

## Evaluation of A21472 for weed control in RR2-XTEND soybeans at Rochester, MN in 2016.

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The objective of this trial was to evaluate weed control and crop response in RR2-XTEND soybeans with A21472 (s-metolachlor + dicamba premix) applied with additive AG13063 and in tank mixes with glyphosate and fomesafen. The research site was a Loamy sand with a pH of 7.0, O.M. of 2.2%, and soil test P and K levels of 26 ppm and 132 ppm, respectively. The field was cultivated prior to planting. Resource S20-J5X, RR2-XTEND soybean was planted May 6, 2016 at 1.5 inches deep in 30-inch rows at 129,000 seeds per acre. A randomized complete block design was used with four replications. Postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi using TTI-110015 nozzles. Evaluations were taken on June 10, 13, 20, 28 and July 11. Application dates, environmental conditions, and weed stages are in Table 1. Performance ratings for control of giant ragweed, common lambsquarters, common waterhemp and grass and crop response are in Tables 2-ough 6, respectively. Common waterhemp population at this site is Group-9 and Group-14 susceptible.

### SUMMARY

Giant ragweed density in this trial was low, 2.0 plants/ft<sup>2</sup> and control was excellent for all systems evaluated. A21472 plus AG13063 with or without NIS provided 99% control of common lambsquarters. Control of lambsquarters remained excellent, 98 and 99%, when A21472 was applied with either Roundup PowerMax or Flexstar + Roundup PowerMax, respectively. Common waterhemp control with A21472 was only 64% and improved significantly when applied with Roundup PowerMax or with Flexstar plus Roundup PowerMax, from 84% to 97%, respectively. Also, adding A21472 to Flexstar + Roundup PowerMax gave a 7% increase in common waterhemp control, from 90% to 97%. Crop response was observed with all herbicide systems. The greatest occurred when Flexstar was included in the programs, 41-49%, (June 10). Crop response to A21472 with AG13063 or with NIS was 19 and 23%, respectively (June 13). *Note: Treatments included in this trial contain unregistered products.* (University of Minnesota Extension Regional Office, Rochester.)

**Table 1. Application timing, plant stage, environmental conditions.**

Date	June 6
Treatment	POST I
Temperature (F)	
Air	67.0
Soil	65.7
Relative Humidity (%)	56%
Wind (mph)	15
Soil Moisture	normal
Soybean	
Stage	V1-V2
Height (inch)	4.7
Giant Ragweed	
Weed density (ft <sup>2</sup> )	2.0
Height (inch)	3.8
Common Lambsquarters	
Weed density (ft <sup>2</sup> )	22.0
Height (inch)	1.6
Common Waterhemp	
Weed density (ft <sup>2</sup> )	14.5
Height (inch)	2.0
Grass species	
Weed density (ft <sup>2</sup> )	11.0
Height (inch)	2.0
Rainfall after each application (inch)	
Week 1	1.66
Week 2	1.39
Week 3	0.71

Table 2. Evaluation of A21472 for giant ragweed control in dicamba tolerant soybean at Rochester, MN in 2016.										
Pest Code Pest Name Rating Date					AMBTR					
					Giant ragweed					
Treatment					June-13	June-20	June-28	July-11		
Rate	Application				Percent Control (%)					
1 UNTREATED CHECK					0	d	0	b	0	b
<i>POST 1 6/6/16 (4-6 inch weeds)</i>										
2 SOA 4,15					98	c	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	A21472	3.53	pt/a	MIPOWE A						
3 SOA 4,15					98	bc	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	A21472	3.53	pt/a	MIPOWE A						
	NIS	0.25	% v/v	MIPOWE A						
4 SOA 4,15,9					99	ab	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	A21472	3.53	pt/a	MIPOWE A						
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A						
5 SOA 14, 4,15, 9					99	ab	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	FLEXSTAR	1.0	pt/a	MIPOWE A						
	A21472	3.53	pt/a	MIPOWE A						
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A						
6 SOA 14, 9					99	a	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	FLEXSTAR	1.0	pt/a	MIPOWE A						
	ROUNDUP POWERMAX	26.6	fl oz/a	MIPOWE A						
	MSO	1.0	% v/v	MIPOWE A						
7 SOA 4,9					98	bc	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	CLARITY	1.0	pt/a	MIPOWE A						
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A						
8 SOA 14, 15, 4, 9					99	ab	99	a	99	a
	AG13063	1	% v/v	MIPOWE A						
	WARRANT ULTRA	50.0	fl oz/a	MIPOWE A						
	CLARITY	1.0	pt/a	MIPOWE A						
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A						
LSD P=.10					0.6		0.3		0.4	0.5

Table 3. Evaluation of A21472 for common lambsquarters control in dicamba tolerant soybean at Rochester, MN in 2016.												
Pest Code					CHEAL							
Pest Name					Common lambsquarters							
Rating Date					June-13		June-20		June-28		July-11	
Treatment		Rate		Application		Percent Control (%)						
1 UNTREATED CHECK					0	c	0	c	0	c	0	c
<i>POST 1 6/6/16 (2-4 inch weeds)</i>												
2 SOA 4,15					97	b	99	a	99	a	99	a
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
3 SOA 4,15					97	b	99	a	99	a	99	a
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
NIS		0.25	% v/v	MIPOWE A								
4 SOA 4,15,9					99	a	99	a	99	a	98	a
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
5 SOA 14, 4,15, 9					99	a	99	a	99	a	99	a
AG13063		1	% v/v	MIPOWE A								
FLEXSTAR		1.0	pt/a	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
6 SOA 14, 9					99	a	98	b	92	b	87	b
AG13063		1	% v/v	MIPOWE A								
FLEXSTAR		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		26.6	fl oz/a	MIPOWE A								
MSO		1.0	% v/v	MIPOWE A								
7 SOA 4,9					99	a	99	a	99	a	97	a
AG13063		1	% v/v	MIPOWE A								
CLARITY		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
8 SOA 14, 15, 4, 9					99	a	99	a	99	a	99	a
AG13063		1	% v/v	MIPOWE A								
WARRANT ULTRA		50.0	fl oz/a	MIPOWE A								
CLARITY		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
LSD P=.10					1		1		1		2	

Table 4. Evaluation of A21472 common waterhemp control in dicamba tolerant soybean at Rochester, MN in 2016.												
Pest Code					AMATA							
Pest Name					Common waterhemp							
Rating Date					June 13		June 20		June 28		July 11	
Treatment	Rate	Application										
1	UNTREATED CHECK				0	c	0	e	0	f	0	f
<i>POST 1 (6/6/16) 2-4 inch weeds</i>												
2	SOA 4,15				92	b	76	d	66	e	64	e
	AG13063	1	% v/v	MIPOWE A								
	A21472	3.53	pt/a	MIPOWE A								
3	SOA 4,15				92	b	79	d	66	e	65	e
	AG13063	1	% v/v	MIPOWE A								
	A21472	3.53	pt/a	MIPOWE A								
	NIS	0.25	% v/v	MIPOWE A								
4	SOA 4,15,9				98	a	93	b	86	c	84	c
	AG13063	1	% v/v	MIPOWE A								
	A21472	3.53	pt/a	MIPOWE A								
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A								
5	SOA 14, 4,15, 9				99	a	99	a	98	a	97	a
	AG13063	1	% v/v	MIPOWE A								
	FLEXSTAR	1.0	pt/a	MIPOWE A								
	A21472	3.53	pt/a	MIPOWE A								
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A								
6	SOA 14, 9				98	a	97	a	93	b	90	b
	AG13063	1	% v/v	MIPOWE A								
	FLEXSTAR	1.0	pt/a	MIPOWE A								
	ROUNDUP POWERMAX	26.6	fl oz/a	MIPOWE A								
	MSO	1.0	% v/v	MIPOWE A								
7	SOA 4,9				97	a	88	c	77	d	72	d
	AG13063	1	% v/v	MIPOWE A								
	CLARITY	1.0	pt/a	MIPOWE A								
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A								
8	SOA 14, 15, 4, 9				99	a	98	a	97	a	95	a
	AG13063	1	% v/v	MIPOWE A								
	WARRANT ULTRA	50.0	fl oz/a	MIPOWE A								
	CLARITY	1.0	pt/a	MIPOWE A								
	ROUNDUP POWERMAX	28.4	fl oz/a	MIPOWE A								
LSD P=.10					2		4		2		4	

Table 5. Evaluation of A21472 for grass control in dicamba tolerant soybean at Rochester, MN in 2016.												
Pest Code					Grass Species							
Rating Date					June 13		June-20		June-28			
Treatment					Rate		Application		July-11			
1 UNTREATED CHECK					0	e	0	d	0	e	0	d
<i>POST 1 (6/6/16) 2-4 inch weeds</i>												
2 SOA 4,15					50	d	34	c	69	d	66	c
AG13063					1	% v/v	MIPOWE	A				
A21472					3.53	pt/a	MIPOWE	A				
3 SOA 4,15					50	d	31	c	70	d	64	c
AG13063					1	% v/v	MIPOWE	A				
A21472					3.53	pt/a	MIPOWE	A				
NIS					0.25	% v/v	MIPOWE	A				
4 SOA 4,15,9					98	b	97	a	97	a	94	a
AG13063					1	% v/v	MIPOWE	A				
A21472					3.53	pt/a	MIPOWE	A				
ROUNDUP POWERMAX					28.4	fl oz/a	MIPOWE	A				
5 SOA 14, 4,15, 9					99	a	97	a	97	a	95	a
AG13063					1	% v/v	MIPOWE	A				
FLEXSTAR					1.0	pt/a	MIPOWE	A				
A21472					3.53	pt/a	MIPOWE	A				
ROUNDUP POWERMAX					28.4	fl oz/a	MIPOWE	A				
6 SOA 14, 9					98	b	96	a	93	b	91	a
AG13063					1	% v/v	MIPOWE	A				
FLEXSTAR					1.0	pt/a	MIPOWE	A				
ROUNDUP POWERMAX					26.6	fl oz/a	MIPOWE	A				
MSO					1.0	% v/v	MIPOWE	A				
7 SOA 4,9					97	c	92	b	83	c	80	b
AG13063					1	% v/v	MIPOWE	A				
CLARITY					1.0	pt/a	MIPOWE	A				
ROUNDUP POWERMAX					28.4	fl oz/a	MIPOWE	A				
8 SOA 14, 15, 4, 9					99	a	98	a	97	a	94	a
AG13063					1	% v/v	MIPOWE	A				
WARRANT ULTRA					50.0	fl oz/a	MIPOWE	A				
CLARITY					1.0	pt/a	MIPOWE	A				
ROUNDUP POWERMAX					28.4	fl oz/a	MIPOWE	A				
LSD P=.10					0.5		3		3		4	

Table 6. Dicamba tolerant soybean response to A21472 herbicide systems at Rochester, MN in 2016.												
Crop Response					CROP RESPONSE							
Rating Date					June-10		June-13		June-20			
Treatment		Rate	Application									
1 UNTREATED CHECK					0	g	0	f	0	e	0	c
<i>POST 1 (6/6/16) 2-4 inch weeds</i>												
2 SOA 4,15					7	f	19	de	9	cd	0	c
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
3 SOA 4,15					13	e	23	cd	10	c	0	c
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
NIS		0.25	% v/v	MIPOWE A								
4 SOA 4,15,9					20	d	25	c	9	cd	0	c
AG13063		1	% v/v	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
5 SOA 14, 4,15, 9					41	b	34	ab	21	a	10	a
AG13063		1	% v/v	MIPOWE A								
FLEXSTAR		1.0	pt/a	MIPOWE A								
A21472		3.53	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
6 SOA 14, 9					49	a	38	a	21	ab	10	a
AG13063		1	% v/v	MIPOWE A								
FLEXSTAR		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		26.6	fl oz/a	MIPOWE A								
MSO		1.0	% v/v	MIPOWE A								
7 SOA 4,9					8	f	16	e	5	d	0	c
AG13063		1	% v/v	MIPOWE A								
CLARITY		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
8 SOA 14, 15, 4, 9					30	c	33	b	17	b	5	b
AG13063		1	% v/v	MIPOWE A								
WARRANT ULTRA		50.0	fl oz/a	MIPOWE A								
CLARITY		1.0	pt/a	MIPOWE A								
ROUNDUP POWERMAX		28.4	fl oz/a	MIPOWE A								
LSD P=.10					3		5		4		.	