

# ***Efficacy of A22089 Herbicide Programs for controlling weeds in HPPD tolerant Soybean at Rochester, MN in 2018.***

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The objective of this trial was to evaluate the efficacy of HPPD herbicide programs for controlling weeds in HPPD tolerant soybean in southeastern Minnesota. The research site was a loamy sand series with pH of 6.6, O.M. 2.1% and soil test P and K levels of 49 ppm and 135 ppm, respectively. The field was spring disked and field cultivated twice prior to planting. The previous crop was cover crop mix. A regulated soybean variety was planted on June 4, 2018 at a depth of 1.5 inches in 30-inch rows at a rate of 129,000 seeds per acre. Soybean emergence date was June 11, 2018. A randomized complete block design was used with four replications. Preemergence (PRE) 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. (POST) treatments were applied with a tractor-mounted sprayer delivering 15 gpa at 40 psi with a ground speed of 4.0 mph using TurboTee 110015 spray tips. Evaluations of the plots were taken June 25, July 6, and July 9. Crop was destroyed on July 9, 2018 to comply with protocol requirements. Application dates, environmental conditions, and weed stages can be found in Table 1. Performance rating for control of giant ragweed, common lambsquarters, common waterhemp, and grass control, along with crop injury can be found in Tables 2 through 6, respectively.

## **DISCUSSION**

A22089 at 1.8 qt/A applied PRE provided excellent control (98-99%) of giant ragweed, common lambsquarters, common waterhemp and grasses in this study. There was no difference in level of control of these weeds when either Tricor at 6.66 oz wt/a or Spartan at fl oz/a were included with A22089. No crop injury was observed with these treatments. The greatest difference in control was for giant ragweed where A22089 performed better (99%) compared to the standards used in this trial, Boundary (35%), Valor XLT (89%), and Sonic (95%). Treatments included in this trial contain unregistered products. (University of Minnesota Extension Regional Office, Rochester).

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

<b>Date</b>	<b>6/5</b>	<b>6/29</b>
<b>Treatment</b>	PRE (A)	POST I (B)
<b>Temperature (F)</b>		
Air	74	74
Soil	70.9	73.6
<b>Relative Humidity (%)</b>	63	71
<b>Wind (mph)</b>	3	18
<b>Soil Moisture</b>	Normal	Normal
<b>Soybean</b>		
Stage		V3
Height (in)		9.6
<b>Giant Ragweed</b>		
Weed Density (ft <sup>2</sup> )		
Height (in)		
<b>Common Lambsquarter</b>		
Weed Density (ft <sup>2</sup> )		32
Height (in)		2.0
<b>Common Waterhemp</b>		
Weed Density (ft <sup>2</sup> )		24
Height (in)		2.8
<b>Grass</b>		
Height (in)		3.0
<b>Rainfall after each application (in)</b>		
Week 1	0.93	2.47
Week 2	1.87	1.26
Week 3	2.89	0.64

**Table 2. Giant ragweed control with A22089 in an HPPD tolerant soybean at Rochester, MN in 2018.**

Pest Code				AMBTR					
Pest Name				GIANT RAGWEED					
Rating Date				Jun-25-2018		Jul-6-2018		Jul-9-2018	
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)					
1	UNTREATED CHECK			0	d	0	d	0	e
<b>PRE (6/5/18)</b>									
2	A22089	1.8 qt/a	A	99	a	99	a	99	a
3	TRICOR	6.66 oz wt/a	A	99	a	99	a	99	a
	A22089	1.8 qt/a	A						
4	A22089	1.8 qt/a	A	99	a	99	a	99	a
	SPARTAN	4.5 fl oz/a	A						
5	BOUNDARY	1.5 pt/a	A	38	c	33	c	35	d
6	VALOR XLT	2.5 oz wt/a	A	96	b	90	b	89	c
7	SONIC	4.0 oz wt/a	A	98	a	96	a	95	b
<b>POST I (6/29/18)</b>									
8	LIBERTY 280	36 fl oz/a	B	0	d	99	a	99	a
	N-PAK AMS	2.5 % v/v	B						
<b>LSD P=.10</b>				1.6		3.4		3.0	

**Table 3. Common lambsquarters control with A22089 in an HPPD tolerant soybean at Rochester, MN in 2018.**

Pest Code				CHEAL					
Pest Name				COMMON LAMBSQUARTERS					
Rating Date				Jun-25-2018		Jul-6-2018		Jul-9-2018	
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)					
1	UNTREATED CHECK			0	c	0	c	0	c
<b>PRE (6/5/18)</b>									
2	A22089	1.8 qt/a	A	99	a	99	a	99	a
3	TRICOR	6.66 oz wt/a	A	99	a	99	a	99	a
	A22089	1.8 qt/a	A						
4	A22089	1.8 qt/a	A	99	a	99	a	99	a
	SPARTAN	4.5 fl oz/a	A						
5	BOUNDARY	1.5 pt/a	A	99	a	98	ab	97	b
6	VALOR XLT	2.5 oz wt/a	A	98	b	97	b	99	a
7	SONIC	4.0 oz wt/a	A	99	a	99	a	99	a
<b>POST I (6/29/18)</b>									
8	LIBERTY 280	36 fl oz/a	B	0	c	99	a	99	a
	N-PAK AMS	2.5 % v/v	B						
<b>LSD P=.10</b>				0.9		2.0		1.3	

**Table 4. Common waterhemp control with A22089 in an HPPD tolerant soybean at Rochester, MN in 2018.**

Pest Code				AMATA COMMON WATERHEMP					
Pest Name									
Rating Date				Jun-25-2018		Jul-6-2018		Jul-9-2018	
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)					
1	UNTREATED CHECK			0	c	0	c	0	d
<b>PRE (6/5/18)</b>									
2	A22089	1.8 qt/a	A	98	ab	98	a	98	ab
3	TRICOR	6.66 oz wt/a	A	99	a	99	a	99	a
	A22089	1.8 qt/a	A						
4	A22089	1.8 qt/a	A	99	ab	99	a	99	a
	SPARTAN	4.5 fl oz/a	A						
5	BOUNDARY	1.5 pt/a	A	98	ab	95	b	94	c
6	VALOR XLT	2.5 oz wt/a	A	99	a	97	ab	96	bc
7	SONIC	4.0 oz wt/a	A	97	b	95	b	95	c
<b>POST I (6/29/18)</b>									
8	LIBERTY 280	36 fl oz/a	B	0	c	99	a	96	bc
	N-PAK AMS	2.5 % v/v	B						
<b>LSD P=.10</b>				<b>1.6</b>		<b>2.3</b>		<b>2.4</b>	

**Table 5. Grass control with A22089 in an HPPD tolerant soybean at Rochester, MN in 2018.**

Pest Code				GRASS					
Rating Date									
Rating Date				Jun-25-2018		Jul-6-2018		Jul-9-2018	
Trt	Treatment	Rate	Appl	PERCENT CONTROL (%)					
1	UNTREATED CHECK			0	c	0	c	0	c
<b>PRE (6/5/18)</b>									
2	A22089	1.8 qt/a	A	97	a	98	a	98	a
3	TRICOR	6.66 oz wt/a	A	99	a	99	a	99	a
	A22089	1.8 qt/a	A						
4	A22089	1.8 qt/a	A	98	a	98	a	98	a
	SPARTAN	4.5 fl oz/a	A						
5	BOUNDARY	1.5 pt/a	A	98	a	98	a	98	a
6	VALOR XLT	2.5 oz wt/a	A	93	b	91	b	91	b
7	SONIC	4.0 oz wt/a	A	97	a	90	b	89	b
<b>POST I (6/29/18)</b>									
8	LIBERTY 280	36 fl oz/a	B	0	c	99	a	99	a
	N-PAK AMS	2.5 % v/v	B						
<b>LSD P=.10</b>				<b>3.3</b>		<b>4.9</b>		<b>4.7</b>	