Comparison of PRE/POST and POST only Weed Control Systems in Liberty Link Soybeans at Rochester, MN in 2012.

Behnken, Lisa M, Fritz R. Breitenbach, Ryan P. Miller, Kevin Welter and Matthew Mitchell

The objective of this trial was to evaluate the performance of PRE/POST and POST only herbicide programs for weed control in Liberty Link soybeans in southeastern Minnesota. The research site was a Lawler loam series with a pH of 6.6, O.M of 2.3%, and soil test P and K levels of 41 ppm and 126 ppm, respectively. The field was fall moldboard plowed, and disked and field cultivated once prior to planting. The soybean variety, Stine 17LD02, was planted on May 9, 2012, at a depth of 1.5 inches in 30 inch rows at a rate of 165,900 seeds per acre. A randomized complete block design was used with four replications. Preemergence (PRE) and postemergence (POST) treatments were applied with a tractor-mounted sprayer delivering 20 gpa at 32 psi using Turbo Tee 11002 nozzles. Evaluations of the plots were taken on June 11, 19, 27, July 3, 19 , and September 14. Application dates, environmental conditions, and weed stages are listed in Table 1. The center two rows of each plot were machine harvested on October 4, 2012. Herbicide performance for control of giant ragweed, common lambsquarters, common waterhemp, giant foxtail, and plant injury ratings can be found in Tables 2 through 6, respectively. (University of Minnesota Extension Regional Office, Rochester)

SUMMARY Soil applied Authority First treatments consistently provided giant ragweed control between 71-88%. Boundary + Sharpen soil applied provided 71% control of giant ragweed (6/19 rating date). Post emergence giant ragweed control was excellent for all treatments and ranged from 93 to 99% (9/14 rating date). Slightly reduced control was observed with Authority First / Liberty 280 + Dual II Magnum and with Boundary + Sharpen / Liberty 280 treatment (95% and 93% control, respectively, 9/14 rating date).

Common lambsquarters control differences were also observed. Soil applied Authority First treatments provided 76-81% control and Boundary + Sharpen gave 97% control (6/19 rating date). Post emergence common lambsquarters was excellent for all treatments and ranged from 94 to 99% control (9/14 rating date). Slightly reduced control was observed with Authority First / Liberty 280 + Dual II Magnum and with Authority First / Liberty 280 + Zidua treatment (94 and 95% control, respectively, 9/14 rating date).

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

Date	5/9	6/12	6/19	6/26	6/29
Treatment	PRE	POST I	POST II	POST III	POST IV
Temperature					
Air	60	60	81	75	72
Soil	62	65	74	79	74
Relative Humidity (%)	43	49	62	41	66
Wind (mph)	12	14	10	16	0
Soil Moisture	Normal	Normal	Wet	Normal	Normal
Soybean					
Stage		V4	V5	R1	R2
Height (inches)		6.4	12.0	17.0	17.0
Giant Ragweed					
Weed density (ft^2)				1.0	1.0
Height (inches)		6.6	10.5	27.0	27.3
Common Lambsquarters					
Weed density (ft^2)				2.8	2.8
Height (inches)		3.5	4.6	12.8	13.0
Common Waterhemp					
Weed density (ft^2)				5.8	5.8
Height (inches)		3.7	4.4	14.0	14.8
Giant foxtail					
Weed density (ft^2)				23.8	23.8
Height (inches)		1.6	6.0	7.0	7.8
Rainfall after each application					
Week 1	0.00	0.93	1.94	0.00	0.00
Week 2	0.05	1.94	0.00	0.00	0.96
Week 3	2.51	0.00	0.00	0.96	0.24

Common waterhemp control differences were also observed with the soil applied Authority First treatments providing 89-90% control and the Boundary + Sharpen treatment giving 93% control (6/19 rating date). Post emergence common waterhemp control was excellent for all treatments and ranged from 97 to 99% control (9/14 rating date).

Giant foxtail control differences were minimal. Soil applied Authority First treatments resulted in 82-88% control and the Boundary + Sharpen treatment provided 93% control (6/19 rating date). Post emergence giant foxtail control was excellent for all treatments, 98-99% control (9/14 rating date).

Crop injury, in the form of plant stunting, was observed with all soil applied treatments. Authority First treated plots had minor stunting with only 10%. The Boundary Sharpen treatment, however resulted in stunting of 33%. Injury from post emergence treatments varied widely from a low of 4% with Liberty 280 applied at POST I / POST IV to a high of 43% with the Liberty 280 + Prefix treatment. The addition of residual herbicides to Liberty 280 (tank mix partners) increased crop injury in all treatments from a low of 14% to a high of 43%.

Table 2. Evaluation of PRE/POST and POST only herbicide systems for giant ragweed control in Liberty Link soybeans on June 11, 19, 27, July 3, 19, and September 14 at Rochester, MN, in 2012.

Treatment	Rate	Giant Ragweed Control						Yield
		6/11	6/19	6/27	7/3	7/19	9/14	10/4
	(rate/A)	(% Control)						(bu/A)
Untreated		0	0	0	0	0	0	22
PRE (After Planting) / POST II (3"- 4" Regrowth)								
Authority First / Liberty 280 + Dual II MAG + AMS	3 oz/a / 29 fl oz/a + 21.3 fl oz/a + 8.5 lb/100 gal	71	79	96	97	97	95	38
Authority First / Liberty 280 + Anthem + AMS	3 oz/a / 29 fl oz/a + 8 fl oz/a + 8.5 lb/100 gal	76	88	98	98	99	98	37
Authority First / Liberty 280 + Prefix + AMS	3 oz/a / 29 fl oz/a +32 fl oz/a + 8.5 lb/100 gal	75	78	99	99	98	98	42
Authority First / Liberty 280 + Zidua + AMS	3 oz/a / 29 fl oz/a + 2.5 oz/a + 8.5 lb/100 gal	76	78	96	96	97	96	39
Boundary 6.5 + Sharpen / Liberty 280 + AMS	1.8 pt/a + 0.75 fl oz/a / 29 fl oz/a + 8.5 lb/100 gal	48	71	94	93	93	93	37
POST II (12" GIRW) / POST III (7 Days after POST II)								
Liberty 280 + AMS / Liberty 280 + AMS	36 fl oz/a + 8.5 lb/100 gal / 29 fl oz/a + 8.5 lb/100 gal	0	0	95	99	99	99	37
POST I (2"-4" Weeds) / POST IV (3"-4" Regrowth)								
Liberty 280 + AMS / Liberty 280 + AMS	29 fl oz/a + 8.5 lb/100 gal / 24 fl oz/a + 8.5 lb/100 gal	0	97	99	99	99	99	41
	LSD (P=0.10)	**4**	**5**	**2**	**3**	**3**	**3**	**5**

Table 3. Evaluation of PRE/POST and POST only herbicide systems for common lambsquarters control in Liberty Link soybeans on June 11, 19, 27, July 3, 19, and September 14 at Rochester, MN, in 2012.

Treatment	Rate	Common Lambsquarters Control						Yield
		6/11	6/19	6/27	7/3	7/19	9/14	10/4
	(rate/A)	(% Control)						(bu/A)
Untreated		0	0	0	0	0	0	22
PRE (After Planting) / POST II (3"- 4" Regrowth)								
Authority First / Liberty 280 + Dual II MAG + AMS	3 oz/a / 29 fl oz/a + 21.3 fl oz/a + 8.5 lb/100 gal	76	81	96	95	95	94	38
Authority First / Liberty 280 + Anthem + AMS	3 oz/a / 29 fl oz/a + 8 fl oz/a + 8.5 lb/100 gal	78	81	98	97	97	97	37
Authority First / Liberty 280 + Prefix + AMS	3 oz/a / 29 fl oz/a +32 fl oz/a + 8.5 lb/100 gal	75	76	96	95	96	97	42
Authority First / Liberty 280 + Zidua + AMS	3 oz/a / 29 fl oz/a + 2.5 oz/a + 8.5 lb/100 gal	76	76	96	93	96	95	39
Boundary 6.5 + Sharpen / Liberty 280 + AMS	1.8 pt/a + 0.75 fl oz/a / 29 fl oz/a + 8.5 lb/100 gal	94	97	99	99	99	98	37
POST II (12" GIRW) / POST III (7 Days after POST II)								
Liberty 280 + AMS / Liberty 280 + AMS	36 fl oz/a + 8.5 lb/100 gal / 29 fl oz/a + 8.5 lb/100 gal	0	0	95	99	99	99	37
POST I (2"-4" Weeds) / POST IV (3"-4" Regrowth)								
Liberty 280 + AMS / Liberty 280 + AMS	29 fl oz/a + 8.5 lb/100 gal / 24 fl oz/a + 8.5 lb/100 gal	0	94	94	99	99	99	41
	LSD (P=0.10)	**4**	**6**	**2**	**3**	**2**	**3**	**5**

Table 4. Evaluation of PRE/POST and POST only herbicide systems for common waterhemp control in Liberty Link soybeans on June 11, 19, 27, July 3, 19, and September 14 at Rochester, MN, in 2012.

Treatment	Rate	Common Waterhemp Control						Yield
		6/11	6/19	6/27	7/3	7/19	9/14	
	(rate/A)	(% Control)						(bu/A)
Untreated		0	0	0	0	0	0	22
PRE (After Planting) / POST II (3"- 4" Regrowth)								
Authority First / Liberty 280 + Dual II MAG + AMS	3 oz/a / 29 fl oz/a + 21.3 fl oz/a + 8.5 lb/100 gal	93	90	99	97	97	97	38
Authority First / Liberty 280 + Anthem + AMS	3 oz/a / 29 fl oz/a + 8 fl oz/a + 8.5 lb/100 gal	93	89	98	98	98	98	37
Authority First / Liberty 280 + Prefix + AMS	3 oz/a / 29 fl oz/a +32 fl oz/a + 8.5 lb/100 gal	95	90	99	99	99	99	42
Authority First / Liberty 280 + Zidua + AMS	3 oz/a / 29 fl oz/a + 2.5 oz/a + 8.5 lb/100 gal	96	89	99	99	99	99	39
Boundary 6.5 + Sharpen / Liberty 280 + AMS	1.8 pt/a + 0.75 fl oz/a / 29 fl oz/a + 8.5 lb/100 gal	98	93	99	99	99	99	37
POST II (12" GIRW) / POST III (7 Days after POST II)								
Liberty 280 + AMS / Liberty 280 + AMS	36 fl oz/a + 8.5 lb/100 gal / 29 fl oz/a + 8.5 lb/100 gal	0	0	94	99	99	99	37
POST I (2"-4" Weeds) / POST IV (3"-4" Regrowth)								
Liberty 280 + AMS / Liberty 280 + AMS	29 fl oz/a + 8.5 lb/100 gal / 24 fl oz/a + 8.5 lb/100 gal	0	94	89	92	99	98	41
	LSD (P=0.10)	**3**	**4**	**2**	**2**	**1**	**2**	**5**

Table 5. Evaluation of PRE/POST and POST only herbicide systems for giant foxtail control in Liberty Link soybeans on June 11, 19, 27, July 3, 19 and September 14 at Rochester, MN, in 2012.

Treatment	Rate	Giant Foxtail Control						Yield
		6/11	6/19	6/27	7/3	7/19	9/14	
	(rate/A)	(% Control)						(bu/A)
Untreated		0	0	0	0	0	0	22
PRE (After Planting) / POST II (3"- 4" Regrowth)								
Authority First / Liberty 280 + Dual II MAG + AMS	3 oz/a / 29 fl oz/a + 21.3 fl oz/a + 8.5 lb/100 gal	90	87	99	99	99	98	38
Authority First / Liberty 280 + Anthem + AMS	3 oz/a / 29 fl oz/a + 8 fl oz/a + 8.5 lb/100 gal	90	88	99	99	99	99	37
Authority First / Liberty 280 + Prefix + AMS	3 oz/a / 29 fl oz/a +32 fl oz/a + 8.5 lb/100 gal	85	82	99	99	98	98	42
Authority First / Liberty 280 + Zidua + AMS	3 oz/a / 29 fl oz/a + 2.5 oz/a + 8.5 lb/100 gal	88	88	99	99	99	99	39
Boundary 6.5 + Sharpen / Liberty 280 + AMS	1.8 pt/a + 0.75 fl oz/a / 29 fl oz/a + 8.5 lb/100 gal	99	93	99	99	99	99	37
POST II (12" GIRW) / POST III (7 Days after POST II)								
Liberty 280 + AMS / Liberty 280 + AMS	36 fl oz/a + 8.5 lb/100 gal / 29 fl oz/a + 8.5 lb/100 gal	0	0	97	99	99	99	37
POST I (2"-4" Weeds) / POST IV (3"-4" Regrowth)								
Liberty 280 + AMS / Liberty 280 + AMS	29 fl oz/a + 8.5 lb/100 gal / 24 fl oz/a + 8.5 lb/100 gal	0	93	90	89	99	99	41
	LSD (P=0.10)	**3**	**6**	**0**	**1**	**1**	**1**	**5**

Table 6. Soybean response to PRE/POST and POST only herbicide systems in Liberty Link soybeans on June 11, 27, July 3, and 19 at Rochester, MN, in 2012.

Treatment	Rate	Injury				Yield
		6/11	6/27	7/3	7/19	
	(rate/A)	(% Control)				(bu/A)
Untreated		0	0	0	0	22
PRE (After Planting) / POST II (3"- 4" Regrowth)						
Authority First / Liberty 280 + Dual II MAG + AMS	3 oz/a / 29 fl oz/a + 21.3 fl oz/a + 8.5 lb/100 gal	10	14	10	0	38
Authority First / Liberty 280 + Anthem + AMS	3 oz/a / 29 fl oz/a + 8 fl oz/a + 8.5 lb/100 gal	10	26	19	0	37
Authority First / Liberty 280 + Prefix + AMS	3 oz/a / 29 fl oz/a +32 fl oz/a + 8.5 lb/100 gal	10	43	24	0	42
Authority First / Liberty 280 + Zidua + AMS	3 oz/a / 29 fl oz/a + 2.5 oz/a + 8.5 lb/100 gal	10	19	14	0	39
Boundary 6.5 + Sharpen / Liberty 280 + AMS	1.8 pt/a + 0.75 fl oz/a / 29 fl oz/a + 8.5 lb/100 gal	33	8	8	0	37
POST II (12" GIRW) / POST III (7 Days after POST II)						
Liberty 280 + AMS / Liberty 280 + AMS	36 fl oz/a + 8.5 lb/100 gal / 29 fl oz/a + 8.5 lb/100 gal	0	13	20	6	37
POST I (2"-4" Weeds) / POST IV (3"-4" Regrowth)						
Liberty 280 + AMS / Liberty 280 + AMS	29 fl oz/a + 8.5 lb/100 gal / 24 fl oz/a + 8.5 lb/100 gal	0	4	16	0	41
	LSD (P=0.10)	**2**	**3**	**4**	**2**	**5**