

Control of Volunteer glyphosate tolerant Alfalfa in No-Till Xtend Soybeans at Rochester, Minnesota in 2017.

Breitenbach, Fritz R., Lisa M. Behnken, Annette Kylo and Amelia Welter

The objective of this trial was to evaluate herbicide programs for controlling volunteer glyphosate tolerant alfalfa in no-till soybeans in southeastern Minnesota in 2017. The research site was a loamy sand series with pH of 6.2, O.M. 2.2% and soil test P and K levels of 16 ppm and 117 ppm, respectively. The field had been in alfalfa for 3 seasons. The soybean variety ASGROW AG14X7 was planted June 27, 2017 at a depth of 1.5 inches in 30-inch rows at a rate of 165,000 seeds per acre. A randomized complete block design with three replications was used. Preemergence (PRE) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 30 psi using TTI 11002 spray tips. Evaluations of this plot were taken July 5, 10, 17, 24, 31, September 1 and October 9. Application dates, environmental conditions, and weed stages are in Table 1. Performance ratings for volunteer alfalfa, mature dandelions, seedling dandelions, and crop response can be found in Tables 2 through 5 respectively. (University of Minnesota Extension Regional Office, Rochester.)

Table 1. Application timing, plant stages, environmental conditions.

Date	6/27	7/5	7/11	7/24	8/8
Treatment	PRE (A)	POST I (B)		POST II (C)	
Temperature (F)					
Air	72	85	78	71	73
Soil	71.8		74.5		66.0
Relative Humidity (%)	34	49	71	63	65
Wind (mph)	13	9	10	3	9
Soil Moisture	Normal	Normal	Normal	Normal	Normal
Soybean					
Stage		VE	VC	V3	V4-V5
Height (in)		2.0	3.8	8.0	13.1
Volunteer Alfalfa					
Weed Density (ft ²)					
Height (in)		7.5	6.1	3.5	4.5
Mature Dandelion					
Weed Density (ft ²)					
Diameter (in)		9.0			
Seedling Dandelion					
Weed Density (ft ²)					
Height (in)		1.5	1.5	1.5	1.5
Grass					
Rainfall after each application (in)					
Week 1	1.53	0.53	0.0	1.63	0.38
Week 2	0.53	1.42	3.73	1.95	1.21
Week 3	0.0	3.88	1.63	0.32	0.31
Week 4	3.73	0.06	1.95	0.86	0.04

Table 2: Control of volunteer alfalfa in no-till Xtend Soybean at Rochester, MN in 2017.

Pest Code			MEDICAGO													
Pest Name			VOL ALFALFA													
Rating Date			July- 5		July- 10		July- 17		July- 24		July- 31		Sept- 1		Oct- 9	
Treatment	Rate	Appl	Percent Control (%)													
A= PRE 6/27/17																
1 ROUNDUP POWERMAX	32 fl oz/a	A	0.0	d	0.0	d	0.0	e	0.0	d	0.0	e	0.0	d	0.0	d
N-PAK AMS	2.5 % v/v	A														
6 XTENDIMAX	44 fl oz/a	A	85.0	a	95.0	a	95.0	a	94.3	a	87.0	b	90.0	a	90.0	a
ROUNDUP POWERMAX	32 fl oz/a	A														
A/C= PRE 6/27/17 / POST II 7/11/17																
2 FLEXSTAR GT 3.5	3.5 pt/a	A	75.0	b	56.7	c	56.7	d	56.7	c	56.7	d	59.7	c	59.7	c
COC	1 % v/v	A														
N-PAK AMS	2.5 % v/v	A														
ROUNDUP POWERMAX	32 fl oz/a	C														
FIRSTRATE	0.45 oz/a	C														
NIS	0.25 % v/v	C														
N-PAK AMS	2.5 % v/v	C														
3 AUTHORITY FIRST	8 oz wt/a	A	61.7	c	56.7	c	75.0	c	75.0	b	74.7	c	67.7	b	65.3	b
COC	1 % v/v	A														
N-PAK AMS	2.5 % v/v	A														
ROUNDUP POWERMAX	32 fl oz/a	A														
FLEXSTAR GT 3.5	3.5 pt/a	C														
COC	1 % v/v	C														
A/D= PRE 6/27/17 / POST III 7/24/17																
4 XTENDIMAX	44 fl oz/a	A	85.0	a	95.0	a	95.0	a	92.3	a	96.3	a	94.3	a	94.3	a
ROUNDUP POWERMAX	32 fl oz/a	A														
XTENDIMAX	22 fl oz/a	D														
ROUNDUP POWERMAX	32 fl oz/a	D														
B/E= POST I 7/5/17 / POST IV 8/8/17																
5 XTENDIMAX	44 fl oz/a	B	0.0	d	85.0	b	85.0	b	93.0	a	94.7	a	92.7	a	92.7	a
ROUNDUP POWERMAX	32 fl oz/a	B														
ROUNDUP POWERMAX	32 fl oz/a	E														
LSD P=.10			1.7		2.6		1.7		3.1		2.4		4.4		4.7	

Table 3: Control of Mature Dandelion in No-Till Xtend Soybean at Rochester, MN in 2017.

Pest Code			GRAM							YIELD BU/A		
Pest Name			DANDELION									
Rating Date			July-5	July-10	July-17	July-24	July-31	Sept-1				
Trt	Treatment	Rate	Appl	Percent Control (%)								
A= PRE 6/27/17												
1	ROUNDUP POWERMAX N-PAK AMS	32 fl oz/a 2.5 % v/v	A A	43.3 c	30.0 e	30.0 e	50.0 d	50.0 e	48.3 d	48.3	e	
6	XTENDIMAX ROUNDUP POWERMAX	44 fl oz/a 32 fl oz/a	A A	51.7 b	61.7 c	80.0 c	76.0 b	71.7 d	63.3 c	61.7	d	
A/C= PRE 6/27/17 / POST II 7/11/17												
2	FLEXSTAR GT 3.5 COC N-PAK AMS ROUNDUP POWERMAX FIRSTRATE NIS N-PAK AMS	3.5 pt/a 1 % v/v 2.5 % v/v 32 fl oz/a 0.45 oz/a 0.25 % v/v 2.5 % v/v	A A A C C C C	75.0 a	86.7 a	90.0 b	92.7 a	93.7 a	93.7 a	90.3	b	
3	AUTHORITY FIRST COC N-PAK AMS ROUNDUP POWERMAX FLEXSTAR GT 3.5 COC	8 oz wt/a 1 % v/v 2.5 % v/v 32 fl oz/a 3.5 pt/a 1 % v/v	A A A A C C	75.0 a	76.7 b	95.7 a	95.7 a	90.3 b	82.7 b	80.3	c	
A/D = PRE 6/27/17 / POST III 7/24/17												
4	XTENDIMAX ROUNDUP POWERMAX XTENDIMAX ROUNDUP POWERMAX	44 fl oz/a 32 fl oz/a 22 fl oz/a 32 fl oz/a	A A D D	50.0 b	63.3 c	80.0 c	76.0 b	84.3 c	94.3 a	93.3	ab	
B/E= POST I 7/5/17 / POST IV 8/8/17												
5	XTENDIMAX ROUNDUP POWERMAX ROUNDUP POWERMAX	44 fl oz/a 32 fl oz/a 32 fl oz/a	B B E	0.0 d	50.0 d	65.0 d	65.0 c	81.7 c	96.7 a	96.7	a	
LSD P=.10				4.1	3.7	0.7	3.9	3.1	3.9	4.1		

Table 4: Control of Seedling Dandelions in No-Till Xtend Soybeans in Rochester, MN in 2017.

Pest Code			GRAM								YIELD Bu/A			
Pest Name			SEEDING DANDELION											
Rating Date			July- 10	July- 17	July- 24	July- 31	Sept- 1							
Treatment	Rate	Appl	Percent Control (%)											
A= PRE 6/27/17														
1 ROUNDUP POWERMAX	32 fl oz/a	A	85.0	b	85.0	e	69.3	d	69.3	e	66.0	d	65.0	d
N-PAK AMS	2.5 % v/v	A												
6 XTENDIMAX	44 fl oz/a	A	95.0	a	91.7	c	84.0	c	77.7	d	76.0	c	76.0	c
ROUNDUP POWERMAX	32 fl oz/a	A												
A/C= PRE 6/27/17 / POST II 7/11/17														
2 FLEXSTAR GT 3.5	3.5 pt/a	A	95.0	a	95.0	b	95.0	a	96.7	a	94.3	a	91.0	a
COC	1 % v/v	A												
N-PAK AMS	2.5 % v/v	A												
ROUNDUP POWERMAX	32 fl oz/a	C												
FIRSTRATE	0.45 oz/a	C												
NIS	0.25 % v/v	C												
N-PAK AMS	2.5 % v/v	C												
3 AUTHORITY FIRST	8 oz wt/a	A	95.0	a	98.0	a	98.0	a	98.0	a	93.3	a	89.3	ab
COC	1 % v/v	A												
N-PAK AMS	2.5 % v/v	A												
ROUNDUP POWERMAX	32 fl oz/a	A												
FLEXSTAR GT 3.5	3.5 pt/a	C												
COC	1 % v/v	C												
A/D= PRE 6/27/17 / POST III 7/24/17														
4 XTENDIMAX	44 fl oz/a	A	95.0	a	95.0	b	87.3	bc	92.0	b	87.7	b	86.0	b
ROUNDUP POWERMAX	32 fl oz/a	A												
XTENDIMAX	22 fl oz/a	D												
ROUNDUP POWERMAX	32 fl oz/a	D												
B/E= POST I 7/5/17 / POST IV 8/8/17														
5 XTENDIMAX	44 fl oz/a	B	50.0	c	89.3	d	90.0	b	90.0	c	91.7	a	89.7	a
ROUNDUP POWERMAX	32 fl oz/a	B												
ROUNDUP POWERMAX	32 fl oz/a	E												
LSD P=.10					2.0		4.4		1.9		3.9		3.4	

Table 5: Injury to Xtend Soybeans No-Tilled into Alfalfa in Rochester, MN 2017.

Pest Name		INJURY										YIELD BU/A
Rating Date		July- 5	July- 17	July- 24	July- 31							
Treatment	Rate	Appl	Percent Damage (%)									
A= PRE 6/27/17												
1	ROUNDUP POWERMAX	32 fl oz/a	A	0.0	-	0.0	c	0.0	c	0.0	-	
	N-PAK AMS	2.5 % v/v	A									
6	XTENDIMAX	44 fl oz/a	A	0.0	-	0.0	c	0.0	c	0.0	-	
	ROUNDUP POWERMAX	32 fl oz/a	A									
A/C= PRE 6/27/17 / POST II 7/11/17												
2	FLEXSTAR GT 3.5	3.5 pt/a	A	0.0	-	15.0	b	6.7	b	0.0	-	
	COC	1 % v/v	A									
	N-PAK AMS	2.5 % v/v	A									
	ROUNDUP POWERMAX	32 fl oz/a	C									
	FIRSTRATE	0.45 oz/a	C									
	NIS	0.25 % v/v	C									
	N-PAK AMS	2.5 % v/v	C									
3	AUTHORITY FIRST	8 oz wt/a	A	0.0	-	55.0	a	11.7	a	0.0	-	
	COC	1 % v/v	A									
	N-PAK AMS	2.5 % v/v	A									
	ROUNDUP POWERMAX	32 fl oz/a	A									
	FLEXSTAR GT 3.5	3.5 pt/a	C									
	COC	1 % v/v	C									
A/D= PRE 6/27/17 / POST III 7/24/17												
4	XTENDIMAX	44 fl oz/a	A	0.0	-	0.0	c	0.0	c	0.0	-	
	ROUNDUP POWERMAX	32 fl oz/a	A									
	XTENDIMAX	22 fl oz/a	D									
	ROUNDUP POWERMAX	32 fl oz/a	D									
B/E= POST I 7/5/17 / POST IV 8/8/17												
5	XTENDIMAX	44 fl oz/a	B	0.0	-	0.0	c	0.0	c	0.0	-	
	ROUNDUP POWERMAX	32 fl oz/a	B									
	ROUNDUP POWERMAX	32 fl oz/a	E									
LSD P=.10						3.2		2.2				