

**Using residual herbicides and multiple sites of action (SOA) to reduce the soil weed seed bank**

Trial ID: SOY08-21 Study Dir.: Sprague, Stiles, Powell  
 Conducted: Campus, C-16 Investigator: Christy Sprague

**Planting Date:** 5-11-21 **Row Spacing:** 30 IN  
**Variety:** P24T35E **No. of Reps:** 4  
**Population:** 155000 seeds/A **% OM:** 2.4  
**Soil Type:** L loam **pH:** 7.1  
**Plot Size:** 10 X 30 FT **Study Design:** Randomized Complete Block (RCB)

**Tillage/Previous Crops:** Fall chisel plow; Spring soil finished twice  
**Fertilizer:**

**Crop and Weed Description**

Weed	Code	Common Name	Scientific Name
1	ANGR	annual grass	mainly foxtail species
2	CHEAL	common lambsquarters	Chenopodium album
3	AMAPO	Powell amaranth	Amaranthus powellii
4	AMBEL	common ragweed	Ambrosia artemisiifolia
5	ABUTH	velvetleaf	Abutilon theophrasti
6	SINAR	wild mustard	Sinapis arvensis
Crop	Code	Common Name	
1	GLXMA	Soybean	

**Application Description**

	A	B
<b>Application Timing:</b>	PRE	POST
<b>Date Treated:</b>	5-12-21	6-17-21
<b>Time Treated:</b>	10:50 AM	10:50 AM
<b>% Cloud Cover:</b>	25	10
<b>Air Temp., Unit:</b>	50 F	76 F
<b>% Relative Humidity:</b>	38	39
<b>Wind Speed/Unit/Dir:</b>	5.5 MPH N	7 MPH SW
<b>Soil Temp, Unit:</b>	62 F	78 F
<b>Leaf Moist/Dew Presence (Y/N):</b>	N	N
<b>Soil Moist:</b>	5	5

**Crop Stage at Each Application**

	A	B
<b>Crop 1 Name:</b>	GLXMA	GLXMA
<b>Height:</b>		2-5 " (3.5)
<b>Stage:</b>		V1-V3 (V2)

**Weed Stage at Each Application**

	A	B
<b>Weed 1 Name:</b>	ANGR	ANGR
<b>Height:</b>		2-7 " (4.5)
<b>Stage:</b>		3L-4L (3L)
<b>Weed 2 Name:</b>	CHEAL	CHEAL
<b>Height:</b>		1-8 " (4.5)
<b>Stage:</b>		4L-16L (10L)
<b>Weed 3 Name:</b>	AMAPO	AMAPO
<b>Height:</b>		1-4 " (2.5)
<b>Stage:</b>		2L-6L (4L)
<b>Weed 4 Name:</b>	AMBEL	AMBEL
<b>Height:</b>		1-4 " (2.5)
<b>Stage:</b>		4L-8L (6L)
<b>Weed 5 Name:</b>	ABUTH	ABUTH
<b>Height:</b>		1-2 " (1.5)
<b>Stage:</b>		2L-4L (3L)
<b>Weed 6 Name:</b>	SINAR	SINAR
<b>Height:</b>		2-4 " (3)
<b>Stage:</b>		8L-10L (9L)

**Weed Density**

	1	2	3	4	5	6
<b>Date:</b>	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21
<b>Weed Name:</b>	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	SINAR
<b>Density:</b>	4 FT2	0.5 FT2	0.5 FT2	2 FT2	0.5 FT2	0.5 FT2

**Application Equipment**

Appl	Sprayer Type	Ground Speed	Nozzle Type	Nozzle Size	Nozzle Height	Nozzle Spacing	Boom Width	Spray Volume	Carrier	Operation Pressure
A	CUB	3.8 MPH	AIXR	11003	20.0 "	20.0 "	100.0 "	19 GAL/AC	WATER	30 PSI
B	CUB	3.8 MPH	AIXR	11003	25.0 "	20.0 "	100.0 "	19 GAL/AC	WATER	30 PSI

**Comments:**

Common ragweed at this location is Group 2 (ALS) resistant. End of season weed counts were for the entire plot length within the center two rows, with the exception of the untreated control where weed numbers were extrapolated from 0.25 m2 quadrats.

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Pest Code	CHEAL	ANAP	AMAP	AMBEL	ABUTH	SINAR	ANAP	CHEAL	AMAP
Crop Type, Code	C, GLXMA								
Rating Date	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21	6-17-21
Rating Type	injury	control	control	control	control	control	control	weed count	weed count
Rating Unit	%	%	%	%	%	%	%	#/m2	#/m2
Trt-Eval Interval	36 DA-A	36 DA-A	36 DA-A	36 DA-A	36 DA-A	36 DA-A	36 DA-A	36 DA-A	36 DA-A

Trt No.	Treatment Name	Rate	Unit	Appl Code	ANAP	CHEAL	AMAP	AMBEL	ABUTH	SINAR	ANAP	CHEAL	AMAP	
1	Untreated				0	0	0	0	0	0	78	6	5	
2	Authority Edge	7 fl oz/a		A	0	86	98	100	66	96	4	1	0	
	2 Anthem Maxx	3 fl oz/a		B										
	2 Enlist One	32 fl oz/a		B										
	2 Roundup PowerMax 3	30 fl oz/a		B										
	2 AMS	17 lb/100 gal		B										
3	Warrant	48 fl oz/a		B	0	0	0	0	0	0	54	18	5	
	3 Enlist One	32 fl oz/a		B										
	3 Roundup PowerMax 3	30 fl oz/a		B										
	3 AMS	17 lb/100 gal		B										
4	Metribuzin	5 oz/a		A	0	75	93	99	63	84	50	1	1	
	4 Enlist One	32 fl oz/a		B										
	4 Roundup PowerMax 3	30 fl oz/a		B										
	4 AMS	17 lb/100 gal		B										
5	Enlist One	32 fl oz/a		B	0	0	0	0	0	0	48	9	1	
	5 Roundup PowerMax 3	30 fl oz/a		B										
	5 AMS	17 lb/100 gal		B										
	LSD P=.05				.	2.1	4.8	1.7	4.0	4.8	4.0	38.3	21.8	3.3
	Standard Deviation				0.0	1.3	3.1	1.1	2.6	3.1	2.6	24.9	14.2	2.2
	CV				0.0	4.15	8.16	2.81	10.03	8.69	6.71	53.22	208.23	102.5

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Pest Code	AMBEL	ABUTH	C, GLXMA	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	SINAR	C, GLXMA		
Crop Type, Code	6-17-21	6-17-21	7-1-21	7-1-21	7-1-21	7-1-21	7-1-21	7-1-21	7-1-21	7-15-21		
Rating Date	weed count	weed count	injury	control	control	control	control	control	control	injury		
Rating Type	#/m2	#/m2	%	%	%	%	%	%	%	%		
Rating Unit	36 DA-A	36 DA-A	14 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	14 DA-B	28 DA-B		
Trt-Eval Interval												
Trt No.	Treatment Name	Rate Rate Unit	Appl Code									
1	Untreated			34	4	0	0	0	0	0	0	0
2	Authority Edge	7 fl oz/a	A	22	1	9	100	100	100	100	100	0
	2 Anthem Maxx	3 fl oz/a	B									
	2 Enlist One	32 fl oz/a	B									
	2 Roundup PowerMax 3	30 fl oz/a	B									
	2 AMS	17 lb/100 gal	B									
3	Warrant	48 fl oz/a	B	16	0	2	100	99	100	100	100	0
	3 Enlist One	32 fl oz/a	B									
	3 Roundup PowerMax 3	30 fl oz/a	B									
	3 AMS	17 lb/100 gal	B									
4	Metribuzin	5 oz/a	A	23	2	0	100	100	100	100	100	0
	4 Enlist One	32 fl oz/a	B									
	4 Roundup PowerMax 3	30 fl oz/a	B									
	4 AMS	17 lb/100 gal	B									
5	Enlist One	32 fl oz/a	B	26	8	0	100	100	100	100	99	100
	5 Roundup PowerMax 3	30 fl oz/a	B									
	5 AMS	17 lb/100 gal	B									
	LSD P=.05			26.3	8.7	1.5	0.7	1.7	.	.	1.7	.
	Standard Deviation			17.1	5.6	1.0	0.4	1.1	0.0	0.0	1.1	0.0
	CV			71.51	208.31	42.93	0.56	1.4	0.0	0.0	1.4	0.0

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Pest Code	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	SINAR	ANGR	CHEAL	AMAPO	AMBEL	ABUTH
Crop Type, Code											
Rating Date	7-15-21	7-15-21	7-15-21	7-15-21	7-15-21	7-15-21	9-24-21	9-24-21	9-24-21	9-24-21	9-24-21
Rating Type	control	control	control	control	control	control	control	control	control	control	control
Rating Unit	%	%	%	%	%	%	%	%	%	%	%
Trt-Eval Interval	28 DA-B	28 DA-B	28 DA-B	28 DA-B	28 DA-B	28 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B

Trt No.	Treatment Name	Rate	Unit	Appl Code	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	SINAR	ANGR	CHEAL	AMAPO	AMBEL	ABUTH
1	Untreated				0	0	0	0	0	0	0	0	0	0	0
2	Authority Edge	7 fl oz/a		A	100	100	100	96	100	100	100	100	100	96	100
	2 Anthem Maxx	3 fl oz/a		B											
	2 Enlist One	32 fl oz/a		B											
	2 Roundup PowerMax 3	30 fl oz/a		B											
	2 AMS	17 lb/100 gal		B											
3	Warrant	48 fl oz/a		B	100	100	100	93	100	100	99	100	100	94	100
	3 Enlist One	32 fl oz/a		B											
	3 Roundup PowerMax 3	30 fl oz/a		B											
	3 AMS	17 lb/100 gal		B											
4	Metribuzin	5 oz/a		A	93	100	100	87	100	100	97	100	100	93	100
	4 Enlist One	32 fl oz/a		B											
	4 Roundup PowerMax 3	30 fl oz/a		B											
	4 AMS	17 lb/100 gal		B											
5	Enlist One	32 fl oz/a		B	94	100	100	90	100	100	96	100	100	91	100
	5 Roundup PowerMax 3	30 fl oz/a		B											
	5 AMS	17 lb/100 gal		B											
	LSD P=.05				5.8	0.7	.	12.0	.	.	3.4	0.7	.	12.1	1.0
	Standard Deviation				3.8	0.4	0.0	7.8	0.0	0.0	2.2	0.4	0.0	7.9	0.7
	CV				4.92	0.56	0.0	10.61	0.0	0.0	2.83	0.56	0.0	10.49	0.82

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Pest Code	SINAR	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	SINAR	C, GLXMA	C, GLXMA			
Crop Type, Code	9-24-21	9-24-21	9-24-21	9-24-21	9-24-21	9-24-21	9-24-21	10-11-21	10-11-21			
Rating Date	control	weed count	weed count	weed count	weed count	weed count	weed count	moisture	yeild			
Rating Type	%	#/28 m2	#/28 m2	#/28 m2	#/28 m2	#/28 m2	#/28 m2	%	bu/A			
Rating Unit	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	116 DA-B	at 13% M			
Trt-Eval Interval	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	99 DA-B	116 DA-B	at 13% M			
Trt No.	Treatment Name	Rate	Appl									
		Rate Unit	Code									
1	Untreated			0	63	0	0	53	0	0	23.0	40.5
2	Authority Edge	7 fl oz/a	A	100	0	0	0	2	0	0	19.0	61.1
	2 Anthem Maxx	3 fl oz/a	B									
	2 Enlist One	32 fl oz/a	B									
	2 Roundup PowerMax 3	30 fl oz/a	B									
	2 AMS	17 lb/100 gal	B									
3	Warrant	48 fl oz/a	B	100	1	2	0	3	0	0	19.5	62.0
	3 Enlist One	32 fl oz/a	B									
	3 Roundup PowerMax 3	30 fl oz/a	B									
	3 AMS	17 lb/100 gal	B									
4	Metribuzin	5 oz/a	A	100	2	0	0	3	0	0	18.5	61.9
	4 Enlist One	32 fl oz/a	B									
	4 Roundup PowerMax 3	30 fl oz/a	B									
	4 AMS	17 lb/100 gal	B									
5	Enlist One	32 fl oz/a	B	100	4	0	0	4	0	0	19.0	64.4
	5 Roundup PowerMax 3	30 fl oz/a	B									
	5 AMS	17 lb/100 gal	B									
LSD P=.05				.	22.8	2.5	.	14.5	0.5	.	3.20	5.83
Standard Deviation				0.0	14.8	1.6	0.0	9.4	0.3	0.0	2.08	3.79
CV				0.0	105.03	399.87	0.0	73.42	329.14	0.0	10.51	6.53

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Pest Code	AMBEL	
Crop Type, Code		C, GLXMA
Rating Date	9-24-21	10-14-20
Rating Type	seeds	lbs/plot
Rating Unit	#/28 m2	
Trt-Eval Interval	99 DA-B	

Trt No.	Treatment Name	Rate	Unit	Appl Code		
1	Untreated				354648	11.0
2	Authority Edge	7 fl oz/a		A	179	15.8
2	Anthem Maxx	3 fl oz/a		B		
2	Enlist One	32 fl oz/a		B		
2	Roundup PowerMax 3	30 fl oz/a		B		
2	AMS	17 lb/100 gal		B		
3	Warrant	48 fl oz/a		B	807	16.2
3	Enlist One	32 fl oz/a		B		
3	Roundup PowerMax 3	30 fl oz/a		B		
3	AMS	17 lb/100 gal		B		
4	Metribuzin	5 oz/a		A	1662	15.9
4	Enlist One	32 fl oz/a		B		
4	Roundup PowerMax 3	30 fl oz/a		B		
4	AMS	17 lb/100 gal		B		
5	Enlist One	32 fl oz/a		B	811	16.7
5	Roundup PowerMax 3	30 fl oz/a		B		
5	AMS	17 lb/100 gal		B		
LSD P=.05					228168.0	1.42
Standard Deviation					148098.2	0.92
CV					206.78	6.11