

Evaluation of HPPD compounds and adjuvants tank mixed with Steadfast in field corn at Rochester, MN, in 2007.

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The objective of this trial was to evaluate herbicide systems for weed control in field corn with HPPD compounds and adjuvants tank mixed with Steadfast in southeastern Minnesota. The research site was a Terril loam with a pH of 6.1 and soil test P and K levels of 51 ppm and 180 ppm, respectively. Anhydrous ammonia was applied at 150 lbs/A in the spring prior to planting. The field was field cultivated in the spring prior to planting. The corn hybrid, NK N38B4, was planted on May 3, 2007 at a depth of 1.5 inches in 30 inch rows at 32,000 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 May 29, June 8, June 15, June 25, and September 11. Application dates, environmental conditions, and weed stages are listed below. Eight feet of each of the center two rows of the plots were hand harvested on September 17, 2007.

Date	May 4	May 29
Treatment	PRE	POST
Temperature (F)		
Air	56	86
soil	--	72
Relative Humidity (%)	57	38
Wind (mph)	23	25
Soil moisture	adequate	adequate
Corn		
stage	--	3 collar
height (inch)	--	6.1
Common Lambsquarters		
weed density (ft ²)	--	5.1
height (inch)	--	3.7
Velvetleaf		
weed density (ft ²)	--	0.8
height (inch)	--	1.4
Giant Foxtail		
weed density (ft ²)	--	1.9
height (inch)	--	0.7
Rainfall after each application (inch)		
week 1	0.52	1.31
week 2	0.34	0.38
week 3	2.41	1.40

CONCLUSIONS

Herbicide injury was not detected throughout the duration of this trial. Below average rainfall the first two week following pre-emergence herbicide applications resulted in poor herbicide activation, and low weed control ratings.

Common lambsquarters was the predominate weed species in this trial. No significant differences among pre-emergence treatments were observed for common lambsquarters. Final weed control ratings for common lambsquarters indicated significant differences. Weed control programs where Roundup Original Max was the sole post emergent herbicide component provided statistically lower weed control. The addition of New Resolve to Roundup Original Max resulted in significantly greater common lambsquarters control then Roundup Original Max by itself, 91 compared to 76%, respectively. Common lambsquarters control increased to 99% with the addition of 8 oz of Aatrex to the New Resolve and Roundup Original Max tank mix. All postemergence Steadfast programs delivered excellent common lambsquarters control, 98-99%. The Breakfree preemergence program followed by Stout + Impact + atrazine provided control at the statistically highest level.

No significant differences among pre-emergence treatments were observed for giant foxtail. Final weed control ratings for giant foxtail indicated no significant differences among treatments.

No significant differences among pre-emergence treatments were observed for velvetleaf . Final weed control ratings for velvetleaf indicated no significant differences among treatments.

Table 1. Performance of herbicide systems for common lambsquarters control in field corn on May 29, June 8, June 15, June 25, and September 11 at Rochester, MN, in 2007.

Treatment	Rate	Common Lambsquarters Control					Yield
		5/29	6/8	6/15	6/25	9/11	
	(rate/A)	(%)					(bu/A)
Untreated		0	0	0	0	0	136
PRE / POST							
Breakfree / Stout + Impact + Aatrex + COC + AMS	1 pt / 0.5 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	40	99	99	99	97	189
Breakfree / New Resolve + Roundup Original Max + NIS + AMS	1 pt / 1.25 oz + 22 fl oz + 0.25% v/v + 2 lb	40	83	80	85	91	172
Resolve + Aatrex / Roundup Original Max + NIS + AMS	1 oz / 12 oz + 22 fl oz + 0.25% v/v + 2 lb	40	68	70	81	80	180
POST							
New Resolve + Aatrex + Roundup Original Max + NIS + AMS	1.25 oz / 8 oz + 22 fl oz + 0.25% v/v + 2 lb	0	99	99	99	99	172
Steadfast + Status + Aatrex + COC + AMS	0.75 oz + 2.5 oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	195
Steadfast + Callisto + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	180
Steadfast + Laudis + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	188
Steadfast + Impact + Aatrex + COC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	94	96	97	98	190
Steadfast + Impact + Aatrex + MSO + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	171
Steadfast + Impact + Aatrex + Destiny HC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 0.5% v/v + 2 lb	0	99	99	99	99	173
Roundup Original Max + NIS + AMS	22 fl oz + 0.25% v/v + 2 lb	0	60	71	78	76	196
LSD (P=0.10)		0	4	5	3	3	16

Table 2. Performance of herbicide systems for giant foxtail control in field corn on May 29, June 8, June 15, June 25, and September 11 at Rochester, MN, in 2007.

Treatment	Rate	Giant Foxtail Control					Yield
		5/29	6/8	6/15	6/25	9/11	
	(rate/A)	(%)					(bu/A)
Untreated		0	0	0	0	0	136
PRE / POST							
Breakfree / Stout + Impact + Aatrex + COC + AMS	1 pt / 0.5 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	48	99	99	99	99	189
Breakfree / New Resolve + Roundup Original Max + NIS + AMS	1 pt / 1.25 oz + 22 fl oz + 0.25% v/v + 2 lb	50	99	99	99	99	172
Resolve + Aatrex / Roundup Original Max + NIS + AMS	1 oz / 12 oz + 22 fl oz + 0.25% v/v + 2 lb	50	94	99	99	99	180
POST							
New Resolve + Aatrex + Roundup Original Max + NIS + AMS	1.25 oz / 8 oz + 22 fl oz + 0.25% v/v + 2 lb	0	94	99	99	99	172
Steadfast + Status + Aatrex + COC + AMS	0.75 oz + 2.5 oz + 8 oz + 1% v/v + 2 lb	0	98	99	99	99	195
Steadfast + Callisto + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	94	99	99	99	180
Steadfast + Laudis + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	97	99	99	99	188
Steadfast + Impact + Aatrex + COC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	190
Steadfast + Impact + Aatrex + MSO + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	98	99	99	99	171
Steadfast + Impact + Aatrex + Destiny HC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 0.5% v/v + 2 lb	0	98	99	99	99	172
Roundup Original Max + NIS + AMS	22 fl oz + 0.25% v/v + 2 lb	0	99	97	99	99	196
LSD (P=0.10)		2	4	1	0.4	1	16

Table 3. Performance of herbicide systems for velvetleaf control in field corn on May 29, June 8, June 15, June 25, and September 11 at Rochester, MN, in 2007.

Treatment	Rate	Velvetleaf Control					Yield	
		5/29	6/8	6/15	6/25	9/11		
	(rate/A)	(%)					(bu/A)	
Untreated		0	0	0	0	0	136	
Pre / Post								
Breakfree / Stout + Impact + Aatrex + COC + AMS	1 pt / 0.5 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	40	99	99	99	99	189	
Breakfree / New Resolve + Roundup Original Max + NIS + AMS	1 pt / 1.25 oz + 22 fl oz + 0.25% v/v + 2 lb	40	99	99	98	99	172	
Resolve + Aatrex / Roundup Original Max + NIS + AMS	1 oz / 12 oz + 22 fl oz + 0.25% v/v + 2 lb	40	97	98	98	99	180	
Post								
New Resolve + Aatrex + Roundup Original Max + NIS + AMS	1.25 oz / 8 oz + 22 fl oz + 0.25% v/v + 2 lb	0	99	98	98	99	172	
Steadfast + Status + Aatrex + COC + AMS	0.75 oz + 2.5 oz + 8 oz + 1% v/v + 2 lb	0	97	99	99	99	195	
Steadfast + Callisto + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	99	98	99	99	180	
Steadfast + Laudis + Aatrex + COC + AMS	0.75 oz + 2 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	99	99	188	
Steadfast + Impact + Aatrex + COC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	99	99	98	99	190	
Steadfast + Impact + Aatrex + MSO + AMS	0.75 oz + 0.5 fl oz + 8 oz + 1% v/v + 2 lb	0	98	99	99	99	171	
Steadfast + Impact + Aatrex + Destiny HC + AMS	0.75 oz + 0.5 fl oz + 8 oz + 0.5% v/v + 2 lb	0	99	99	99	99	172	
Roundup Original Max + NIS + AMS	22 fl oz + 0.25% v/v + 2 lb	0	97	99	96	99	196	
		LSD (P=0.10)	0	1	1	2	0.2	16