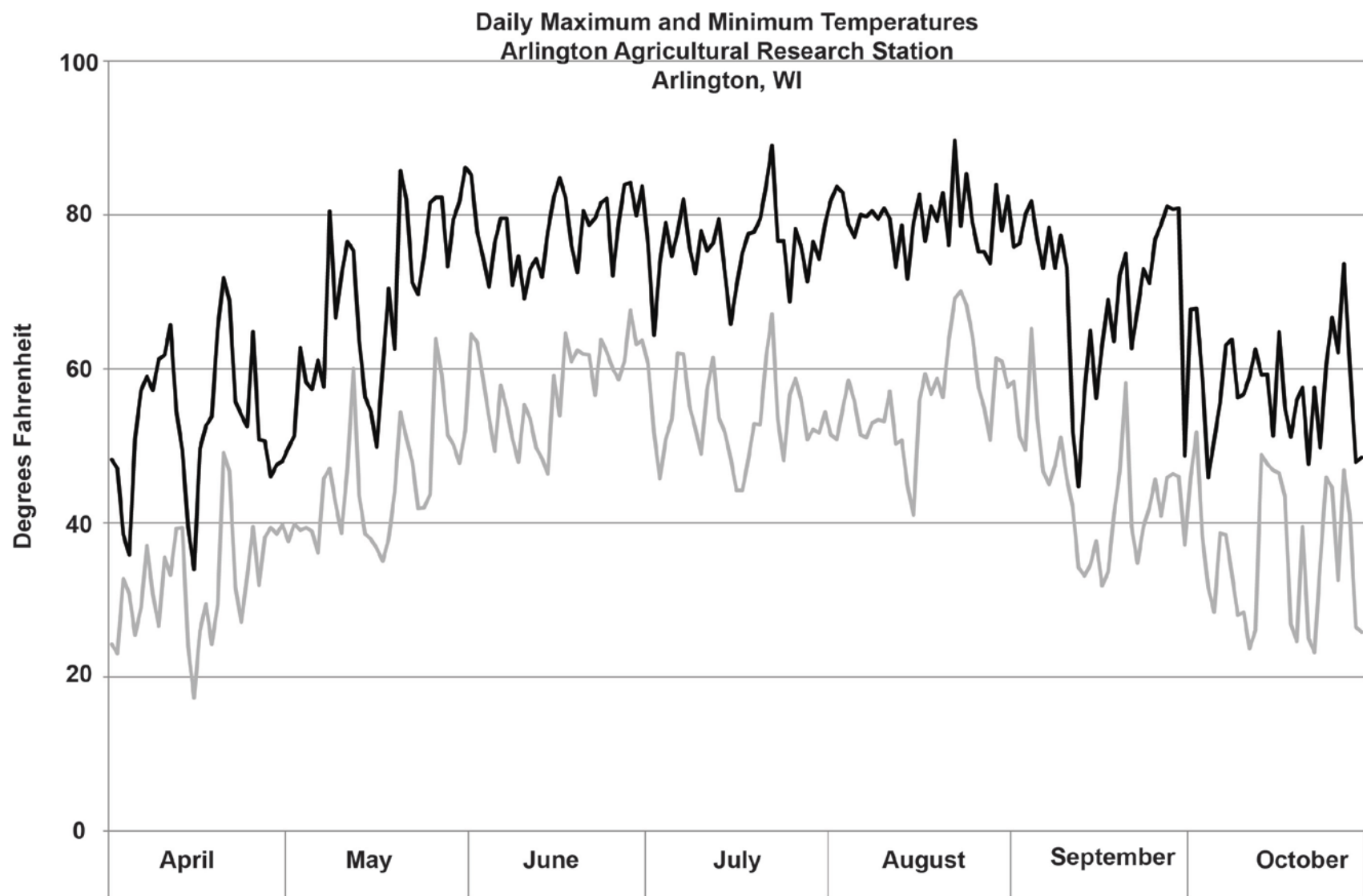


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Trial: Sequential Corn Herbicide Evaluation: Liberty 280 **Trial #** CN05

Project Goal: To evaluate weed efficacy of herbicide programs in Liberty Link corn.

Location: Arlington Research Station

Site Description:

Field no.:	454	Crop:	Corn
Soil type:	Plano silt loam	Variety:	Wyffels 2888
% OM:	3.4	Date planted:	5/20/2014
pH:	6.9	Planting pop.:	32,000 S/A
Fertilization:	145 lbs N per acre	Planting depth:	2 in
Previous cropping and tillage:	Soybean	Row spacing:	30 in
		Plot size:	10 by 28 ft
Principal weeds present:	Common ragweed (AMBEL), common lambsquarters (CHEAL), amaranth (AMASS), velvetleaf (ABUTH), giant foxtail (SETFA)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	5/21/2014	6/16/2014	6/24/2014
Treatment:	PRE	EPOST	MPOST
Soil moisture [surface]:	Slightly wet	DRY	WET
Soil temperature (°F) [2 in depth]	60	80	78
Air temperature (°F)	76	88	83
Wind speed (mph)/direction	7/NW	7/S	8.5/NW
Relative humidity (%)	57	42	62
Cloud cover (%)	10	80	25

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		5/21/2014	6/16/2014	6/24/2014
Crop	Height (in)	PRE		24 in
	Stage (lf)			V6
AMBEL	Height (in)	PRE		5-10 in
	Density (per ft sq)			¼ ft ²
CHEAL	Height (in)	PRE		2-4 in
	Density (per ft sq)			¼ ft ²
AMASS	Height (in)	PRE		
	Density (per ft sq)			
ABUTH	Height (in)	PRE		
	Density (per ft sq)			
ERBVI	Height (in)	PRE		4-6 in
	Density (per ft sq)			15 ft ²

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	Nontreated					
2	Verdict	5.57lb/gal	EC	15fl oz/a	Pre	A
3	Verdict	5.57lb/gal	EC	15fl oz/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
4	Verdict	5.57lb/gal	EC	15fl oz/a	Pre	A
	Prowl H2O	3.8lb/gal	AS	2pt/a	Pre	A
5	Verdict	5.57lb/gal	EC	15fl oz/a	Pre	A
	Prowl H2O	3.8lb/gal	AS	2pt/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
6	Zidua	85%	WDG	2.5oz/a	Pre	A
	Sharpen	2.85lb/gal	SC	3fl oz/a	Pre	A
7	Zidua	85%	WDG	2.5oz/a	Pre	A
	Sharpen	2.85lb/gal	SC	3fl oz/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
8	Verdict	5.57lb/gal	EC	10fl oz/a	Pre	A
	Zidua	85%	WDG	2.5oz/a	Pre	A
9	Verdict	5.57lb/gal	EC	10fl oz/a	Pre	A
	Zidua	85%	WDG	2.5oz/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
10	SureStart	4.25lb/gal	EC	2pt/a	Pre	A
11	SureStart	4.25lb/gal	EC	2pt/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
12	Zemax	3.7lb/gal	SE	2qt/a	Pre	A
13	Zemax	3.7lb/gal	SE	2qt/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
14	Liberty 280	2.34lb/gal	SL	22fl oz/a	EPost	B
	AMS	100%	SG	3lb/a	EPost	B
15	Capreno	3.45lb/gal	SC	3fl oz/a	EPost	B
	AMS	100%	SG	8.5lb/100 gal	EPost	B
16	Halex GT	4.47lb/gal	SL	3.6pt/a	EPost	B
	AMS	100%	SG	8.5lb/100 gal	EPost	B
17	Anthem	2.5lb/gal	SE	10fl oz/a	Pre	A
18	Anthem	2.5lb/gal	SE	10fl oz/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
19	Dual II Magnum	7.64lb/gal	EC	1.67pt/a	Pre	A
20	Dual II Magnum	7.64lb/gal	EC	1.67pt/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	AMS	100%	SG	3lb/a	Post	C
21	Dual II Magnum	7.64lb/gal	EC	1.67pt/a	Pre	A
	Status	56%	WDG	5oz/a	Post	C
	COC	100%	SL	1% v/v	Post	C
	AMS	100%	SG	17lb/100 gal	Post	C
22	Dual II Magnum	7.64lb/gal	EC	1.67pt/a	Pre	A
	Liberty 280	2.34lb/gal	SL	22fl oz/a	Post	C
	Status	56%	WDG	5oz/a	Post	C
	AMS	100%	SG	17lb/100 gal	Post	C
23	Roundup PowerMax	4.5lb/gal	SL	22fl oz/a	EPost	B
	AMS	100%	SG	17lb/100 gal	EPost	B

Trial Summary:

This trial compared PRE only, EPOST only, and PRE+MPOST herbicide programs. One percent or less of phytotoxicity symptoms were observed at all rating dates (data not shown). Common ragweed control ranged from 81 to 96 percent for the PRE only treatments two weeks after the pre-emergence application (Fig. 1). By the first week of August, control ranged from 71 to 98 percent. For the EPOST only treatments, control exceeded 95 percent seven weeks after the EPOST application. In the PRE+MPOST treatments, control ranged from 53 to 100 percent by the first week of August. Common lambsquarters control varied for all herbicide programs between 25 to 100 percent (Fig. 2). Control of pigweeds exceeded 91 percent for all treatments except treatment #2 at 75 percent six weeks after the PRE application (data not shown). Velvetleaf control in the PRE only treatments ranged from 85 to 98 percent two weeks after application and continued to vary through the growing season (Fig. 3). For the EPOST only treatments, control exceeded 95 percent three weeks after application. Control in the PRE+MPOST treatments ranged from 79 to 100 percent six weeks after the MPOST application. Giant foxtail control for the PRE only treatments ranged from 34 to 90 percent five weeks after application (Fig. 4). Three of the four EPOST only treatments exceeded 94 percent control by the first week of August except for treatment #15 at 43 percent control. The PRE+MPOST treatments ranged from 65 to 100 percent control two weeks after the MPOST application.

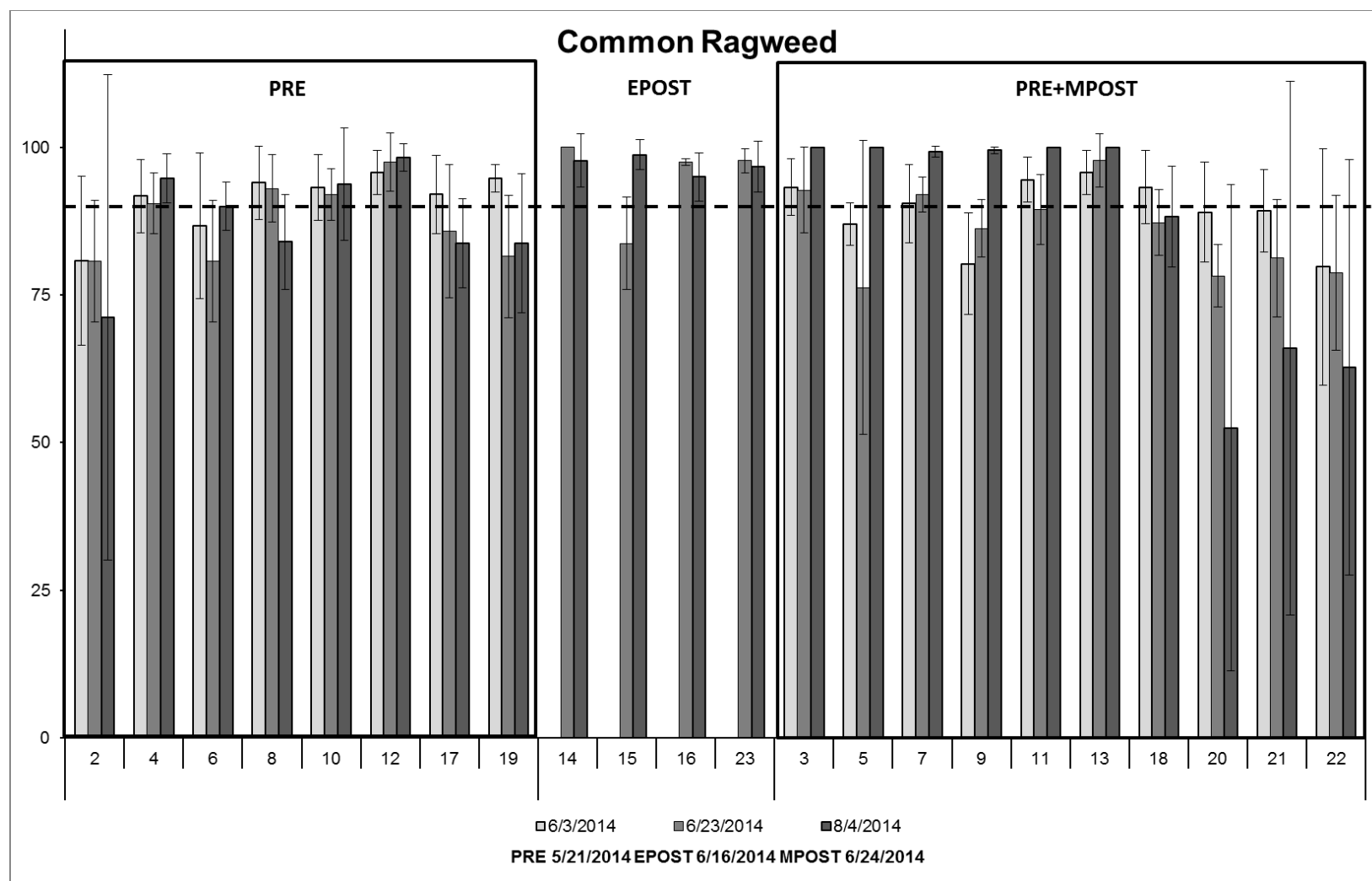


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

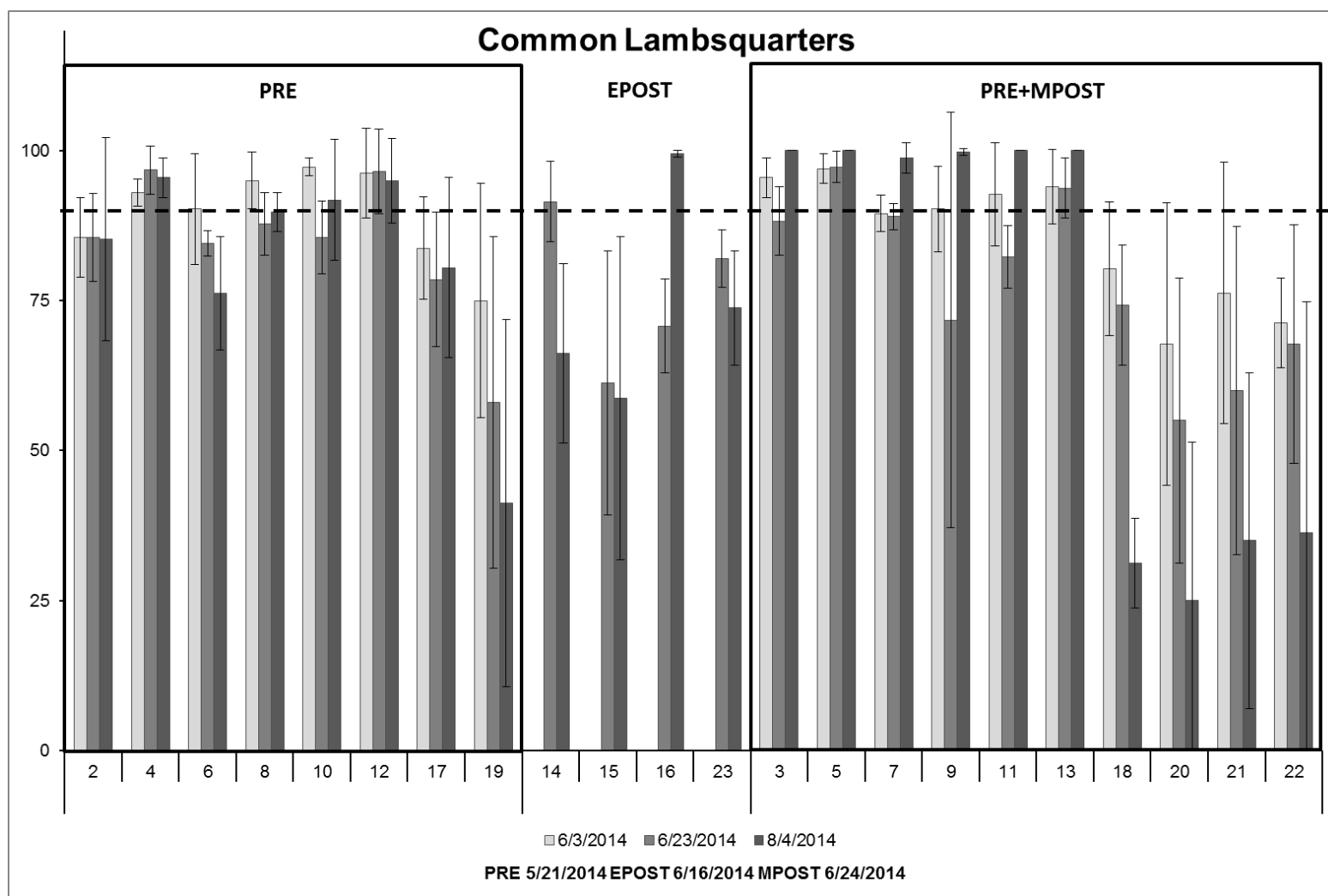


Figure 2: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

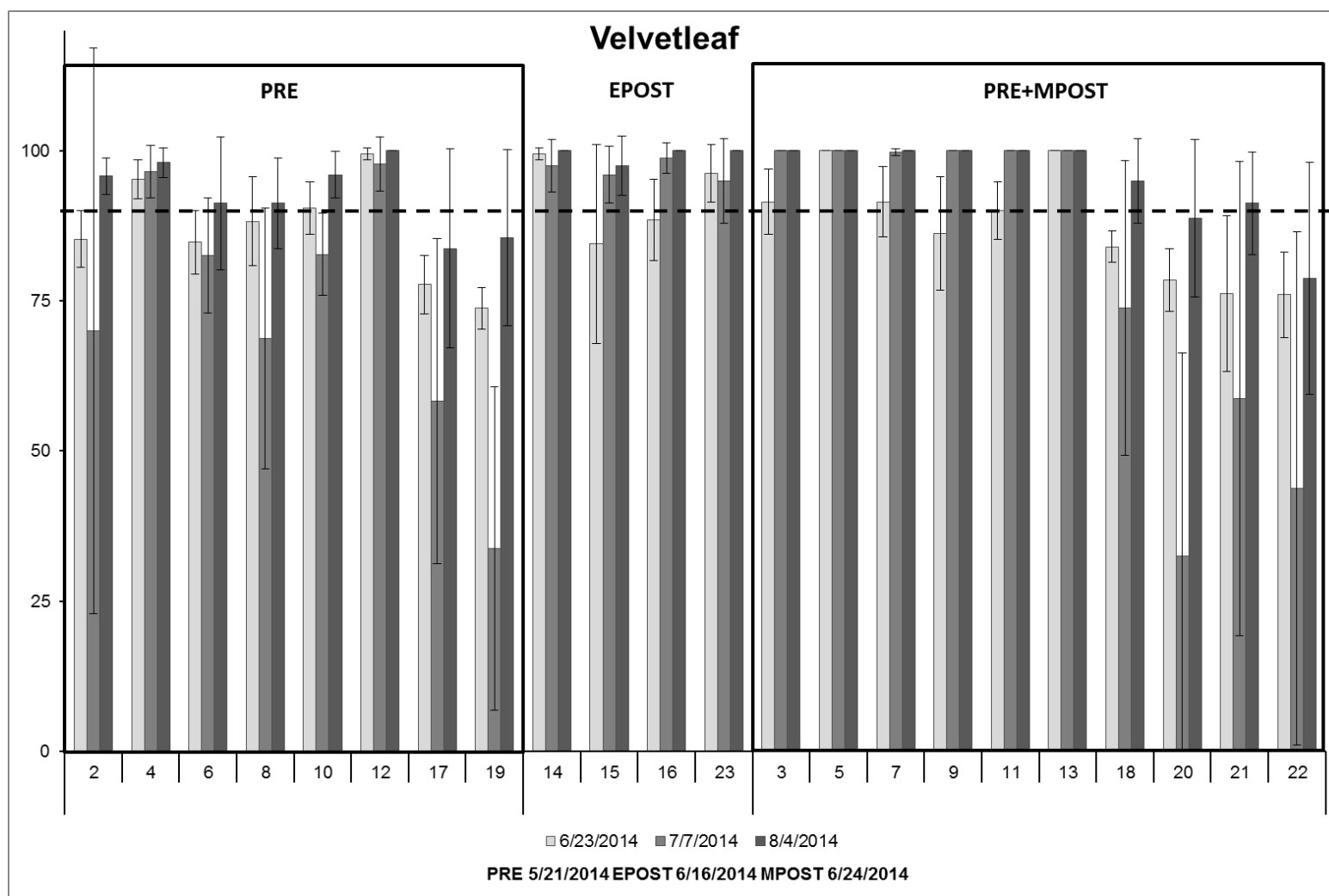


Figure 3: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

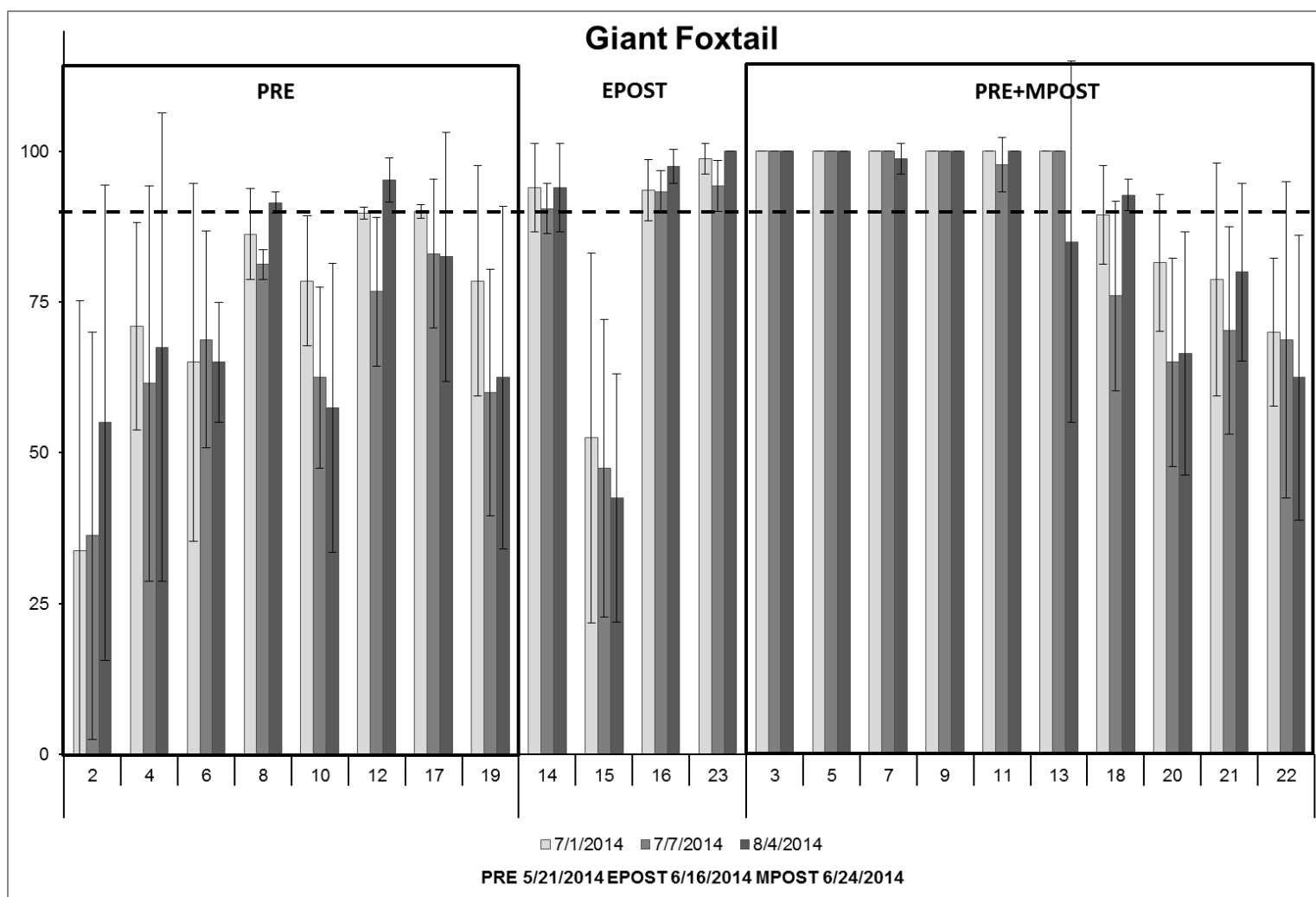


Figure 4: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Herbicide Efficacy Programs with Atrazine in Corn

Trial # CN09

Project Goal: To compare PRE, EPOST, and PRE+MPOST herbicide programs that do and do not include atrazine for field corn

Location: Janesville, WI

Site Description:

Field no.:	ROCK	Crop:	Corn
Soil type:	Silt loam	Variety:	Wyffels 1787
% OM:	3.9	Date planted:	5/29/2014
pH:	6.9	Planting pop.:	32,400
Fertilization:		Planting depth:	2.0 in
Previous cropping and tillage:		Row spacing:	30 in
Principal weeds present:	Common lambsquarters (CHEAL), velvetleaf (ABUTH), green foxtail (SETVI)	Plot size:	10 by 28 ft
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	5/29/2014	6/16/2014	7/3/2014
Treatment:	PRE	EPOST	POST
Soil moisture [surface]:	DRY	DRY	WET
Soil temperature (°F) [2 in depth]	70	86	68
Air temperature (°F)	87	92	69
Wind speed (mph)/direction	4-5/NE	3-8/SSE	4-5/W
Relative humidity (%)	40	52	60
Cloud cover (%)	0	25	0

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR11002, Spacing: 15 in, Height: 20 in

Crop and Weed Information at Application:

Date:		5/29/2014	6/16/2014	7/3/2014
Crop	Height (in)	PRE	8-10	
	Stage	SEED	V2	V6/V7
SETVI	Height (in)		2	
	Density (per sq.ft.)		1-3	
CHEAL	Height (in)		3	
	Density (per sq.ft.)		4-10	
ABUTH	Height (in)		2	
	Density (per sq.ft.)		2-8	

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Amt Product to Measure
1	Nontreated							
2	rimsulfuron	25%		SG	1oz/a	PREPRE	A	0.9436 g/mx
	mesotrione	50%		WDG	5oz/a	PREPRE	A	4.718 g/mx
	Breakfree ATZ Lite	5.5LBA/GAL		SC	3pt/a	PREPRE	A	47.24 ml/mx
	Abundit Extra	3LBA/GAL		SC	32oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2lb/a	POSPOS	C	30.2 g/mx
3	rimsulfuron	25%		SG	1oz/a	PREPRE	A	0.9436 g/mx
	mesotrione	50%		WDG	5oz/a	PREPRE	A	4.718 g/mx
	Breakfree ATZ Lite	5.5LBA/GAL		SC	3pt/a	PREPRE	A	47.24 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	POSPOS	C	15.75 ml/mx
	Abundit Extra	3LBA/GAL		SC	32oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2lb/a	POSPOS	C	30.2 g/mx
4	rimsulfuron	25%		SG	1oz/a	PREPRE	A	0.9436 g/mx
	mesotrione	50%		WDG	5oz/a	PREPRE	A	4.718 g/mx
	Breakfree	6.4lb/gal		EC	1.5pt/a	PREPRE	A	23.62 ml/mx
	Abundit Extra	3LBA/GAL		SC	32oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2lb/a	POSPOS	C	30.2 g/mx
5	rimsulfuron	25%		SG	1oz/a	PREPRE	A	0.9436 g/mx
	mesotrione	50%		WDG	5oz/a	PREPRE	A	4.718 g/mx
	Breakfree	6.4lb/gal		EC	1.5pt/a	PREPRE	A	23.62 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	POSPOS	C	15.75 ml/mx
	Abundit Extra	3LBA/GAL		SC	32oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2lb/a	POSPOS	C	30.2 g/mx
6	Lumax EZ	3.67lb/gal		SE	2.7qt/a	PREPRE	A	85.05 ml/mx
	Abundit Extra	3LBA/GAL		SC	32oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2lb/a	POSPOS	C	30.2 g/mx
7	Lumax EZ	3.67lb/gal		SE	2.7qt/a	PREPRE	A	85.05 ml/mx
8	Hallex GT	4.39lb/gal		SE	3.6pt/a	EAPOCR	B	56.69 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	EAPOCR	B	15.75 ml/mx
	NIS	100%		SL	0.25% v/v	EAPOCR	B	4.724 ml/mx
	AMS	100%		SG	1.27lb/a	EAPOCR	B	19.17 g/mx
9	Lumax EZ	3.67lb/gal		SE	1.25qt/a	PREPRE	A	39.37 ml/mx
	Hallex GT	4.39lb/gal		SE	3.6pt/a	POSPOS	C	56.69 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	POSPOS	C	15.75 ml/mx
	NIS	100%		SL	0.25% v/v	POSPOS	C	4.724 ml/mx
	AMS	100%		SG	1.27lb/a	POSPOS	C	19.17 g/mx
10	Bicep Lite II Magnum	6lb/gal		SE	1qt/a	PREPRE	A	31.5 ml/mx
	Hallex GT	4.39lb/gal		SE	3.6pt/a	POSPOS	C	56.69 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	POSPOS	C	15.75 ml/mx
	NIS	100%		SL	0.25% v/v	POSPOS	C	4.724 ml/mx
	AMS	100%		SG	1.27lb/a	POSPOS	C	19.17 g/mx
11	Lumax EZ	3.67lb/gal		SE	2qt/a	PREPRE	A	63.0 ml/mx
	Touchdown Total	4.17lbae/gal		SL	30fl oz/a	POSPOS	C	29.53 ml/mx
	AMS	100%		SG	1.27lb/a	POSPOS	C	19.17 g/mx
12	Bicep Lite II Magnum	6lb/gal		SE	1qt/a	PREPRE	A	31.5 ml/mx
	Callisto GT	4.18lb/gal		SL	2pt/a	POSPOS	C	31.5 ml/mx
	AAtrex	4LBA/GAL		F	0.33pt/a	POSPOS	C	5.197 ml/mx
	NIS	100%		SL	0.25% v/v	POSPOS	C	4.724 ml/mx
	AMS	100%		SG	1.27lb/a	POSPOS	C	19.17 g/mx
13	Capreno	3.45lb/gal		SC	3fl oz/a	PREPRE	A	2.953 ml/mx
	Parallel	7.8LBA/GAL		SC	1.5pt/a	PREPRE	A	23.62 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	PREPRE	A	15.75 ml/mx
14	Capreno	3.45lb/gal		SC	3fl oz/a	EAPOCR	B	2.953 ml/mx
	AAtrex	4LBA/GAL		F	1pt/a	EAPOCR	B	15.75 ml/mx
	Roundup PowerMax	4.5lbae/gal		SL	22fl oz/a	EAPOCR	B	21.66 ml/mx
	AMS	100%		SG	1.27lb/a	EAPOCR	B	19.17 g/mx
15	Verdict	5.57lb/gal		EC	15fl oz/a	PREPRE	A	14.77 ml/mx
	Roundup PowerMax	4.5lbae/gal		SL	32fl oz/a	POSPOS	C	31.5 ml/mx
	AMS	100%		SG	2.55lb/a	POSPOS	C	38.5 g/mx

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Amt Product to Measure
16	Surestart	4.25lb/gal		EC	2.5pt/a	PREPRE	A	39.37 ml/mx
	Durango DMA	4lb/ae/gal		SL	1.5pt/a	POSPOS	C	23.62 ml/mx
	N-Pak AMS	100%		L	2.5% v/v	POSPOS	C	47.24 ml/mx
20	nontreated							

Trial Summary:

This trial compared PRE, EPOST, and PRE+MPOST herbicide programs in glyphosate-tolerant corn. Less than 1 percent phyto-toxicity was observed after the PRE application (data not shown). Four weeks after the MPOST application, control of velvetleaf exceeded 96 percent for all treatments (data not shown). Four weeks after the MPOST application, control of common lambsquarters exceeded 99 percent for all treatments. Only three of the PRE+MPOST treatments, 10, 12, and 15 were below 90 percent control before the MPOST application (data not shown). Green foxtail control ranged from 94 to 100 percent and from 77 to 100 percent at two and four weeks after the PRE application (Fig. 1). However, control exceeded 97 percent for all treatments four weeks later, at eight weeks after the PRE application.

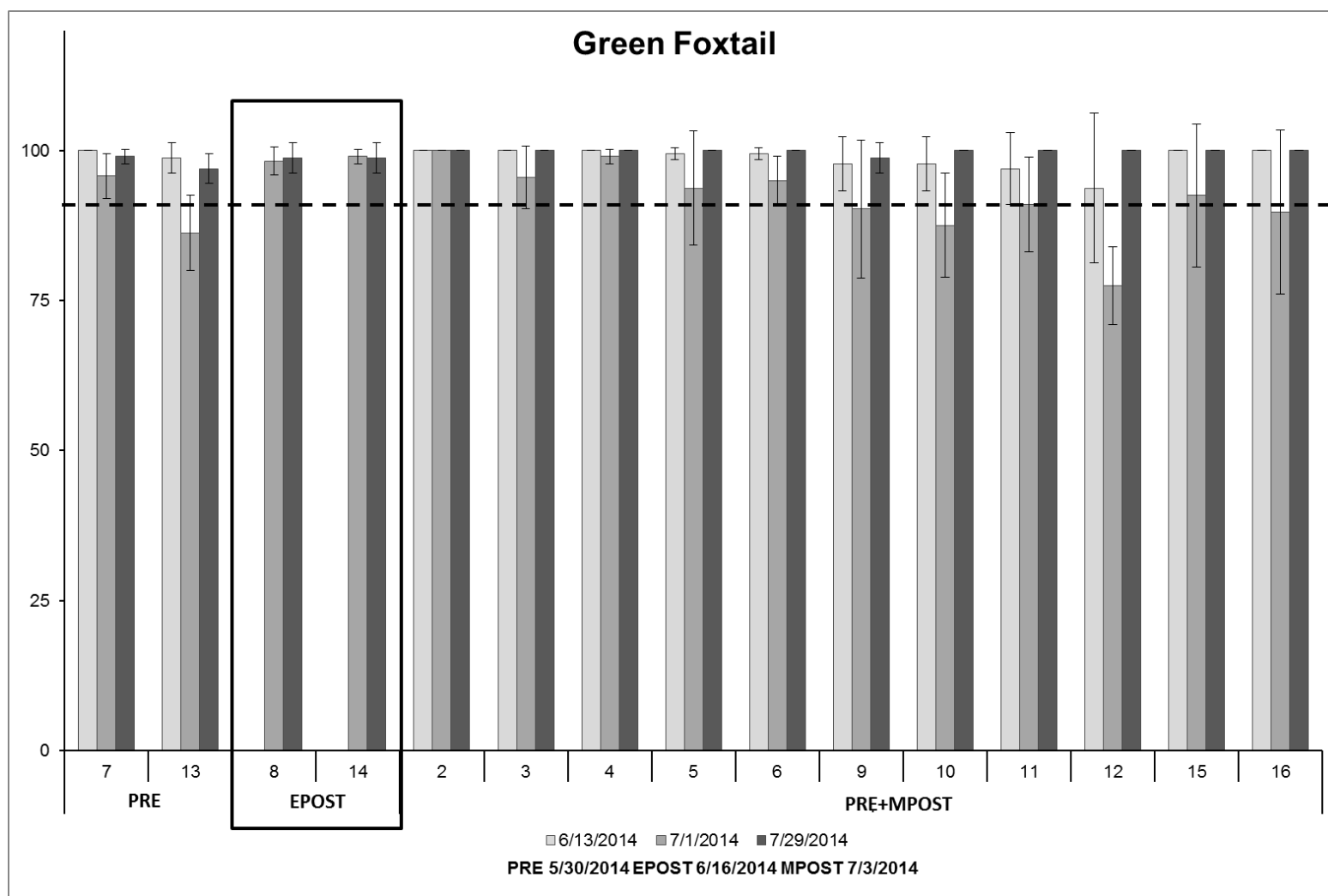


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Herbicide Efficacy Programs in corn **Trial #** CN10

Project Goal: To compare weed efficacy of herbicide programs used in Roundup Ready corn.

Location: Arlington Research Station

Site Description:

Field no.:	454	Crop:	Corn
Soil type:	Plano silt loam	Variety:	Wyffels 2888
% OM:	3.4	Date planted:	5/20/14
pH:	6.9	Planting pop.:	32,000 seeds/acre
Fertilization:	145 lbs N per acre	Planting depth:	2 in
Previous cropping and tillage:	Soybean	Row spacing:	30 in
		Plot size:	10 by 28 ft
Principal weeds present:	Common lambsquarters (CHEAL), velvetleaf (ABUTH), pigweeds (AMASS), common ragweed (AMBEL), giant foxtail (SETFA)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	5/22/2014	6/13/2014	6/24/2014
Treatment:	PRE	EPOST	MPOST
Soil moisture [surface]:	Dry	DRY	WET
Soil temperature (°F) [2 in depth]	62	77	77
Air temperature (°F)	74.5	70	81
Wind speed (mph)/direction	5/W	7/NNE	5.5/NW
Relative humidity (%)	46.7	26	63
Cloud cover (%)	60	10	30

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		5/22/2014	6/13/2014	6/24/2014
Crop	Height (in)	PRE	11-13 in	24 in
	Stage		V3	V6
CHEAL	Height (in)	PRE	1 ½-3 in	6-9 in
	Density (per ft sq)		10-20 ft ²	10-12 ft ²
AMASS	Height (in)	PRE	2-4 in	2-14 in
	Density (per ft sq)		2-3 ft ²	2-5 ft ²
ERBVI	Height (in)	PRE	2-4 in	10-15 in
	Density (per ft sq)		1-3 ft ²	4-6 ft ²
AMBEL	Height (in)	PRE	3-4 in	
	Density (per ft sq)		1 ft ²	
ABUTH	Height (in)	PRE	2-3 in	
	Density (per ft sq)		2-4 ft ²	

Trt No.	Treatment	Form Conc	Form Type	Rate	Growth Stage	Appl Code
	1nontreated					
2	Verdict	5.57lb/gal	EC	15fl oz/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
3	Verdict	5.57lb/gal	EC	15fl oz/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	Status	61.1%	WDG	5oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
4	Verdict	5.57lb/gal	EC	15fl oz/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	Armezon	2.8lb/gal	CS	0.75fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
5	Surestart	4.25lb/gal	EC	2.5pt/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
6	Dual II Magnum	7.64lb/gal	EC	1pt/a	PREPRE	A
	Halex GT	4.39lb/gal	SL	3.6pt/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
7	Zemax	3.67lb/gal	SE	2qt/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
8	Verdict	5.57lb/gal	EC	15fl oz/a	PREPRE	A
	Prowl H2O	3.8lb/gal	AS	2pt/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
9	Zidua	84%	WDG	2.5oz/a	PREPRE	A
	Sharpen	2.8lb/gal	SC	3fl oz/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	NIS	100%	SL	0.25% v/v	POSPOS	C
	AMS	100%	SG	2.55lb/a	POSPOS	C
10	Outlook	6lb/gal	EC	18fl oz/a	EAPOCR	B
	Armezon	2.8lb/gal	CS	0.75fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	3.63lb/a	EAPOCR	B
11	Halex GT	4.39lb/gal	SL	3.6pt/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	2.55lb/a	EAPOCR	B
12	Laudis	3.5lb/gal	SC	3fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	2.55lb/a	EAPOCR	B
	13nontreated					
14	Zemax	3.67lb/gal	SE	2qt/a	PREPRE	A
	Princep	4lb/gal	SC	1.34pt/a	PREPRE	A
15	Halex GT	4.39lb/gal	SL	3.6pt/a	EAPOCR	B
	NorthStar	51.4%	WDG	2.5oz/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B

Trt No.	Treatment	Form Conc	Form Type	Rate	Growth Stage	Appl Code
16	Zemax	3.67lb/gal	SE	1qt/a	PREPRE	A
	Halex GT	4.39lb/gal	SL	3.6pt/a	EAPOCR	B
	NorthStar	51.4%	WDG	2.5oz/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
17	Zemax	3.67lb/gal	SE	1.6qt/a	PREPRE	A
	Touchdown Total	4.17bae/gal	SL	30fl oz/a	POSPOS	C
	AMS	100%	SG	1.27lb/a	POSPOS	C
18	Dual II Magnum	7.64lb/gal	EC	1pt/a	PREPRE	A
	Callisto GT	4.18lb/gal	SL	2pt/a	EAPOCR	B
	NIS	100%	SL	0.25% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
19	Capreno	3.45lb/gal	SC	3fl oz/a	PREPRE	A
	Parallel	7.8lb/gal	SC	1.5pt/a	PREPRE	A
	Princep	4lb/gal	SC	1.34pt/a	PREPRE	A
20	Capreno	3.45lb/gal	SC	3fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5bae/gal	SL	22fl oz/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
21	Harness	7lb/gal	EC	1.75pt/a	PREPRE	A
	Impact	2.8lb/gal	SC	0.75fl oz/a	POSPOS	C
	Status	61.1%	WDG	5oz/a	POSPOS	C
	MSO	100%	SL	1% v/v	POSPOS	C
	28% UAN	100%	L	2.5% v/v	POSPOS	C
22	Harness	7lb/gal	EC	1.75pt/a	PREPRE	A
	Impact	2.8lb/gal	SC	0.75fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5bae/gal	SL	32fl oz/a	EAPOCR	B
	MSO	100%	SL	1% v/v	EAPOCR	B
	N-Pak AMS	100%	L	2.5% v/v	EAPOCR	B
23	Harness	7lb/gal	EC	1.75pt/a	PREPRE	A
	Impact	2.8lb/gal	SC	0.75fl oz/a	POSPOS	C
	Roundup PowerMax	4.5bae/gal	SL	32fl oz/a	POSPOS	C
	MSO	100%	SL	1% v/v	POSPOS	C
	N-Pak AMS	100%	L	2.5% v/v	POSPOS	C
24	nontreated					
25	Surestart	4.25lb/gal	EC	2.5pt/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	POSPOS	C
	N-Pak AMS	100%	L	2.5% v/v	POSPOS	C
26	Surestart	4.25lb/gal	EC	1.5pt/a	PREPRE	A
	Surestart	4.25lb/gal	EC	1.5pt/a	POSPOS	C
	Durango DMA	4lbae/gal	SL	1.5pt/a	POSPOS	C
	N-Pak AMS	100%	L	2.5% v/v	POSPOS	C
27	Surestart	4.25lb/gal	EC	2pt/a	EAPOCR	B
	Durango DMA	4lbae/gal	SL	1.5pt/a	EAPOCR	B
	N-Pak AMS	100%	L	2.5% v/v	EAPOCR	B
28	Anthem	2.15lb/gal	SE	8fl oz/a	PREPRE	A
	Cadet	0.91lb/gal	EC	0.75fl oz/a	POSPOS	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	AMS	100%	SG	1.27lb/a	POSPOS	C
29	Anthem	2.15lb/gal	SE	8fl oz/a	PREPRE	A
	Cadet	0.91lb/gal	EC	0.75fl oz/a	POSPOS	C
	Stanza	78.5%W/W	WG	2oz/a	POSPOS	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	AMS	100%	SG	1.27lb/a	POSPOS	C
30	Anthem	2.15lb/gal	SE	8fl oz/a	PREPRE	A
	Solstice	4lb/gal	SC	3.15fl oz/a	POSPOS	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	POSPOS	C
	COC	100%	SL	1% v/v	POSPOS	C
	AMS	100%	SG	1.27lb/a	POSPOS	C

Trt No.	Treatment	Form Conc	Form Type	Rate	Growth Stage	Appl Code
31	Anthem	2.15lb/gal	SE	8fl oz/a	EAPOCR	B
	Stanza	78.5%W/W	WG	2oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	COC	100%	SL	1% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
32	Anthem	2.15lb/gal	SE	6fl oz/a	EAPOCR	B
	Solstice	4lb/gal	SC	2.5fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	COC	100%	SL	1% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
33	Solstice	4lb/gal	SC	3.15fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	COC	100%	SL	1% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
34	Impact	2.8lb/gal	SC	0.75fl oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EAPOCR	B
	COC	100%	SL	1% v/v	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B

Trial Summary:

This trial compared PRE only, EPOST only, PRE+EPOST, and PRE+MPOST herbicide programs in glyphosate-tolerant corn. All treatments showed less than 2 percent phytotoxicity symptoms except for treatments 31, 32, and 33 at 9, 16, and 14 percent respectively ten days after the EPOST application (data not shown). Control of common lambsquarters, velvetleaf, pigweeds, and giant foxtail exceeded 96, 93, 98, and 95 percent respectively seven weeks after the MPOST application (data not shown). Common ragweed control for PRE+EPOST, EPOST, and PRE+MPOST treatments exceeded 98 percent seven weeks after the MPOST application (Fig. 1). The PRE only treatments, 14 and 19, averaged 100 and 88 percent control.

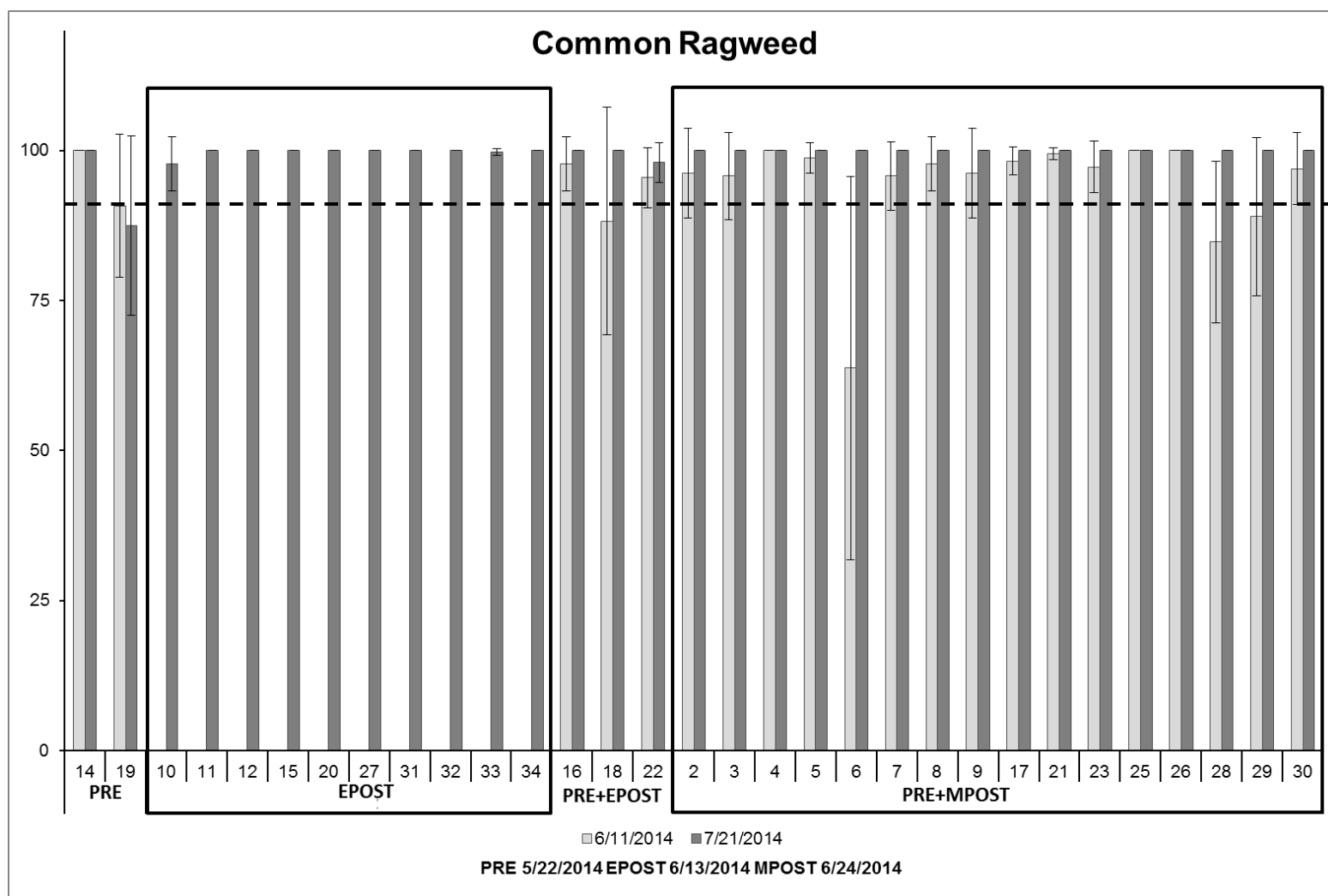


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, PRE+EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Anthem Corn PRE Tank-mixes **Trial #** CN11

Project To compare residual weed control of new Anthem herbicide programs used in Roundup
Goal: Ready corn.
Location: Arlington Research Station

Site Description:

Field no.:	454	Crop:	Corn
Soil type:	Plano silt loam	Variety:	Wyffels 2888
% OM:	3.35	Date planted:	5/20/2014
pH:	6.85	Planting pop.:	32,000 S/A
Fertilization:	145 lbs N per acre	Planting depth:	2
Previous cropping and tillage:	Soybean	Row spacing:	30
		Plot size:	10 by 28 ft
Principal weeds present:	Common lambsquarters (CHEAL), common ragweed (AMBEL), pigweeds (AMASS), velvetleaf (ABUTH), yellow foxtail (SETPU)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	5/22/2014	7/3/2014
Treatment:	PREMCR	POST (see trial summary)
Soil moisture [surface]:	Dry	Moist
Soil temperature (°F) [2 in depth]	62	64
Air temperature (°F)	71.6	70
Wind speed (mph)/direction	3/W	4-6/NW
Relative humidity (%)	53	40
Cloud cover (%)	60	5

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		5/22/2014	7/3/2014
Crop	Height (in)	PRE	
	Stage		V9
CHEAL	Height (in)	PRE	
	Density (per sq. ft.)		
AMBEL	Height (in)	PRE	
	Density (per sq. ft.)		
ABUTH	Height (in)	PRE	
	Density (per sq. ft.)		
ERBVI	Height (in)	PRE	
	Density (per sq. ft.)		
AMASS	Height (in)	PRE	
	Density (per sq. ft.)		
SETPU	Height (in)	PRE	
	Density (per sq. ft.)		

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	ANTHEM	2.15LB/GAL	SE	8oz/a	PREMCR	A
2	ANTHEM	258G/L	SE	8oz/a	PREMCR	A
	ACCOLADE	80%W/W	WG	0.89oz/a	PREMCR	A
3	ANTHEM	2.15LB/GAL	SE	8oz/a	PREMCR	A
	STANZA	78.5%W/W	WG	3oz/a	PREMCR	A
4	ANTHEM	258G/L	SE	8oz/a	PREMCR	A
	SHARPEN	2.85LB/GAL	SC	3oz/a	PREMCR	A
5	ANTHEM	2.15LB/GAL	SE	8oz/a	PREMCR	A
	CALLISTO	4LB/GAL	SC	5oz/a	PREMCR	A
6	STANZA	78.5%W/W	WG	4oz/a	PREMCR	A
7	SURESTART	4.25LB/GAL	SE	2pt/a	PREMCR	A
8	ZEMAX	3.67lb/gal	SE	2qt/a	PREMCR	A
9	VERDICT	5.57LB/GAL	EC	15oz/a	PREMCR	A
10	NON-TREATED CHECK					

Trial Summary:

This trial compared efficacy for grass and broadleaf weed species after different pre-emergence (PRE) residual herbicide applications. On July 3, a post-emergence application of glyphosate was applied to all treatments except for the non-treated control denoted as treatment 10. Observed phytotoxicity, at 20 days and 34 days following the PRE application, was less than 0.5 percent for all treatments. Yellow foxtail, common lambsquarters, pigweed, and velvetleaf ranged from 55 to 100 percent at 34 days after the PRE (Figure 1). Common ragweed control exceeded 95 percent for all treatments except for treatment 2 at 88 percent at 34 days following the PRE application.

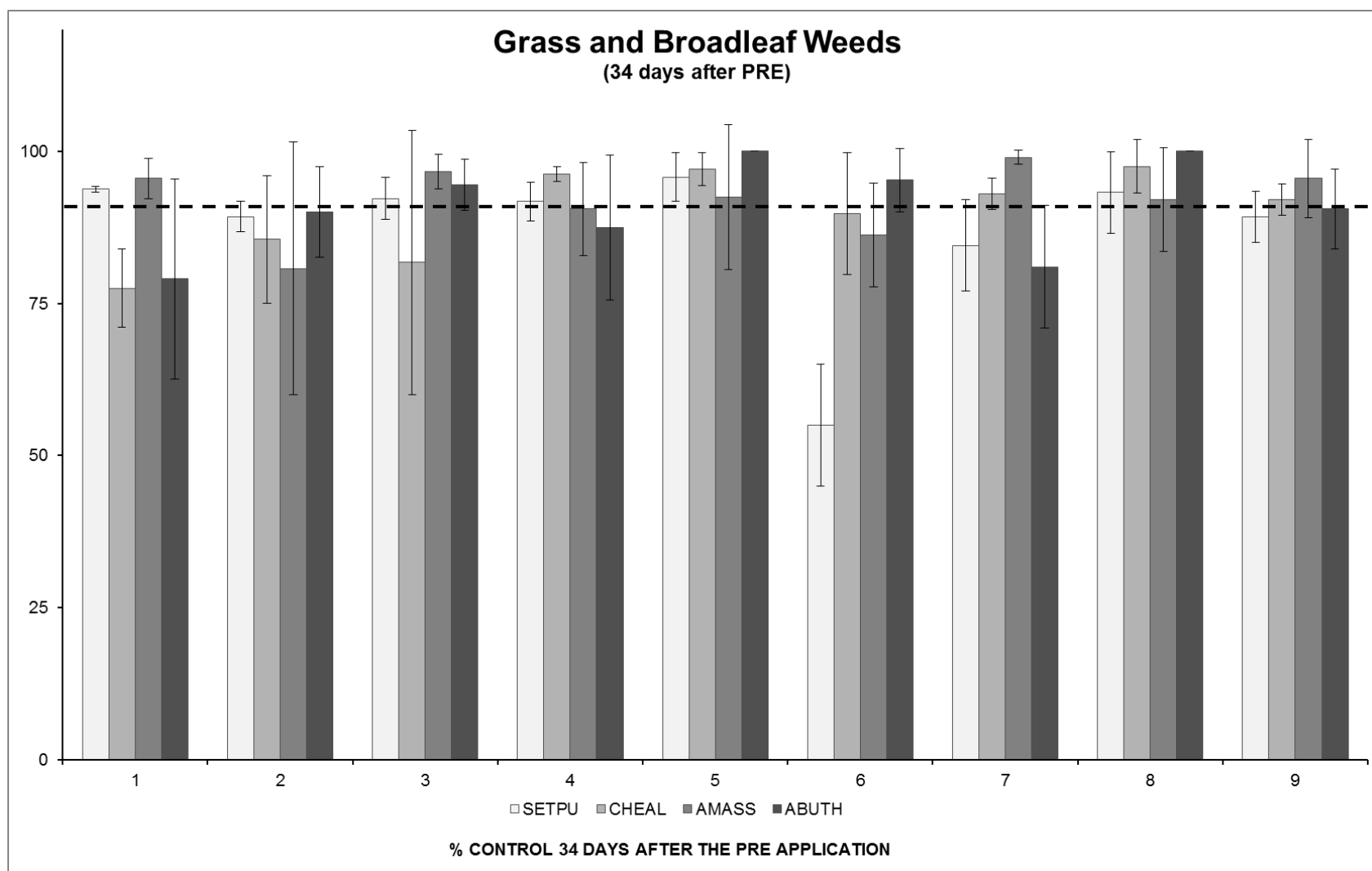


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Evaluation of New Tankmix Partners Applied PRE in Soybeans

Trial # SB12

Project Goal: To compare the efficacy of different PRE combinations and rates in soybean
Location: Arlington Research Station

Site Description:

Field no.:	453	Crop:	Soybean
Soil type:	Plano silt loam	Variety:	AG2534
% OM:	3.8	Date planted:	6/6/2014
pH:	5.9	Planting pop.:	140,000 seeds/acre
Fertilization:	None	Planting depth:	1.5 in
Previous cropping and tillage:	Corn	Row spacing:	30 in
		Plot size:	10 x 28 ft
Principal weeds present:	Common ragweed (AMBEL), common lambsquarters (CHEAL), giant foxtail (SETFA), velvetleaf (ABUTH)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	6/6/2014
Treatment:	PRE
Soil moisture [surface]:	DRY
Soil temperature (°F) [2 in depth]	72
Air temperature (°F)	80
Wind speed (mph)/direction	8/SW
Relative humidity (%)	50
Cloud cover (%)	50

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR11002,
Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		6/6/2014
Crop	Height (in)	PRE
	Stage (lf)	
	Diameter (in)	PRE
	Density (per sq. ft.)	
	Height (in)	PRE
	Density (per sq. ft.)	

TRT NO.	PRODUCT	FORM	FORM TYPE	RATE
1	WARRANT	3 LBS AI/GAL	CS	1.5 QT/A
2	VALOR SX	51 %	WG	2 OZ WT/A
3	VALOR SX	51 %	WG	2.95 OZ WT/A
4	VALOR XLT	40.3 %	WG	3.02 OZ WT/A
5	VALOR XLT	40.3 %	WG	4.5 OZ WT/A
6	AUTHORITY MAXX	66 %	WG	7 OZ WT/A
7	TRICOR DF	75 %	DF	5.33 OZ WT/A
8	WARRANT VALOR SX	3 LBS AI/GAL 51 %	CS WG	1.5 QT/A 2 OZ WT/A
9	WARRANT VALOR SX	3 LBS AI/GAL 51 %	CS WG	1.5 QT/A 2.95 OZ WT/A
10	WARRANT VALOR XLT	3 LBS AI/GAL 40.3 %	CS WG	1.5 QT/A 3.02 OZ WT/A
11	WARRANT VALOR XLT	3 LBS AI/GAL 40.3 %	CS WG	1.5 QT/A 4.5 OZ WT/A
12	WARRANT AUTHORITY MAXX	3 LBS AI/GAL 66 %	CS WG	1.5 QT/A 7 OZ WT/A
13	WARRANT TRICOR DF	3 LBS AI/GAL 75 %	CS DF	1.5 QT/A 5.33 OZ WT/A
14	FIERCE	76 %	WG	3.75 OZ WT/A
15	PREFIX	5.29 LBS AI/GAL	EC	1 QT/A
16	NON-TREATED CHECK			

Trial Summary:

This trial compared weed control for different pre-emergence herbicides at two different rates applied alone and tank mixed. No phytotoxicity symptoms were observed at 14, 28, or 42 days after the application. Common ragweed, common lambsquarters, velvetleaf, and giant foxtail control ranged from 50 to 100 percent at 14, 28, and 42 days after application (Figs. 1, 2, 3, 4).

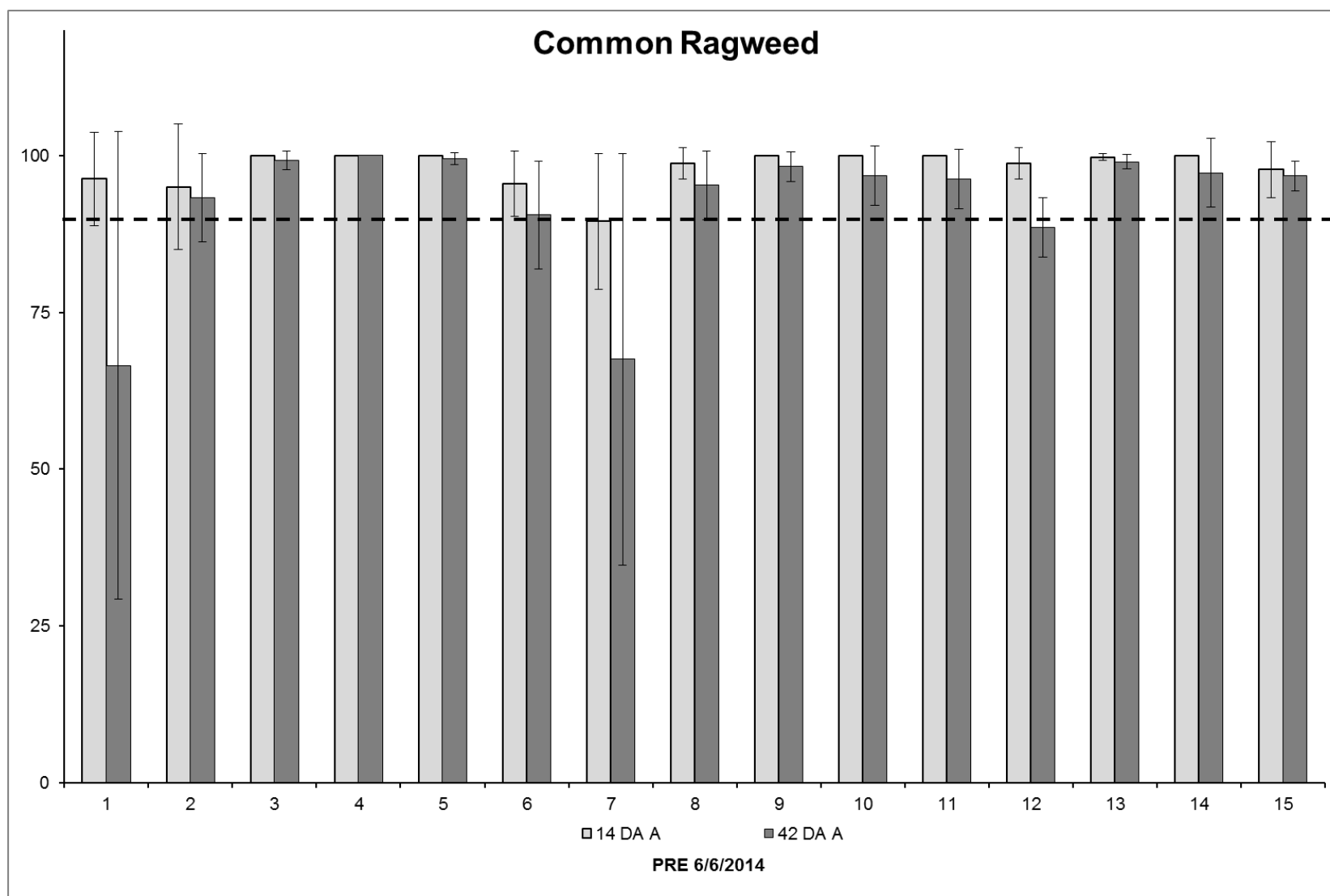


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

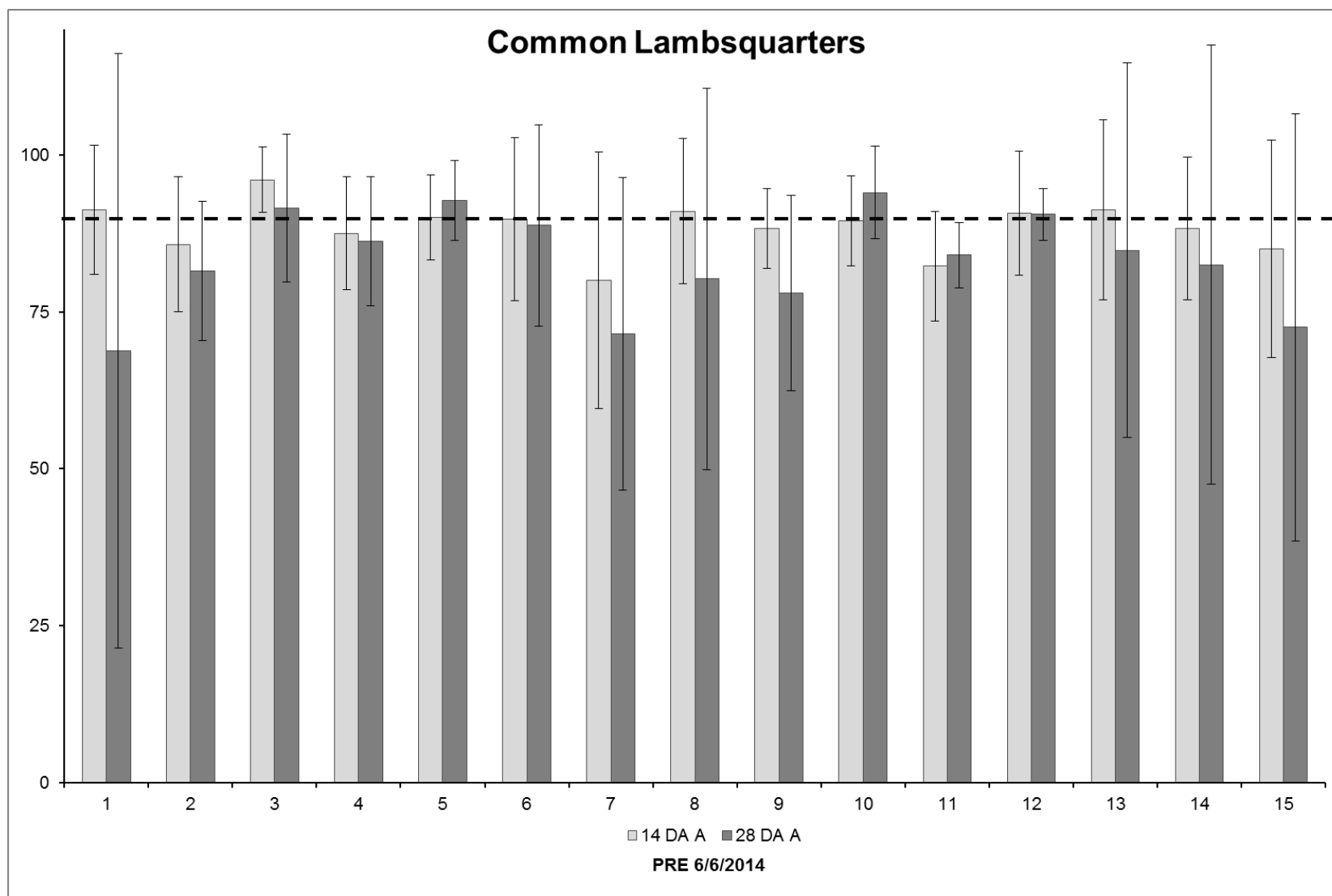


Figure 2: Bars indicate average control \pm the standard deviation of four replications following PRE herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

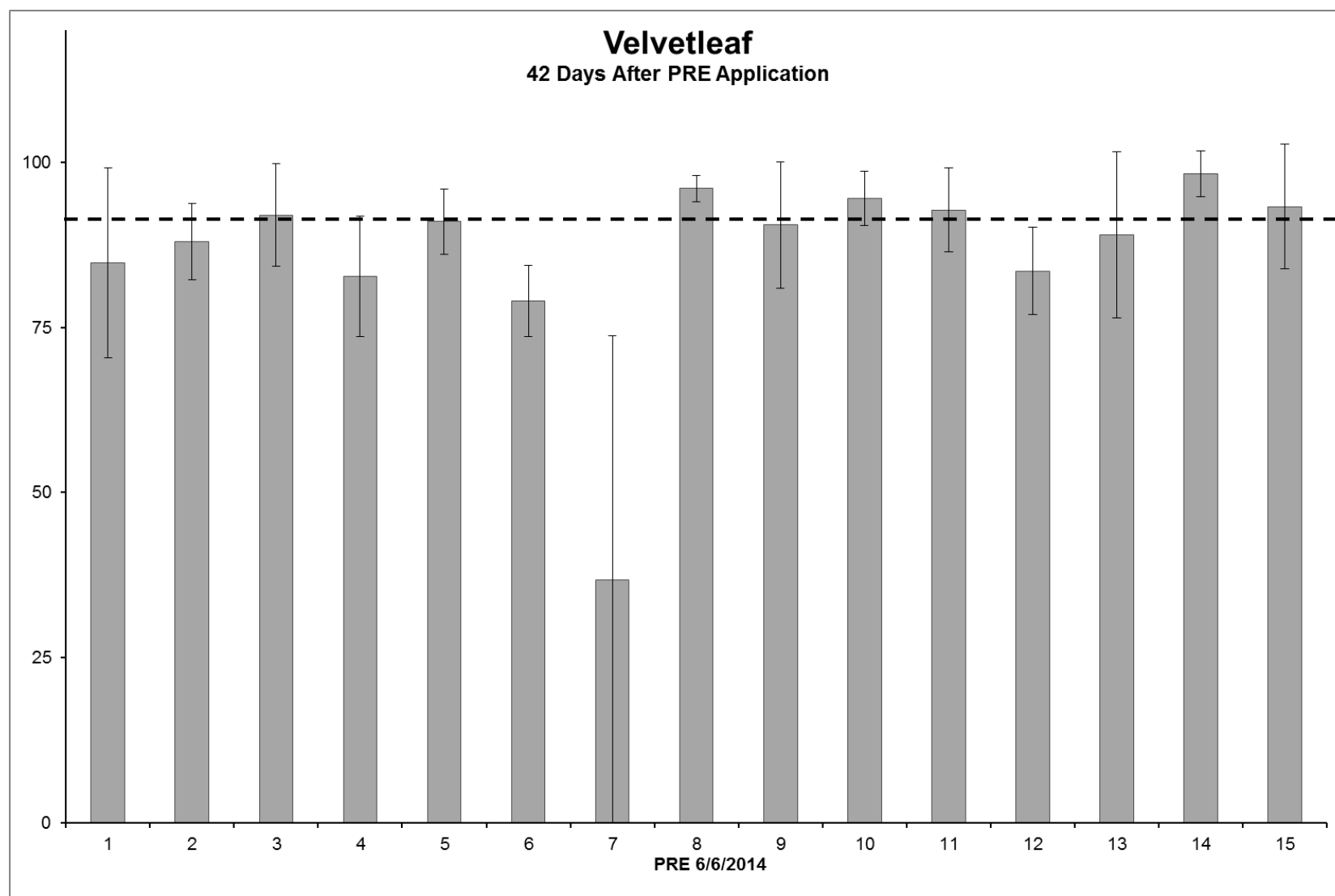


Figure 3: Bars indicate average control \pm the standard deviation of four replications following PRE herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

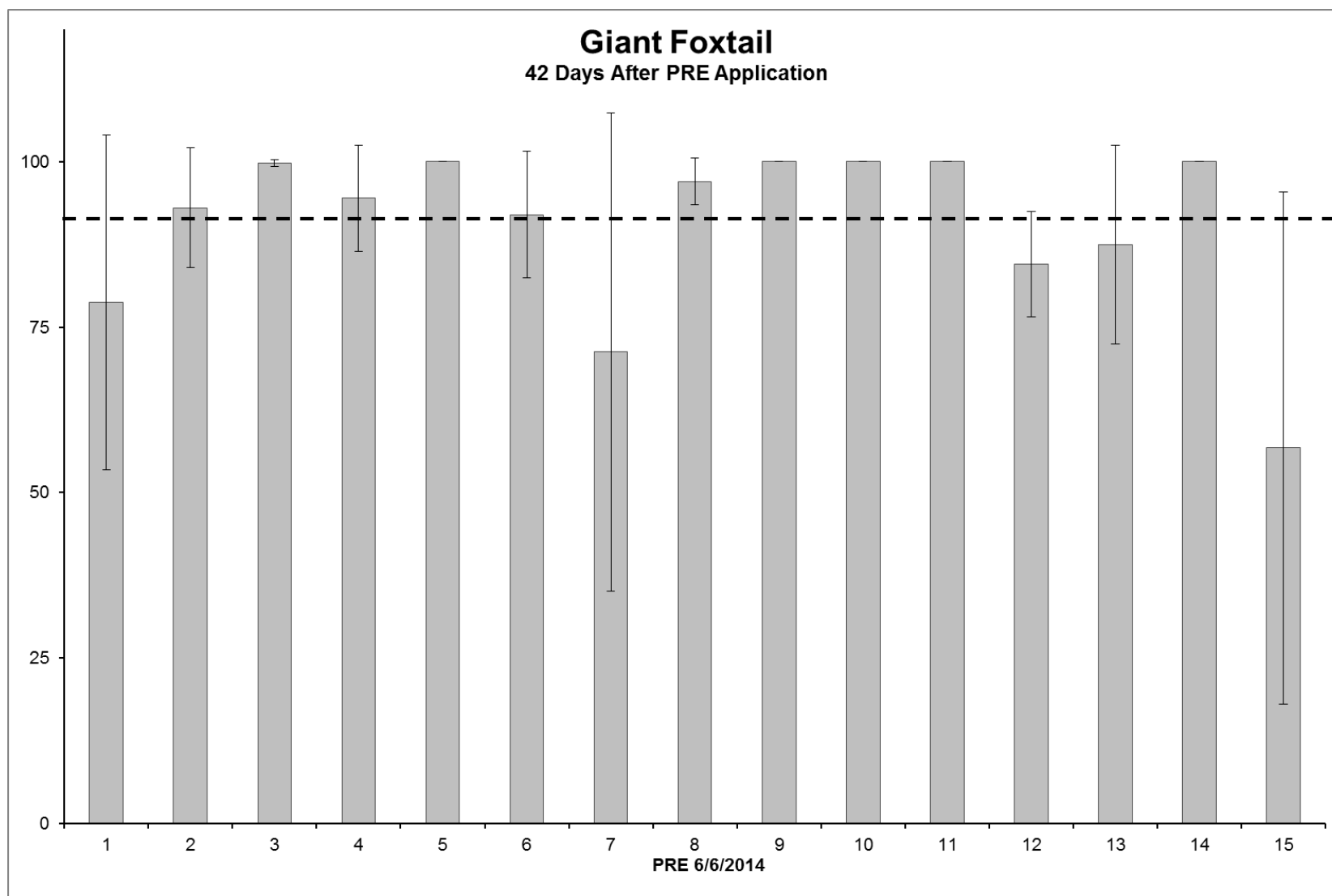


Figure 4: Bars indicate average control \pm the standard deviation of four replications following PRE herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Herbicide Efficacy programs in RR soybean **Trial #** SB13

Project To determine weed efficacy and crop injury based on different timings in a Roundup
Goal: Ready soybean system.
Location: Arlington Research Station

Site Description:

Field no.:	453	Crop:	Soybean
Soil type:	Plano silt loam	Variety:	NK S18-C2
% OM:	3.8	Date planted:	6/6/2014
pH:	5.9	Planting pop.:	140,000 S/A
Fertilization:	None	Planting depth:	1.5 in
Previous cropping and tillage:	Corn	Row spacing:	30 in
		Plot size:	10 by 28 ft
Principal weeds present:			
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	6/6/2014	7/3/2014	7/16/2014
Treatment:	PRE	EPOST	MPOST
Soil moisture [surface]:	Dry	Moist	Moist
Soil temperature (°F) [2 in depth]	72	74	62
Air temperature (°F)	81	74	67
Wind speed (mph)/direction	5/SW	3-6/NNW	1/N
Relative humidity (%)	40	50	73
Cloud cover (%)	40	30	0

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		6/6/2014	7/3/2014	7/16/2014
Crop	Height (in)	PRE	4-6	10
	Stage (lf)	PRE	V1	V6
SETFA	Height (in)	PRE	1-5	1-5
	Density (per ft sq)	PRE	2-5	1
CHEAL	Height (in)	PRE	1-3	0
	Density (per ft sq)	PRE	2-6	0
ABUTH	Height (in)	PRE	2	2-3
	Density (per ft sq)	PRE	0.5-1	0.1
AMBEL	Height (in)	PRE	1-8	0
	Density (per yd sq)	PRE	2-10	0
SOLPT	Height (in)	PRE	1	0
	Density (per yd sq)	PRE	0-0.5	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	AUTHORITY FIRST DF	70%W/W	WG	6.4oz/a	PREPRE	A
	ANTHEM	2.15LB/GAL	SE	6oz/a	PREPRE	A
2	ANTHEM	2.15LB/GAL	SE	8oz/a	PREPRE	A
	ACCOLADE	80%W/W	WG	0.9oz/a	PREPRE	A
3	FIERCE	76%W/W	WG	3.75oz/a	PREPRE	A
4	OPTILL	68%W/W	WG	2oz/a	PREPRE	A
	OUTLOOK	6LB/GAL	EC	10oz/a	PREPRE	A
5	AUTHORITY FIRST DF	70%W/W	WG	6.4oz/a	PREPRE	A
	ANTHEM	2.15LB/GAL	SE	6oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32oz/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
6	AUTHORITY MTZ	45%W/W	WG	12oz/a	PREPRE	A
	ANTHEM	2.15LB/GAL	SE	5oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32oz/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
7	OUTLOOK	6LB/GAL	EC	12oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32oz/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
8	WARRANT	3LB/GAL	CS	3pt/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32oz/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
9	ANTHEM	2.15LB/GAL	SE	8oz/a	EAPOCR	B
	Roundup PowerMax	4.5lbae/gal	SL	32oz/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
10	nontreated					
11	FIERCE	76%W/W	WG	3oz/a	PREPRE	A
12	WARRANT	3LB/GAL	CS	0.625qt/a	PREPRE	A
	VALOR SX	51%	WDG	2oz/a	PREPRE	A
13	Sonic	70%	WDG	3oz/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
14	Sonic	70%	WDG	4.5oz/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
15	Sonic	70%	WDG	3oz/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	MIPOWE	C
	FIRSTRATE	84%	WG	0.3oz/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
16	VALOR SX	51%	WDG	2oz/a	PREPRE	A
	FIRSTRATE	84%	WG	0.4oz/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
17	VALOR SX	51%	WDG	3oz/a	PREPRE	A
	FIRSTRATE	84%	WG	0.6oz/a	PREPRE	A
	Durango DMA	4lbae/gal	SL	1.5pt/a	MIPOWE	C
	AMS	100%	SG	1.27lb/a	MIPOWE	C
18	STATEMENT	5.25LB/GAL	EC	1qt/a	PREPRE	A
19	PREFIX	5.29LB/GAL	XL	1qt/a	PREPRE	A
20	STATEMENT	5.25LB/GAL	EC	1qt/a	EAPOCR	B
	GLYFOS X-TRA	3lbae/gal	SL	1qt/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
21	RHYTHM	1.88LB/GAL	ME	25.5fl oz/a	EAPOCR	B
	GLYFOS X-TRA	3lbae/gal	SL	1qt/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
22	PREFIX	5.29LB/GAL	XL	1qt/a	EAPOCR	B
	GLYFOS X-TRA	3lbae/gal	SL	1qt/a	EAPOCR	B
	AMS	100%	SG	1.27lb/a	EAPOCR	B
23	nontreated					

Trial Summary:

This trial compared PRE, EPOST, and PRE+MPOST herbicide programs in glyphosate-tolerant soybean. Leaf necrosis and puckering, from five to ten percent, was observed 7 and 11 days after the EPOST application (Figs. 1, 2). Two weeks after the MPOST application, leaf necrosis and puckering were observed in treatments 5 and 6. Stunting was observed seven days after the EPOST application but not at later dates (data not shown). Four weeks after the PRE application, control of common ragweed ranged from 50 to 99 percent (Fig. 3). For the EPOST treatments, control exceeded 96 percent five weeks after the EPOST application. At 26 days after the MPOST application, control in the PRE+MPOST treatments exceeded 93 percent. Common lambsquarters control ranged from 69 to 100 percent twenty seven days after the PRE application (Fig. 4). Four weeks after the EPOST application, control exceeded 99 percent for all EPOST treatments (data not shown). At two, four, and six weeks following the MPOST application, control was 100 percent for all PRE+MPOST treatments. Giant foxtail control for the EPOST only treatments exceeded 94 percent at the end of August (data not shown). Control for the PRE only and PRE+MPOST treatments ranged from 80 to 98 percent, twenty seven days after the PRE application (Fig. 5). After the MPOST application, control exceeded 99 percent in the PRE+MPOST treatments.

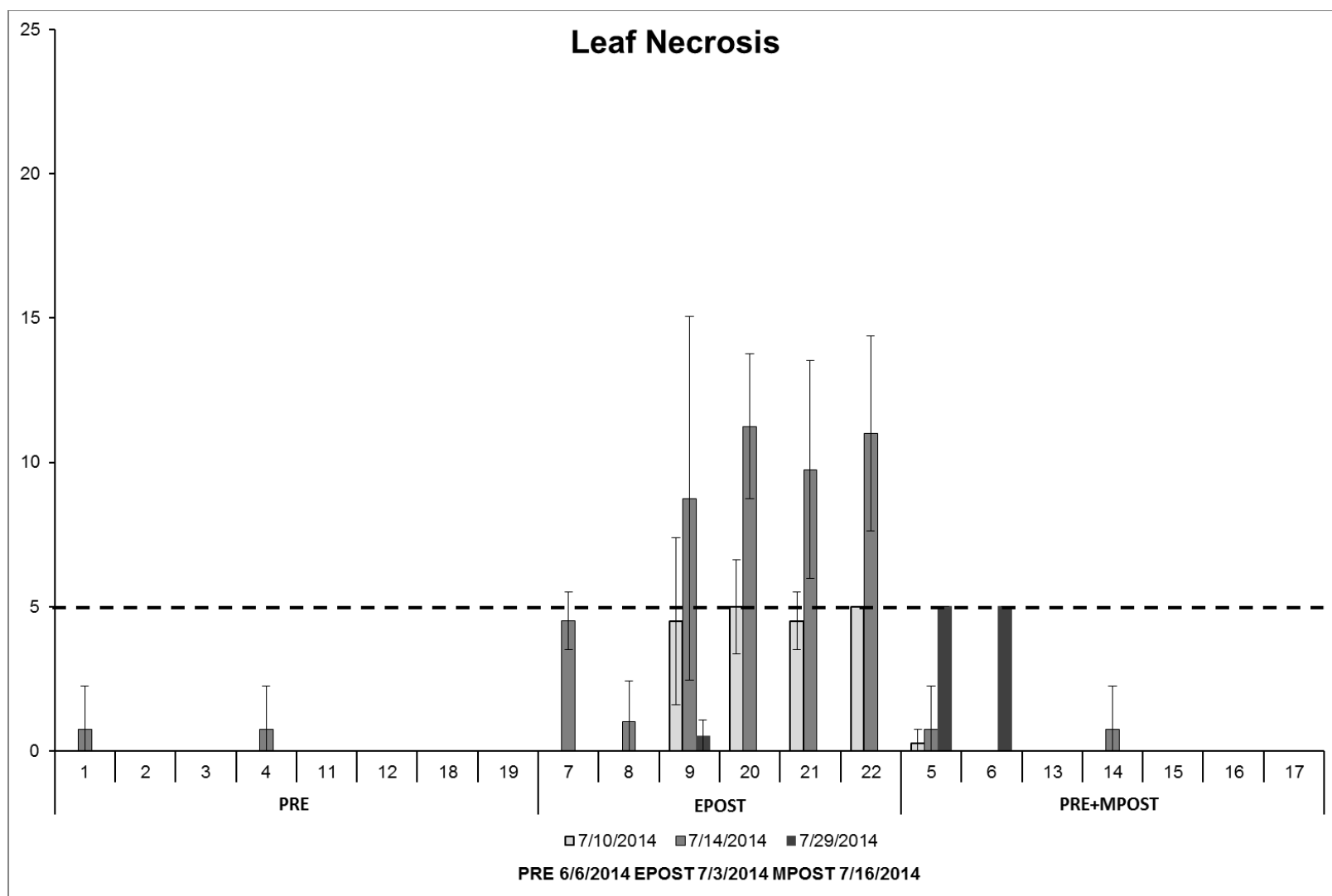


Figure 1: Bars indicate average leaf necrosis \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

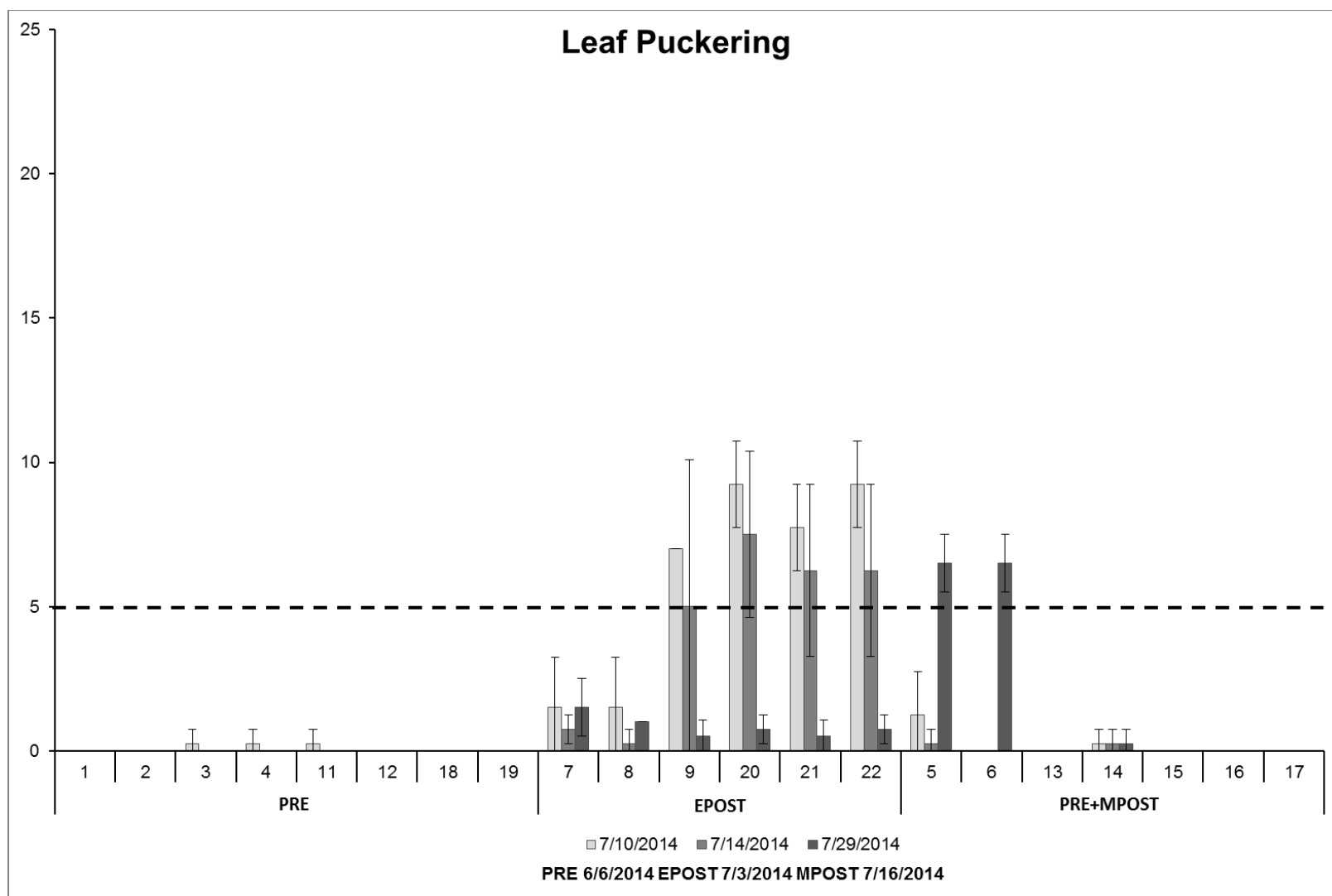


Figure 2: Bars indicate average leaf puckering \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

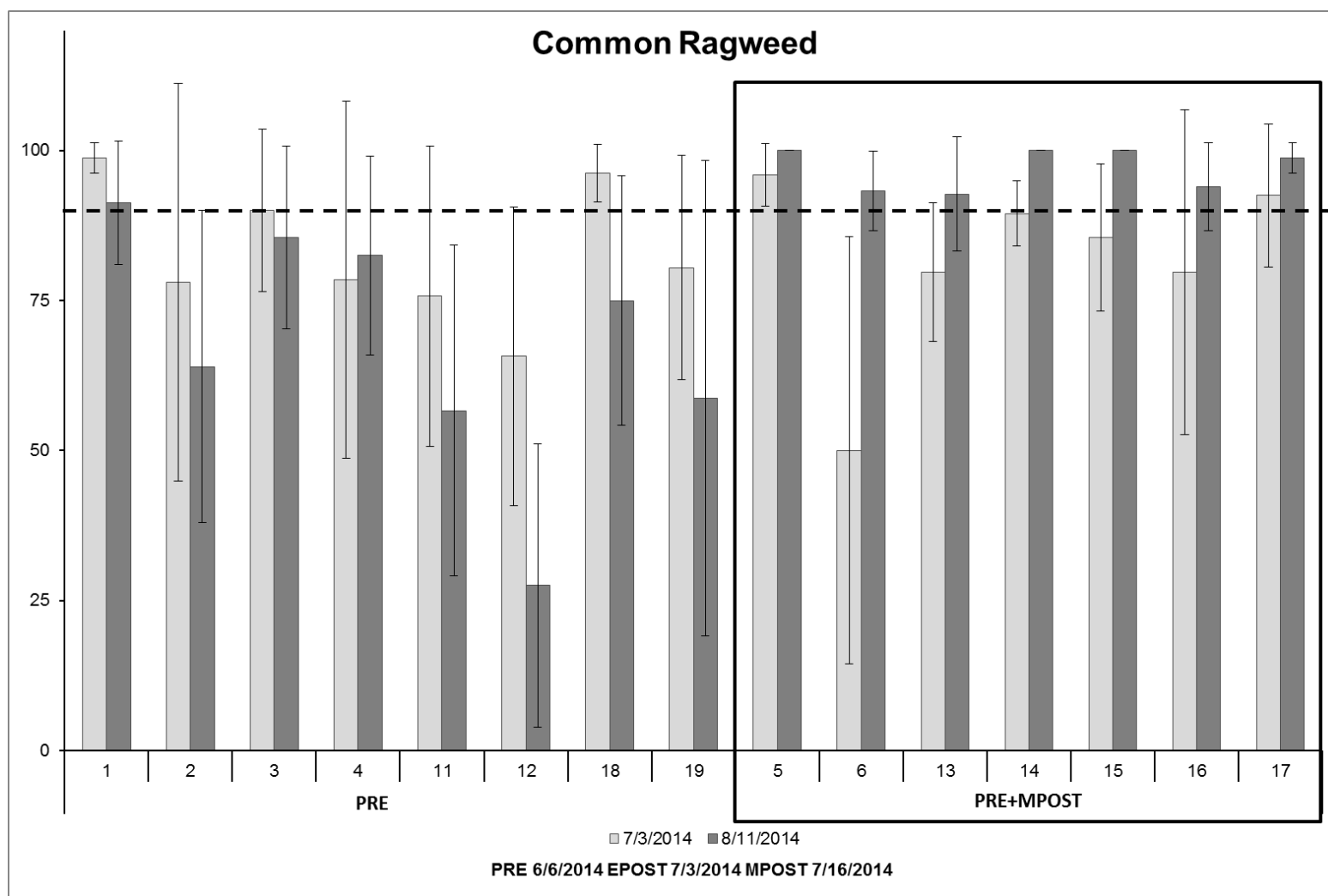


Figure 3: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

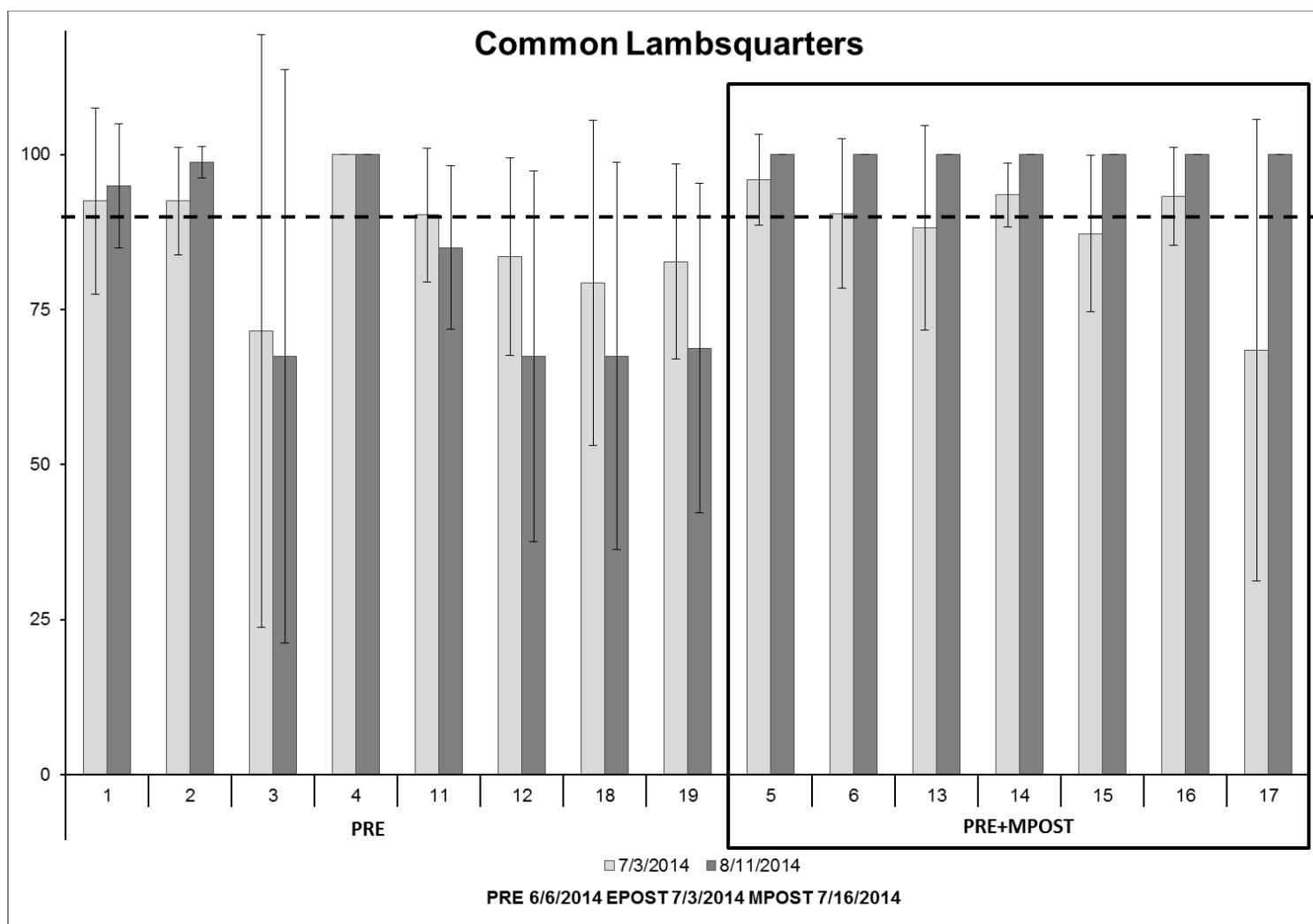


Figure 4: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

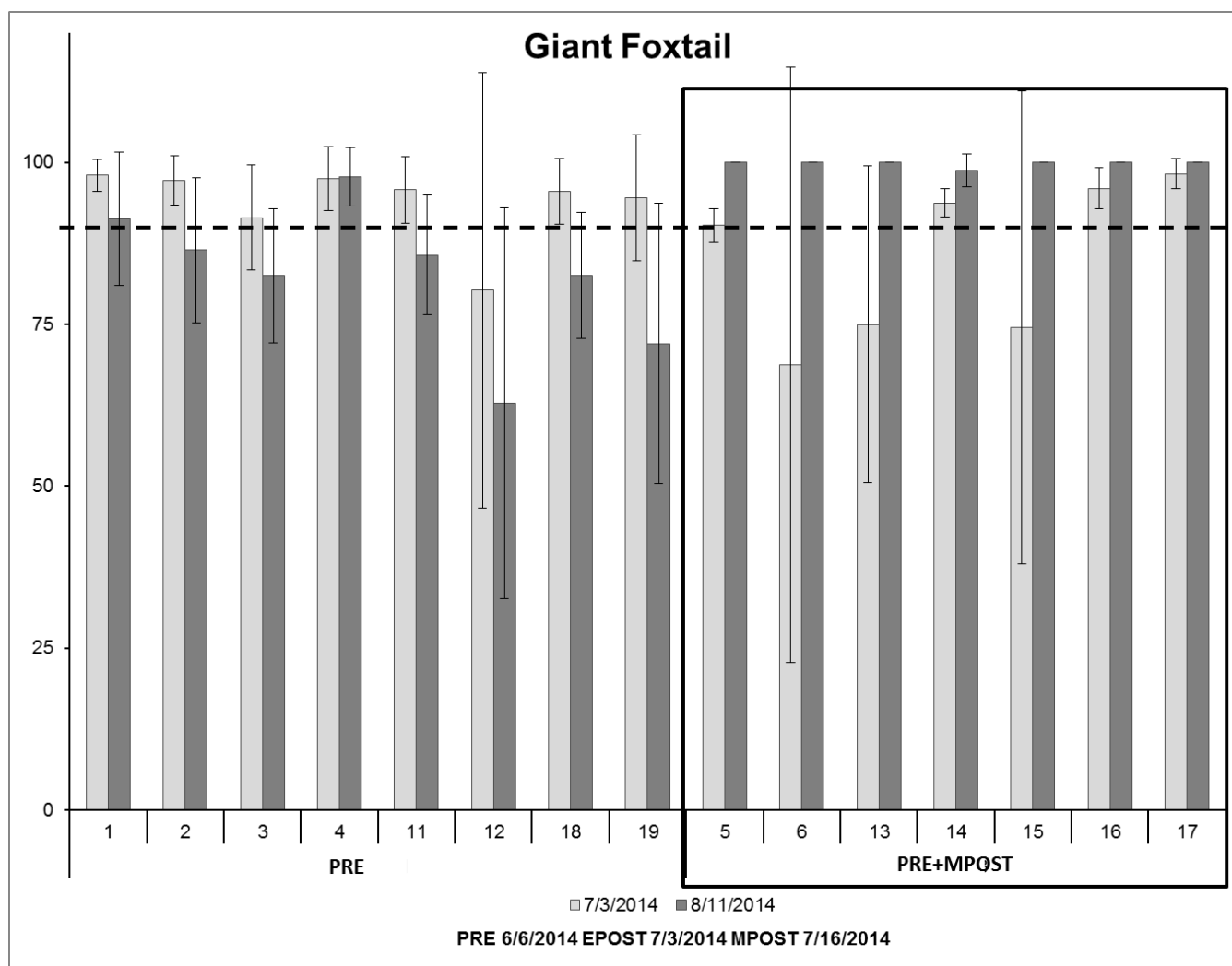


Figure 5: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: PRE and EPOST programs in roundup ready soybean **Trial #** SB14

Project Goal: To compare weed efficacy of herbicide programs used in Roundup Ready soybean.

Location: Arlington Research station

Site Description:

Field no.:	453	Crop:	Soybean
Soil type:	Plano silt loam	Variety:	NK S18-C2
% OM:	3.8	Date planted:	6/6/2014
pH:	5.9	Planting pop.:	140,000 S/A
Fertilization:	None	Planting depth:	1.5 in
Previous cropping and tillage:	Corn	Row spacing:	30 in
		Plot size:	10 by 28 ft
Principal weeds present:	Giant foxtail (SETFA), common lambsquarters (CHEAL), velvetleaf (ABUTH), common ragweed (AMBEL)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	6/6/2014	7/3/2014	7/16/2014
Treatment:	PRE	EPOST	MPOST
Soil moisture [surface]:	Dry/Moist	Moist	MOIST
Soil temperature (°F) [2 in depth]	74	74	62
Air temperature (°F)	84	74	67
Wind speed (mph)/direction	7/SW	3-6/NNW	1-3/N
Relative humidity (%)	42	50	73
Cloud cover (%)	30	30	0

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		7/3/14	7/16/14
Crop	Height (in)	4-6	10
	Stage	V1	V6
SETFA	Height (in)	1-5	1-5
	Density (per ft sq)	2-5	0.5
CHEAL	Height (in)	1-3	
	Density (per ft sq)	2-6	
ABUTH	Height (in)	2	
	Density (per ft sq)	0.5-1	
AMBEL	Height (in)	1-6	2-8
	Density (per ft sq)	2-10	0.5

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	nontreated check					
2	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EPOST	B
	NIS	100%	SL	0.25% v/v	EPOST	B
	AMS	100%	SG	2.55lb/a	EPOST	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	NIS	100%	SL	0.25% v/v	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
3	Fierce	76%AW/W	WDG	3oz/a	PREPRE	A
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	NIS	100%	SL	0.25% v/v	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
4	Fierce	76%AW/W	WDG	3oz/a	PREPRE	A
	Cobra	2LBA/GAL	EC	12.5fl oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	NIS	100%	SL	0.25% v/v	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
5	AUTHORITY FIRST DF	70%W/W	WG	5oz/a	PREPRE	A
6	CADET	0.91LB/GAL	EC	0.7oz/a	EPOST	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EPOST	B
	AMS	100%	SG	2.55lb/a	EPOST	B
7	MARVEL	3LB/GAL	SC	7.25oz/a	EPOST	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EPOST	B
	AMS	100%	SG	2.55lb/a	EPOST	B
8	COBRA	2LB/GAL	EC	12oz/a	EPOST	B
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	EPOST	B
	AMS	100%	SG	2.55lb/a	EPOST	B
9	AUTHORITY FIRST DF	70%W/W	WG	5oz/a	PREPRE	A
	CADET	0.91LB/GAL	EC	0.7oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
10	AUTHORITY FIRST DF	70%W/W	WG	5oz/a	PREPRE	A
	MARVEL	3LB/GAL	SC	7.25oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
11	AUTHORITY MAXX	66%W/W	WG	5oz/a	PREPRE	A
	MARVEL	3LB/GAL	SC	7.25oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
12	AUTHORITY ASSIST	4LB/GAL	SC	8oz/a	PREPRE	A
	MARVEL	3LB/GAL	SC	7.25oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C
13	AUTHORITY MTZ	45%W/W	WG	14oz/a	PREPRE	A
	MARVEL	3LB/GAL	SC	7.25oz/a	MIPOWE	C
	Roundup PowerMax	4.5lbae/gal	SL	32fl oz/a	MIPOWE	C
	AMS	100%	SG	2.55lb/a	MIPOWE	C

Trial Summary:

This trial compared the effectiveness of PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide programs in glyphosate tolerant soybean. Phyto-toxicity symptoms of leaf puckering and necrosis ranged from 0 to 14 percent (Figs. 1, 2). By the second week of August, leaf necrosis was not observed and leaf puckering was below 2 percent. Common ragweed control ranged from 57 to 96 percent four weeks after the PRE application (Fig. 3). Following the EPOST and MPOST applications, control varied from 86 to 100 percent by the end of August. After the PRE application, velvetleaf control ranged from 58 to 97 percent (Fig. 4). Control following the EPOST and MPOST applications exceeded 94 for all treatments except for the PRE only treatment, 5, at 82 percent. Control of common lambsquarters exceeded 90 percent for all observations made through July and August (data not shown). Giant foxtail control, after the PRE application, ranged from 74 to 99 percent (Fig. 5). At two and four weeks after the MPOST and EPOST applications, respectively, control exceeded 96 percent. However, by the end of August, control decreased below 90 percent for the EPOST only treatments.

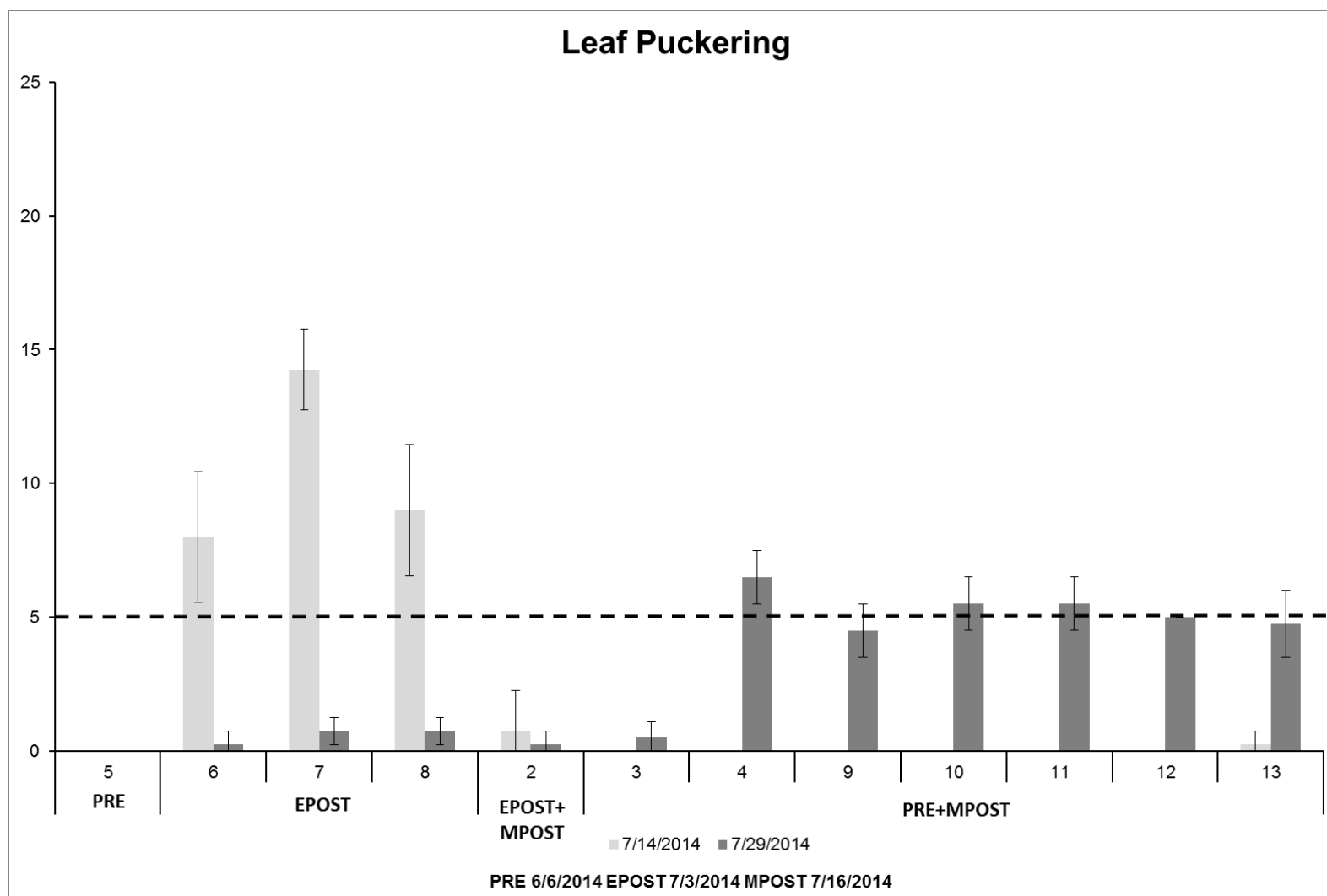


Figure 1: Bars indicate average leaf puckering \pm the standard deviation of four replications following PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

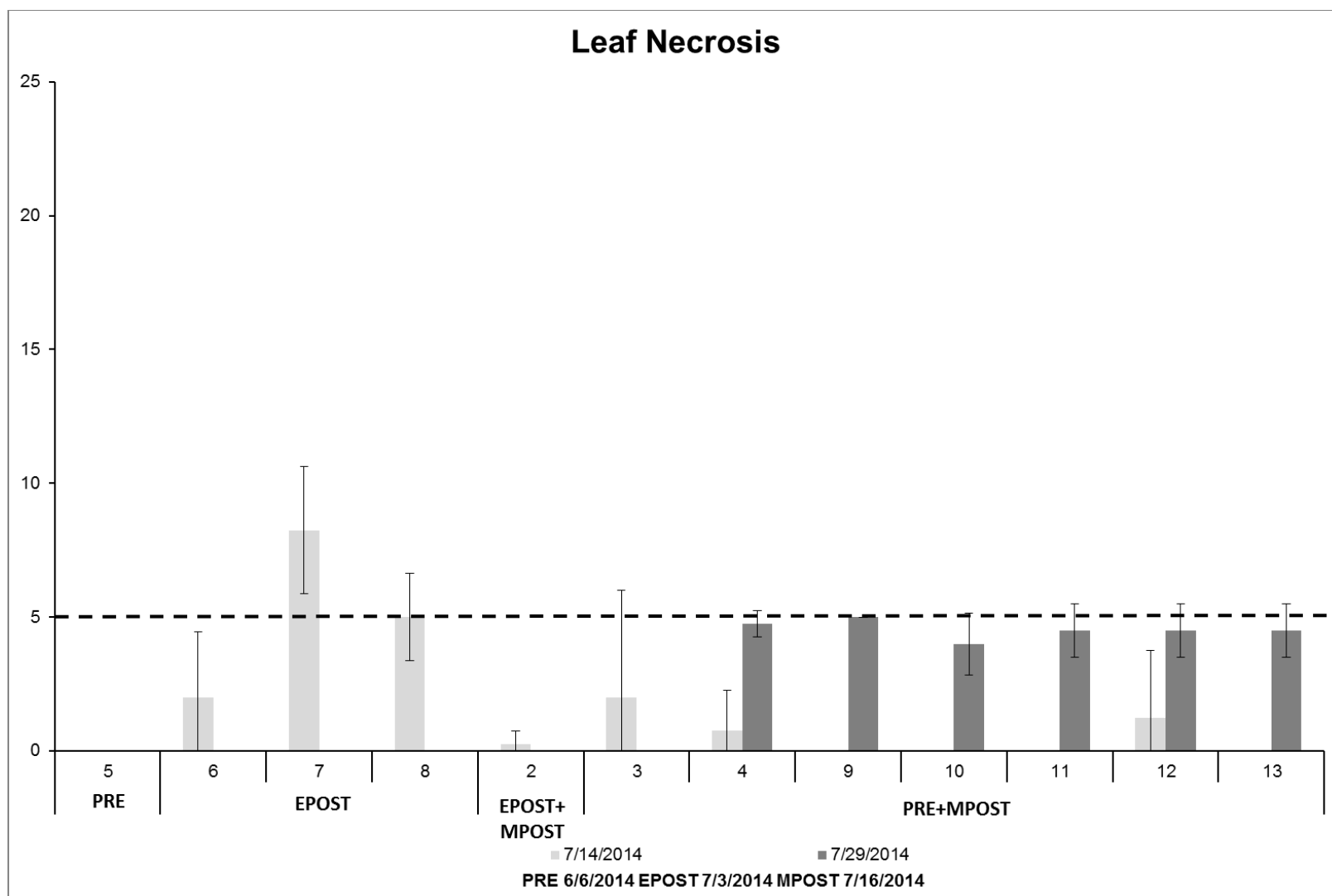


Figure 2: Bars indicate average leaf necrosis \pm the standard deviation of four replications following PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

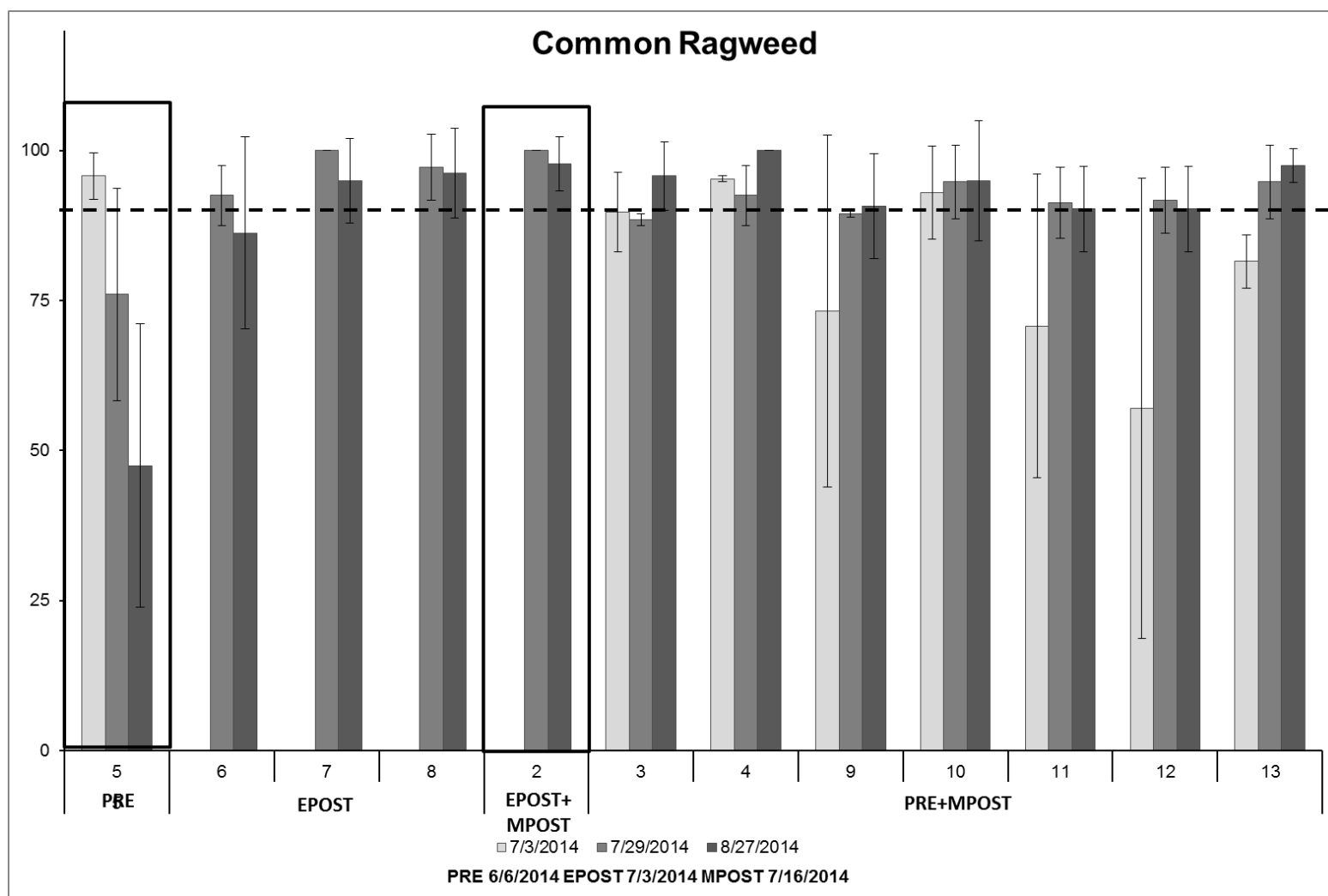


Figure 3: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

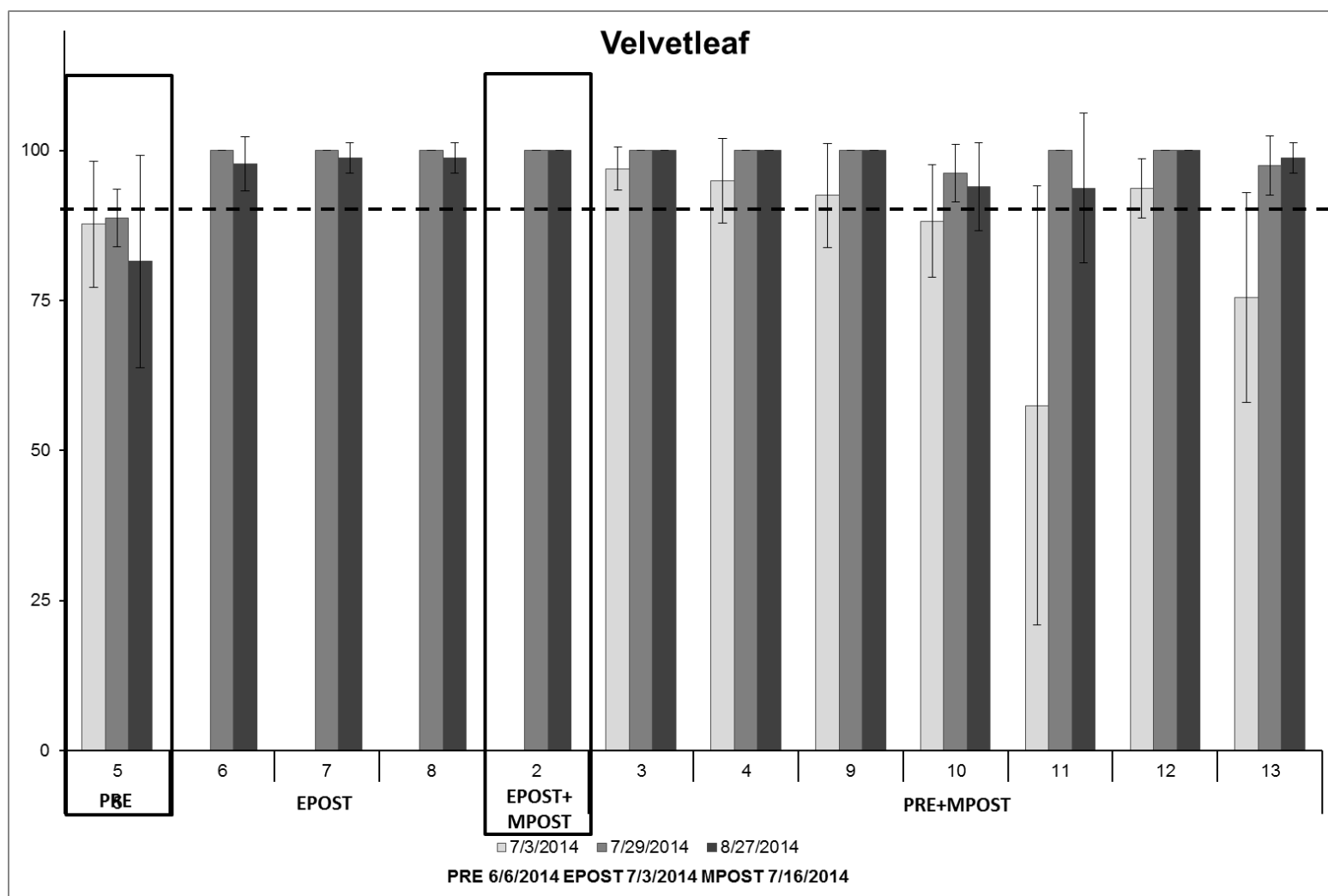


Figure 4: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

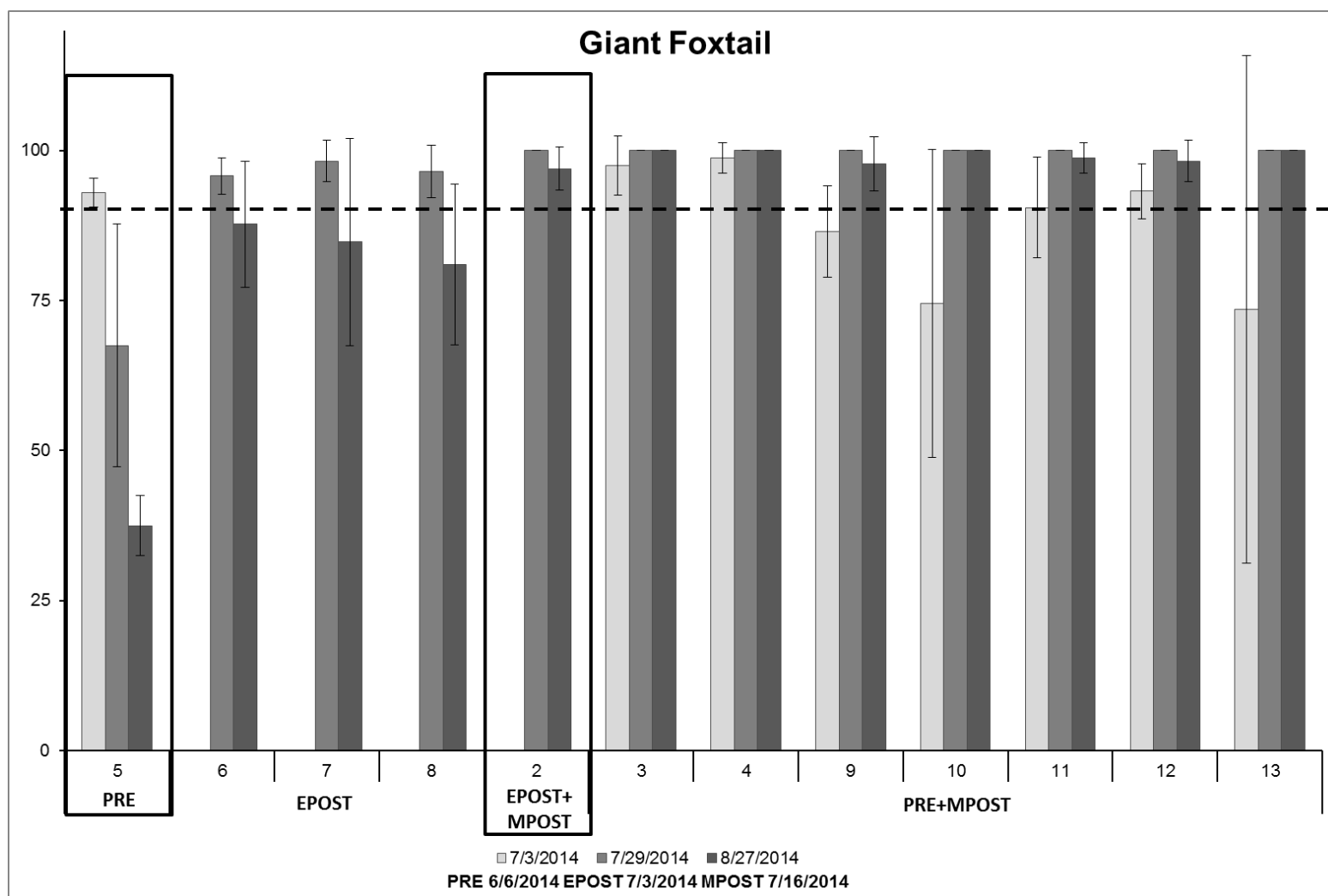


Figure 5: Bars indicate average control \pm the standard deviation of four replications following PRE, EPOST, EPOST+MPOST, and PRE+MPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Pummel PRE evaluation of needed POST timing in roundup ready soybean **Trial #** SB15

Project To determine the difference in timing of when glyphosate applications should occur in a
Goal: Roundup Ready soybean system following different PRE applications.
Location: Arlington Research Station

Site Description:

Field no.:	453	Crop:	Soybean
Soil type:	Plano silt loam	Variety:	NK S18-C2
% OM:	3.8	Date planted:	6/6/2014
pH:	5.9	Planting pop.:	140,000 S/A
Fertilization:	None	Planting depth:	1.5 in
Previous cropping and tillage:	Corn	Row spacing:	30 in
		Plot size:	7.5 by 28 ft
Principal weeds present:	Common ragweed (AMBEL), velvetleaf (ABUTH), common lambsquarters (CHEAL), giant foxtail (SETFA)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	6/6/2014	7/16/2014	7/24/2014
Treatment:	PRE	MPOST	LPOST
Soil moisture [surface]:	Dry/Moist	Moist	Dry
Soil temperature (°F) [2 in depth]	74	62	78
Air temperature (°F)	84	67	74
Wind speed (mph)/direction	7/SW	2/N	3/S
Relative humidity (%)	42	73	58
Cloud cover (%)	30	5	10

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:	6/6/2014	7/16/2014	7/24/2014
Crop	Height (in)	8	12-14
	Stage	V5	R2
SETFA	Height (in)	2-5	6-12
	Density (per ft sq)	0.5	2
AMBEL	Height (in)	4-12	6-12
	Density (per ft sq)	0.5	1
ABUTH	Height (in)	1-6	6-8
	Density (per ft sq)	0.5	0.5
CHEAL	Height (in)	1-3	
	Density (per ft sq)	0.5	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	Pummel	5.25lb/gal	L	2pt/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	LPOST	C
	AMS	100%	SG	2.55lb/a	LPOST	C
2	Pummel	5.25lb/gal	L	2pt/a	PREPRE	A
	Glory	75%	DF	5.3oz/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	POST	C
	AMS	100%	SG	2.55lb/a	POST	C
3	Torment	2.5lb/gal	L	1pt/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	POST	C
	AMS	100%	SG	2.55lb/a	POST	C
4	MANA 25337	55%	WG	4.25oz/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	POST	C
	AMS	100%	SG	2.55lb/a	POST	C
5	Authority First	70%	WG	6.4oz/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	POST	B
	AMS	100%	SG	2.55lb/a	POST	B
6	PREFIX	5.29LB/GAL	XL	2pt/a	PREPRE	A
	Glyphogan Plus	3lbae/gal	SL	1qt/a	POST	C
	AMS	100%	SG	2.55lb/a	POST	C
7	nontreated					

Trial Summary:

This POST application for this trial was made when the replicates (plots) for the treatment contained weeds that were approximately five inches in height. Treatment 5 had weeds of the appropriate size by July 16, 2014 but the other treatments did not have large weeds until July 24, 2014. Also, by July 24, 2014, the soybean plants had reached the R2 growth stage.

No phyto-toxicity symptoms were observed after each application. Common ragweed control, five weeks after the PRE application, ranged from 81 to 96 percent (Fig. 1). After the MPOST and LPOST applications, control exceeded 99 percent for all treatments. Control of velvetleaf exceeded 96 percent five weeks after the PRE application for all treatments except for treatment 6 at 83 percent (data not shown). Control exceeded 98 percent for all treatments following the MPOST and LPOST applications.

Common lambsquarters control ranged from 94 to 100 percent after the PRE application and was 100 percent for all treatments following the MPOST and LPOST applications (data not shown). Giant foxtail control ranged from 58 to 99 percent five weeks after the PRE application and was 100 percent following the MPOST and LPOST applications (Fig. 2).

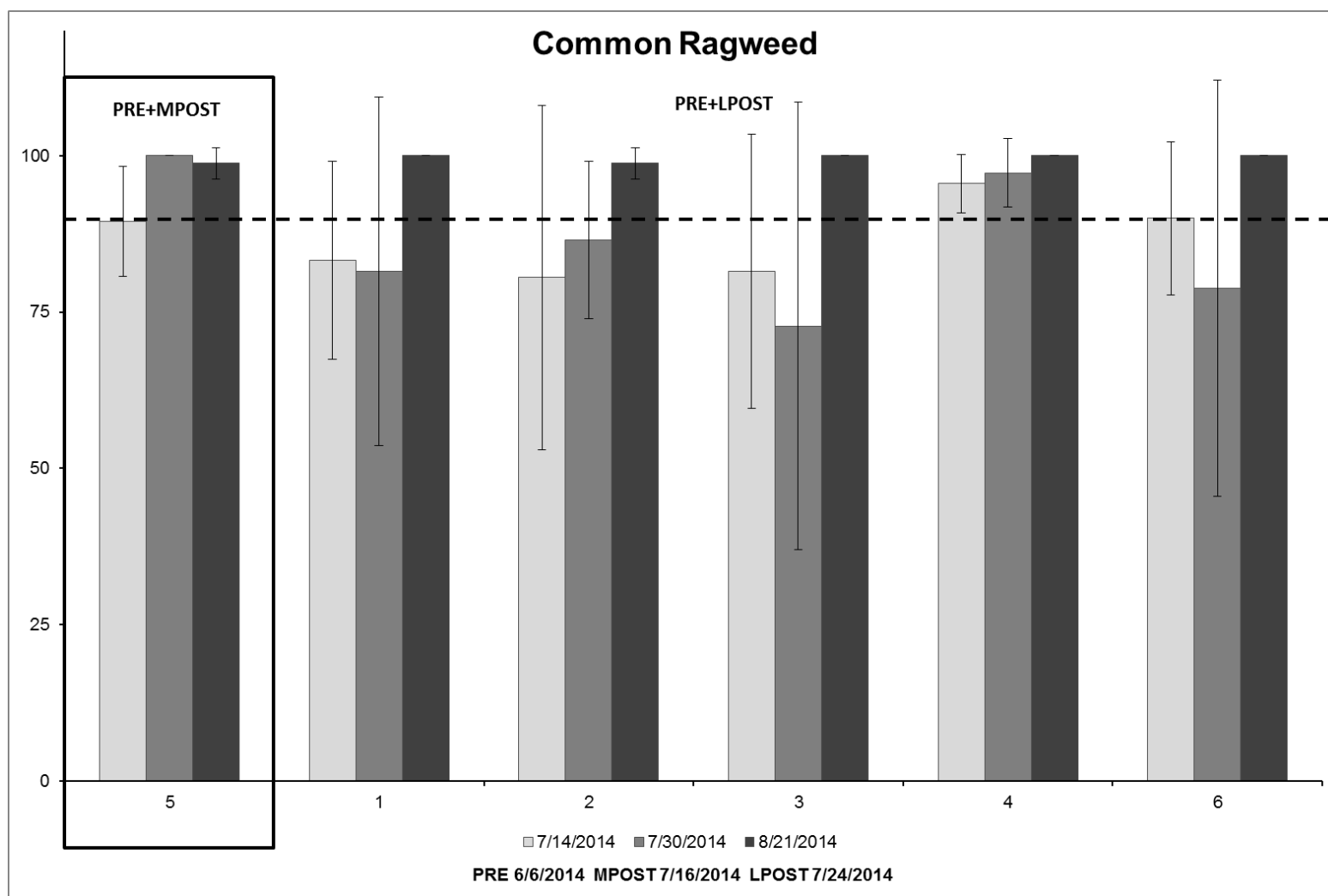


Figure 1: Bars indicate average control \pm the standard deviation of four replications following PRE+MPOST and PRE+LPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

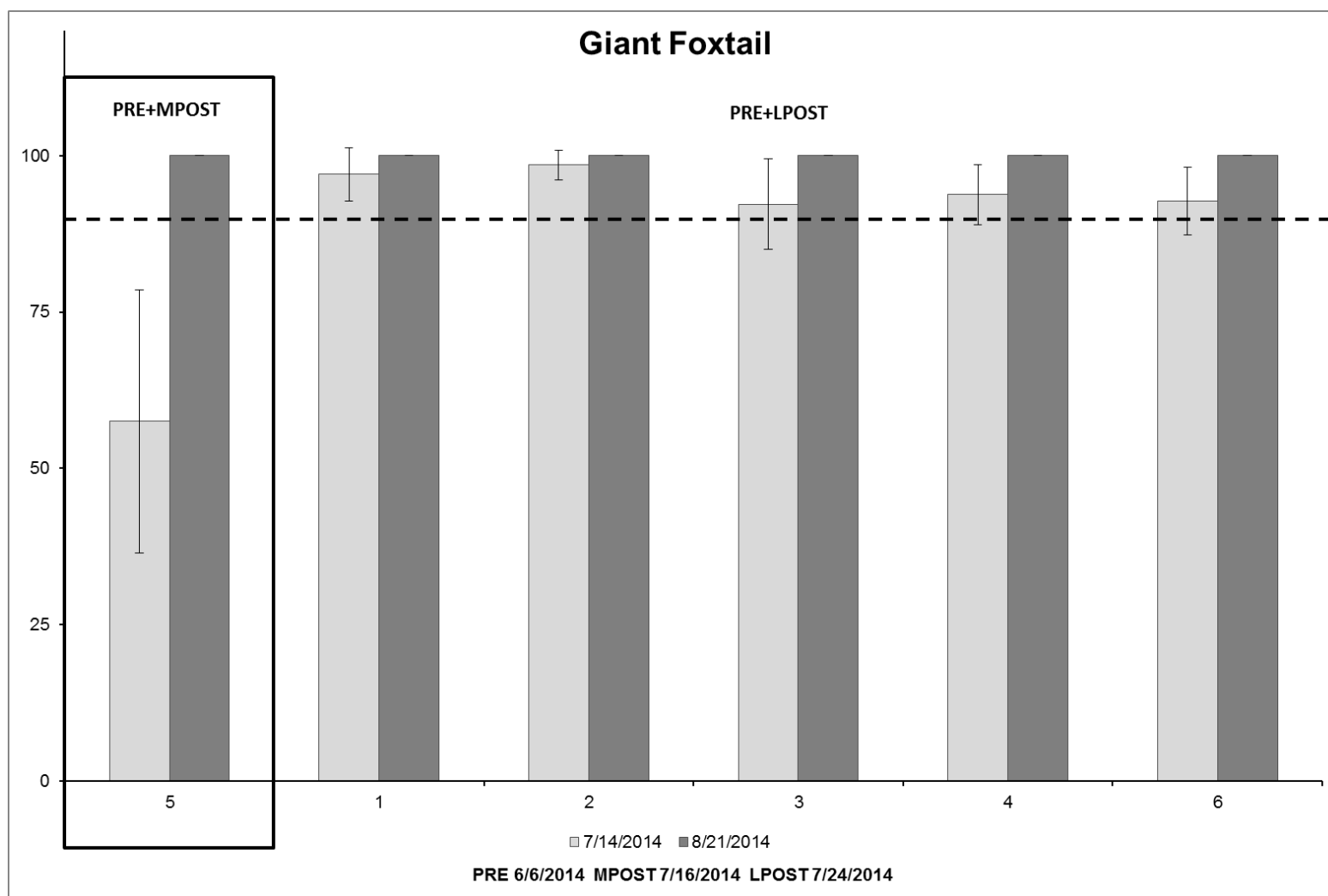


Figure 2: Bars indicate average control \pm the standard deviation of four replications following PRE+MPOST and PRE+LPOST herbicide applications. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 90% control which is a level that generally represents satisfactory performance at the timing of evaluation.

Trial: Pummel POST comparison in roundup ready soybeans **Trial #** SB16

Project To compare weed efficacy of POST herbicide programs used in Roundup Ready
Goal: soybean.
Location: Arlington Research Station

Site Description:

Field no.:	453	Crop:	Soybean
Soil type:	Plano silt loam	Variety:	NK S18-C2
% OM:	3.8	Date planted:	6/6/14
pH:	5.9	Planting pop.:	140,000 seeds/acre
Fertilization:	None	Planting depth:	1.5
Previous cropping and tillage:	Corn	Row spacing:	30
		Plot size:	7.5 by 28 ft
Principal weeds present:	Velvetleaf (ABUTH), giant foxtail (SETFA), common ragweed (AMBEL), common lambsquarters (CHEAL)		
Other pesticides used:	None		
Experimental design and statistical analysis:	4 reps, RCB		

Herbicide Application Information:

Date treated:	7/10/2014
Treatment:	POST
Soil moisture [surface]:	DRY
Soil temperature (°F) [2 in depth]	80
Air temperature (°F)	80
Wind speed (mph)/direction	2-3/W
Relative humidity (%)	62
Cloud cover (%)	25

Application equipment: CO₂ backpack sprayer, GPA: 15, PSI: 23, MPH: 3, Nozzle tips: XR8002, Spacing: 15 in, Height: 20 in

Crop and weed information at application:

Date:		7/10/2014
Crop	Height (in)	
	Stage	V3
ABUTH	Height (in)	3-6
	Density (per ft sq)	0.5
SETFA	Height (in)	2-4
	Density (per ft sq)	5
AMBEL	Height (in)	5
	Density (per ft sq)	½
CHEAL	Height (in)	2-4
	Density (per ft sq)	2

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Growth Stage	Appl Code
1	Pummel	5.25lb/gal	L	2pt/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
2	Pummel	5.25lb/gal	L	2pt/a	EAPOCR	A
	Rumble	1.88lb/gal	EC	1pt/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
3	Warrant	3lb/gal	AS	1.5qt/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
4	Rumble	1.88lb/gal	EC	1pt/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
5	Cobra	2LBA/GAL	EC	12.5fl oz/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
6	Torment	2.5lb/gal	L	1pt/a	EAPOCR	A
	Roundup PowerMax	4.5lbae/gal	SL	22fl oz/a	EAPOCR	A
	AMS	100%	SG	2.55lb/a	EAPOCR	A
7	nontreated					

Trial Summary:

This trial compared weed efficacy of different POST herbicide tank mixes for glyphosate-tolerant soybean. Leaf necrosis and puckering ranged from 0 to 12 percent and 0 to 11 percent at one and two weeks, respectively, following the POST application (Figs. 1, 2). No plant injury was observed four weeks following the POST application. Control of giant foxtail, velvetleaf, and common lambsquarters exceeded 98, 90, and 94 percent, respectively, for all treatments following the POST application (data not shown). Common ragweed control ranged from 93 to 100 percent four weeks after the POST application (data not shown).

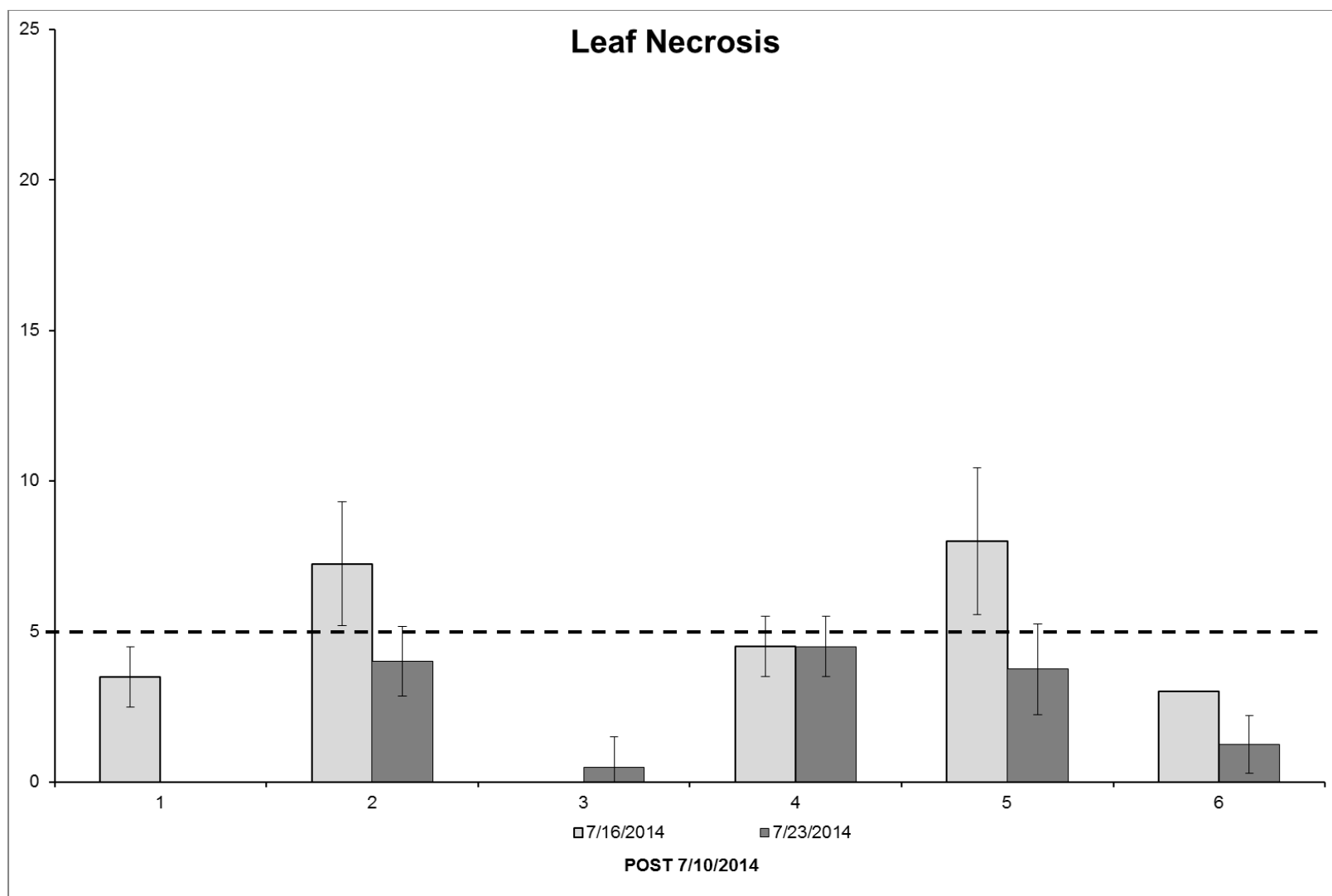


Figure 1: Bars indicate average leaf necrosis \pm the standard deviation of four replications following the POST herbicide application. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

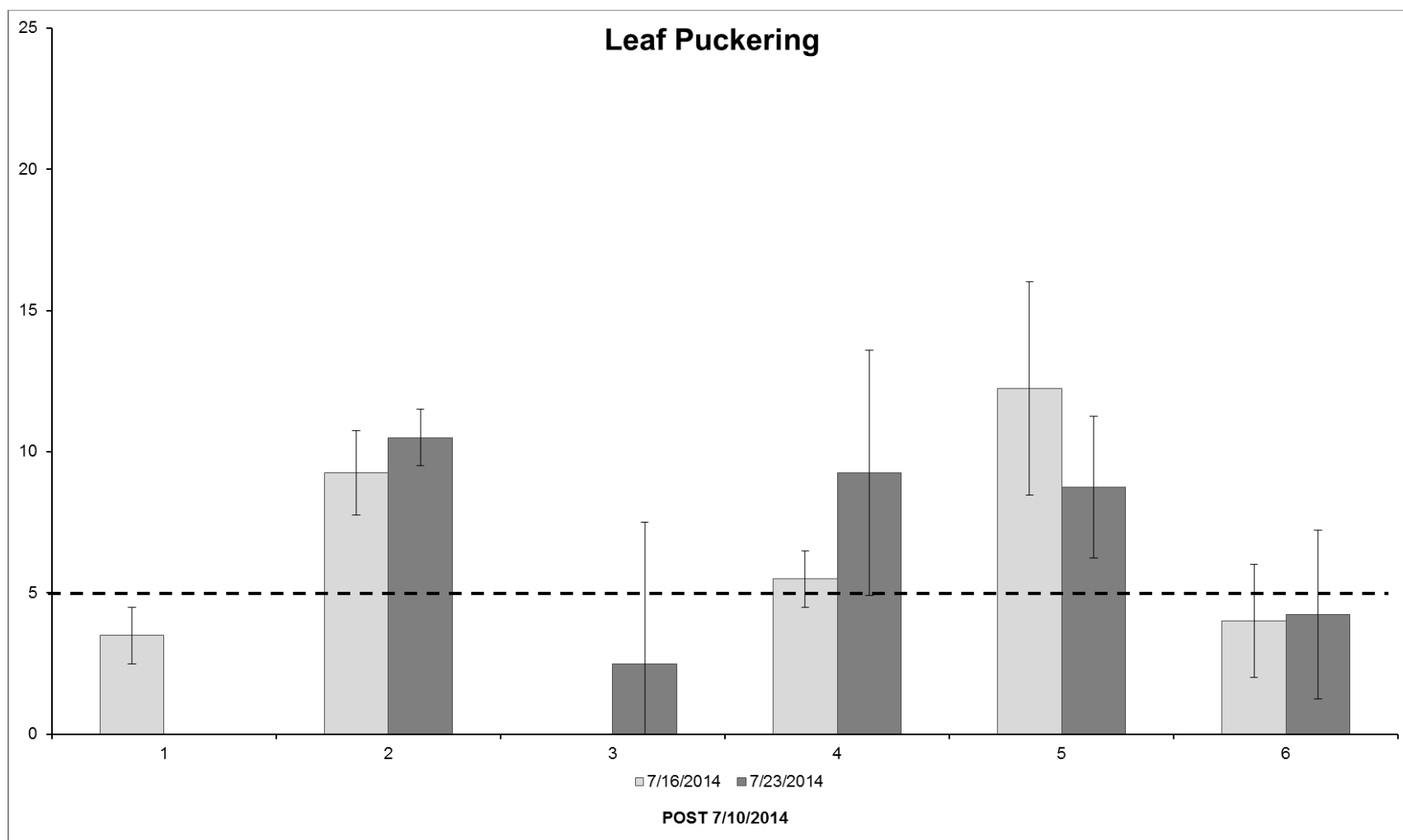


Figure 2: Bars indicate average leaf puckering \pm the standard deviation of four replications following the POST herbicide application. Numbers on the x-axis are the treatment numbers listed in the herbicide treatment list for the respective trial number. The dashed line indicates 5% injury.

Bayer Code	Common Name	Latin binomial
ABUTH	velvetleaf	<i>Abutilon theophrasti</i>
AMAPO	Powell amaranth	<i>Amaranthus powellii</i>
AMARE	redroot pigweed	<i>Amaranthus retroflexus</i>
AMASS	pigweed species	<i>Amaranthus spp.</i>
AMBEL	common ragweed	<i>Ambrosia artemisiifolia</i>
AMBTR	giant ragweed	<i>Ambrosia trifida</i>
CHEAL	common lambsquarters	<i>Chenopodium album</i>
ERBVI	woolly cupgrass	<i>Erichloa villosa</i>
POLCO	wild buckwheat	<i>Polygonum convolvulus</i>
POLPE	ladysthumb smartweed	<i>Polygonum persicaria</i>
SETFA	giant foxtail	<i>Setaria faberii</i>
SOLPT	Eastern black nightshade	<i>Solanum ptychanthum</i>
TAROF	common dandelion	<i>Taraxacum officinale</i>

Abbreviation	Full Length Term	Explanation
GPA	Gallons per Acre	Volume of final spray solution during application
PSI	Pounds per Square Inch	Pressure at which spray solution is applied
MPH	Miles per Hour	The speed of travel
RCB	Randomized Complete Block	Treatments are applied within a block at random, with each treatment being applied once per block
AMS	Ammonium Sulfate	Nitrogen and Sulfur containing spray additive
MSO	Methylated Seed Oil	An adjuvant to improve herbicide uptake into plants to improve POST control.
NIS	Non-Ionic Surfactant	An adjuvant to help reduce surface tension of water droplets to enhance leaf surface coverage and improve POST control.
%OM	Percent Organic Matter	Amount of organic matter in soil
COC	Crop Oil Concentrate	A combination of paraffinic oil and surfactant designed to improve herbicide uptake into plants to improve POST control.
28% UAN	Urea-Ammonium Nitrate	Type of fertilizer
SL	Soluble Liquid Concentrate	A clear liquid to be applied as a solution of the active ingredient after dilution in water
WDG	Water Dispersible Granules	A formulation consisting of granules to be applied after disintegration and dispersion in water
SG	(Water) Soluble Granule	A formulation consisting of granules to be applied as a true solution of the active ingredient after dissolution in water.
F	Flowable	A stable suspension for application for a solution
EC	Emulsifiable Concentrate	A homogenous formulation to be applied as an emulsion after dilution in water
AS	Aqueous Suspension (Concentrate)	A stable suspension of active ingredient(s) in water, intended for dilution with water before use

Abbreviation	Full Length Term	Explanation
SC	(Aqueous) Suspension Concentrate	A stable suspension of active ingredient(s) in water, intended for dilution with water before use
GR	Granule	A solid formulation of a defined granule size range ready for use
CS	Capsule Suspension	A stable suspension of capsules in a fluid, normally intended to be diluted with water before use
SE	Suspo-emulsion	A heterogeneous fluid formulation consisting of a stable dispersion of active ingredients in the form of solid particles in a continuous water phase.
DF	Dry Flowable	Solid particles that will readily form a suspension in water
WG	Water Dispersible Granules	Granules to be applied after disintegration and dispersion in water
ME	Micro-emulsion	An oil and water containing liquid that is to be applied after dilution in water
ZC	A mixture of CS and SC	A stable suspension of capsules and active ingredients in fluid
L	Liquid	A flowable solution

TRADE NAME	COMMON NAME	SITE OF ACTION #	CHEMICAL FAMILY
2,4-D	2,4-D	4	PHENOXY
ABUNDIT EXTRA	GLYPHOSATE	9	ORGANOPHOSPHORUS
ACCENT Q	NICOSULFURON	2	SULFONYLUREA
ACCOLADE	FLUMETSULAM	2	TRIAZOLOYRIMIDINE
AFFORIA	FLUMIOXAZIN	14	N-PHENYLPHTHALIMIDE
	THIFENSULFURON	2	SULFONYLUREA
	TRIBENURON	2	SULFONYLUREA
ANTHEM	PYROXASULFONE	15	PYRAZOLE
	FLUTHIACET	14	ARYL TRIAZINONE
ARMEZON	TOPRAMEZONE	27	PYRAZOLONE
AUTHORITY ASSIST	SULFENTRAZONE	14	ARYL TRIAZINONE
	IMAZETHAPYR	2	IMIDAZOLINONE
AUTHORITY FIRST	SULFENTRAZONE	14	ARYL TRIAZINONE
	CLORANSULAM	2	TRIAZOLOYRIMIDINE
AUTHORITY MAXX	SULFENTRAZONE	14	ARYL TRIAZINONE
	CHLORIMURON	2	SULFONYLUREA
AUTHORITY MTZ	SULFENTRAZONE	14	ARYL TRIAZINONE
	METRIBUZIN	5	TRIAZINONE
BASAGRAN	BENTAZON	6	BENZOTHIADIAZOLE
CADET	FLUTHIACET	14	ARYL TRIAZINONE
CALLISTO	MESOTRIONE	27	TRIKETONE
CAPRENO	THIENCARBAZONE	2	TRIAZONLINONES
	TEMBOTRIONE	27	TRIKETONE
CINCH	S-METOLACHLOR	15	CHLOROACETAMIDE
COBRA	LACTOFEN	2	DIPHENYLETHER
DIFLEXX	DICAMBA	4	BENZOIC ACID
	CYPROSULFAMIDE	--	
DUAL II MAGNUM	S-METOLACHLOR	15	CHLOROACETAMIDE
DURANGO DMA	GLYPHOSATE	9	ORGANOPHOSPHORUS
EXTREME	IMAZETHAPYR	2	IMIDAZOLINONE
	GLYPHOSATE	9	NONE ACCEPTED
FIERCE	FLUMIOXAZIN	14	N-PHENYLPHTHALIMIDE
	PYROXASULFONE	15	PYRAZOLE
FIRSTRATE	CLORANSULAM	2	TRIAZOLOYRIMIDINE
FLEXSTAR	FOMESAFEN	14	DIPHENYLETHER
GLORY	METRIBUZIN	5	TRIAZINONE
GLYFOS X-TRA	GLYPHOSATE	9	ORGANOPHOSPHORUS
GLYPHOGAN PLUS	GLYPHOSATE	9	ORGANOPHOSPHORUS
HALEX GT	S-METOLACHLOR	15	CHLOROACETAMIDE
	MESOTRIONE	27	TRIKETONE
	GLYPHOSATE	9	ORGANOPHOSPHORUS

TRADE NAME	COMMON NAME	SITE OF ACTION #	CHEMICAL FAMILY
IMPACT	TOPRAMEZONE	27	PYRAZOLONE
LAUDIS	TEMBOTRIONE	27	TRIKETONE
LIBERTY 280	GLUFOSINATE	10	ORGANOPHOSPHORUS
MARVEL	FLUTHIACET	14	ARYL TRIAZINONE
	FOMESAFEN	14	DIPHENYLEETHER
METRIBUZIN	METRIBUZIN	5	TRIAZINONE
OPTILL	SAFLUFENCIL	14	PYRIMIDINEDIONE
	IMAZETHAPYR	2	IMIDAZOLINONE
OUTLOOK	DIMETHENAMID	15	CHLOROACETAMIDE
PREFIX	METOLACHLOR	15	CHLOROACETAMIDE
	FOMESAFEN	14	DIPHENYLEETHER
PRINCEP	SIMAZINE	5	TRIAZINE
PROWL H2O	PENDIMETHALIN	3	DINITROANILINE
PUMMEL	METOLACHLOR	15	CHLOROACETAMIDE
PURSUIT	IMAZETHAPYR	2	IMIDAZOLINONE
PYTHON	FLUMETSULAM	2	TRIAZOLOYIMIDINE
RHYTHM	FOMESAFEN	14	DIPHENYLEETHER
RIMSULFURON	RIMSULFURON	2	SULFONYLUREA
ROUNDUP POWERMAX	GLYPHOSATE	9	ORGANOPHOSPHORUS
RUMBLE	FOMESAFEN	14	DIPHENYLEETHER
SHARPEN	SAFLUFENCIL	14	PYRIMIDINEDIONE
SONIC	SULFENTRAZONE	14	ARYL TRIAZINONE
	CLOPANSULAM	2	TRIAZOLOYRIMIDINE
SOLSTICE	MESOTRIONE	27	TRIKETONE
	FLUTHIACET	14	ARYL TRIAZINONE
SPARTAN	SULFENTRAZONE	14	ARYL TRIAZINONE
STANZA	CLOPYRALID	4	CARBOXYLIC ACID
	FLUMETSULAM	2	TRIAZOLOYIMIDINE
STATEMENT	METOLACHLOR	15	CHLOROACETAMIDE
	FOMESAFEN	14	DIPHENYLEETHER
STATUS	DIFLUFENZOPYR	19	SEMICARBAZONE
	DICAMBA	4	BENZOIC ACID
STINGER	CLOPYRALID	4	CARBOXYLIC ACID
SURESTART	ACETOCHLOR	15	CHLOROACETAMIDE
	CLOPYRALID	4	CARBOXYLIC ACID
	FLUMETSULAM	2	TRIAZOLOYIMIDINE
TORMENT	FOMESAFEN	14	DIPHENYLEETHER
	IMAZETHAPYR	2	IMIDAZOLINONE
VALOR	FLUMIOXAZIN	14	N-PHENYLPHTHALIMIDE

TRADE NAME	COMMON NAME	SITE OF ACTION #	CHEMICAL FAMILY
VERDICT	SAFLUFENACIL	14	PYRIMIDINEDIONE
	DIMETHENAMID	15	CHLOROACETAMIDE
WARRANT	ACETOCHLOR	15	CHLOROACETAMIDE
ZEMAX	MESOTRIONE	27	TRIKETONE
	IMAZETHAPYR	2	IMIDAZOLINONE
ZIDUA	PYROXASULFONE	15	PYRAZOLE