Evaluation of Volunteer Corn Control in Dicamba Tolerant Soybean at Rochester, MN in 2018.

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The objective of this trial was to evaluate Fusilade and Select Max tank mixed with XtendiMax for control of volunteer corn in dicamba tolerant soybean at Rochester, MN. The research site was a loamy sand with a pH of 6.4, O.M. of 2.2%, and soil test P and K levels of 31 ppm and 123 ppm, respectively. Volunteer corn was sown by hand and tilled in with a shallow cultivation prior to planting the soybeans on May 23. ASGROW AG19X8 XTEND soybean was planted May 23, 2018 at 1.5 inches deep in 30-inch rows at 165,000 seeds per acre. Soybean emergence date was May 28, 2018. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi with a ground speed of 4.0 mph using TTI 110015 spray tips. Evaluations were made on June 22, 27, July 10 and 27, 2018. The center two rows of each plot were machine harvested on October 22, 2018. Application dates, environmental conditions, and weed stages are in Table 1. Performance ratings for control of volunteer corn, giant ragweed, common lambsquarters, common waterhemp and soybean response are in Tables 2 through 7, respectively.

DISCUSSION

There were only slight differences in the control of volunteer corn among the herbicide programs. For the June 22 rating, 10 days after POST applications, Fusilade DX at 6 fl oz/a + Roundup PowerMax at 32 fl oz/a performed slightly better, 90%, than the combination plus XtendiMax at 22 fl oz/a, 86%. Select Max at 6 fl oz/a + Roundup PowerMax at 32 fl oz/A also performed slightly better, 91%, than SelectMax at 9 fl oz/a + Roundup PowerMax at 32 fl oz/a + XtendiMax at 22 fl oz/a, 88%. However with time, the volunteer corn continued to die and control reached 94-98% for all treatments with no significant difference among the comparisons by July 27 evaluation. There were differences in giant ragweed control by July 27 evaluation. The addition of XtendiMax to either Fusilade DX + Roundup PowerMax or Select Max + Roundup PowerMax increased giant ragweed control to 98% for both programs by July 27. Control without XtendiMax was 84% for Fusilade DX + Roundup PowerMax and 89% Select Max + Roundup PowerMax. Common lambsquarters and common waterhemp was excellent for all system. The greatest soybean response after application of these herbicide programs was 26% from the Select Max + Roundup PowerMax + XtendiMax treatment. (University of Minnesota Extension Regional Office, Rochester.)

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

Date	**May 23**	**June 12**
Treatment	PRE (A)	POST I (B)
Temperature (F)		
Air	79.0	73.0
Soil	70.9	69.1
Relative Humidity (%)	53	78
Wind (mph)	10	3
Soil Moisture	Normal	Normal
Soybean		
Stage		V2
Height (inch)		6.4
Giant Ragweed		
Weed density (ft^2)		2.75
Height (inch)		5.5
Common Lambsquarters		
Weed density (ft^2)		1.0
Height (inch)		1.75
Common Waterhemp		
Weed density (ft^2)		1.25
Height (inch)		1.25
Volunteer Corn		
Weed density (ft^2)		16.5
Height (inch)		9.75
Rainfall after each application (inch)		
Week 1	1.08	1.62
Week 2	0.31	3.14
Week 3	0.93	0.96

Table 2. Volunteer corn control with Fusilade DX or Select Max plus XtendiMax in dicamba tolerant soybean at Rochester, MN in 2018.

Pest Code					VOLUNTEER CORN								YIELD	
Rating Date					Jun-22-2018		Jun-27-2018		Jul-10-2018		Jul-27-2018		Oct-22-2018	
Trt	Treatment	Rate		Appl	PERCENT CONTROL (%)								BU/A	
1	UNTREATED CHECK				0	d	0	c	0	c	0			
PRE (5/23/18) / POST I (6/12/18) 10 inch volunteer corn														
2	BROADAXE XC	28	fl oz/a	A	90	ab	97	a	97	a	98	-	40.7	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	FUSILADE DX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
3	BROADAXE XC	28	fl oz/a	A	91	a	97	a	96	ab	96	-	39.8	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	SELECT MAX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
4	BROADAXE XC	28	fl oz/a	A	86	c	96	b	95	b	94	-	41.1	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	XTENDIMAX	22	fl oz/a	B										
	FUSILADE DX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
	ON TARGET DRA	0.5	% v/v	B										
5	BROADAXE XC	28	fl oz/a	A	88	bc	98	a	97	ab	96	-	38.5	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	XTENDIMAX	22	fl oz/a	B										
	SELECT MAX	9	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
	ON TARGET DRA	0.5	% v/v	B										
LSD P=.10					2.7		0.6		1.6		NS		NS	

Table 3. Giant ragweed control with Fusilade DX or Select Max plus XtendiMax in dicamba tolerant soybean at Rochester, MN in 2018.

Pest Code					AMBTR GIANT RAGWEED								YIELD	
Rating Date					Jun-22-2018		Jun-27-2018		Jul-10-2018		Jul-27-2018		Oct-22-2018	
Trt	Treatment	Rate		Appl	PERCENT CONTROL (%)								BU/A	
1	UNTREATED CHECK				0	c	0	b	0	d	0	d		
PRE (5/23/18) / POST I (6/12/18)														
2	BROADAXE XC	28	fl oz/a	A	98	b	99	a	83	c	84	c	40.7	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	FUSILADE DX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
3	BROADAXE XC	28	fl oz/a	A	99	a	99	a	91	b	89	b	39.8	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	SELECT MAX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
4	BROADAXE XC	28	fl oz/a	A	99	a	99	a	98	a	98	a	41.1	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	XTENDIMAX	22	fl oz/a	B										
	FUSILADE DX	6	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
	ON TARGET DRA	0.5	% v/v	B										
5	BROADAXE XC	28	fl oz/a	A	99	a	99	a	98	a	98	a	38.5	-
	ROUNDUP POWERMAX	32	fl oz/a	B										
	XTENDIMAX	22	fl oz/a	B										
	SELECT MAX	9	fl oz/a	B										
	CLASS ACT RIDION	1	% v/v	B										
	ON TARGET DRA	0.5	% v/v	B										
LSD P=.10					1.0		0.5		3.5		4.5		NS	

Table 4. Common lambsquarters control with Fusilade DX or Select Max plus XtendiMax in dicamba tolerant soybean at Rochester, MN in 2018.

Pest Code					CHEAL COMMON LAMBSQUARTERS								YIELD
Rating Date					Jun-22-2018		Jun-27-2018		Jul-10-2018		Jul-27-2018		Oct-22-2018
Trt	Treatment	Rate		Appl	PERCENT CONTROL (%)								BU/A
1	UNTREATED CHECK				0	b	0	b	0	b	0	b	
PRE (5/23/18) / POST I (6/12/18)													
2	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	40.7 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	FUSILADE DX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
3	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	39.8 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	SELECT MAX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
4	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	41.1 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	XTENDIMAX	22	fl oz/a	B									
	FUSILADE DX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
	ON TARGET DRA	0.5	% v/v	B									
5	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	38.5 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	XTENDIMAX	22	fl oz/a	B									
	SELECT MAX	9	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
	ON TARGET DRA	0.5	% v/v	B									
LSD P=.10					NS		NS		NS		NS		NS

Table 5. Common waterhemp control with Fusilade DX or Select Max plus XtendiMax in dicamba tolerant soybean at Rochester, MN in 2018.

Pest Code					AMATA COMMON WATERHEMP								YIELD
Rating Date					Jun-22-2018		Jun-27-2018		Jul-10-2018		Jul-27-2018		Oct-22-2018
Trt	Treatment	Rate		Appl	PERCENT CONTROL (%)								BU/A
1	UNTREATED CHECK				0	b	0	b	0	b	0	b	
PRE (5/23/18) / POST I (6/12/19)													
2	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	40.7 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	FUSILADE DX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
3	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	39.8 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	SELECT MAX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
4	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	99	a	41.1 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	XTENDIMAX	22	fl oz/a	B									
	FUSILADE DX	6	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
	ON TARGET DRA	0.5	% v/v	B									
5	BROADAXE XC	28	fl oz/a	A	99	a	99	a	99	a	98	a	38.5 -
	ROUNDUP POWERMAX	32	fl oz/a	B									
	XTENDIMAX	22	fl oz/a	B									
	SELECT MAX	9	fl oz/a	B									
	CLASS ACT RIDION	1	% v/v	B									
	ON TARGET DRA	0.5	% v/v	B									
LSD P=.10					NS		NS		NS		1		NS

Table 6. Soybean response to herbicide systems used to control volunteer corn in dicamba tolerant soybean at Rochester, MN in 2018.												
Pest Code Rating Date					**INJURY Jun-22-2018**		**INJURY Jun-27-2018**		**INJURY Jul-10-2018**		**YIELD Oct-22-2018**	
Trt	Treatment	Rate		Appl	**PERCENT INJURY (%)**						**BU/A**	
1	UNTREATED CHECK				**0**	**d**	**0**	**c**	**0**	**-**		
PRE (5/23/18) / POST I (6/12/18)												
2	BROADAXE XC	28	fl oz/a	A	**15**	**c**	**15**	**b**	**0**	**-**	**40.7**	**-**
	ROUNDUP POWERMAX	32	fl oz/a	B								
	FUSILADE DX	6	fl oz/a	B								
	CLASS ACT RIDION	1	% v/v	B								
3	BROADAXE XC	28	fl oz/a	A	**14**	**c**	**15**	**b**	**0**	**-**	**39.8**	**-**
	ROUNDUP POWERMAX	32	fl oz/a	B								
	SELECT MAX	6	fl oz/a	B								
	CLASS ACT RIDION	1	% v/v	B								
4	BROADAXE XC	28	fl oz/a	A	**19**	**b**	**15**	**b**	**0**	**-**	**41.1**	**-**
	ROUNDUP POWERMAX	32	fl oz/a	B								
	XTENDIMAX	22	fl oz/a	B								
	FUSILADE DX	6	fl oz/a	B								
	CLASS ACT RIDION	1	% v/v	B								
	ON TARGET DRA	0.5	% v/v	B								
5	BROADAXE XC	28	fl oz/a	A	**26**	**a**	**20**	**a**	**0**	**-**	**38.5**	**-**
	ROUNDUP POWERMAX	32	fl oz/a	B								
	XTENDIMAX	22	fl oz/a	B								
	SELECT MAX	9	fl oz/a	B								
	CLASS ACT RIDION	1	% v/v	B								
	ON TARGET DRA	0.5	% v/v	B								
LSD P=.10					**2.4**		**3.3**		**NS**		**NS**	