



## Comparisons of One-pass and Two-pass Herbicide Programs for Weed Control in Corn

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The purpose of this study was to compare various herbicides used in one-pass Preemergence (PRE), one-pass postemergence (POST1) and two-pass PRE plus POST1 or POST2 programs for crop injury and weed control in corn.

### Materials and Methods

The study was established using a randomized complete block design with three replications. The crop rotation was corn following soybean. The pre-plant seedbed was prepared with a field cultivator, and corn was planted at 35,000 seeds per acre in 30-in. rows on May 7. PRE herbicide treatments were applied May 7 delivering 15 gal per acre with 11015TTI tips at 35 psi. POST1 and POST2 treatments were applied June 14 and June 18 to V6 and V7 corn, respectively, delivering 15 gal per acre with 11015TT tips at 35 psi. Weeds were generally 4-5 and 6-7 in. tall for the POST1 and POST2 treatments, respectively. Weed species in the study included giant foxtail, common waterhemp, common lambsquarters, and Pennsylvania smartweed with average population densities of 3, 1, 2 and 4 plants per ft.<sup>2</sup>, respectively, for POST1 and POST2. Visual estimates of percent corn injury and weed control during the growing season were compared with an untreated control; 0% = no injury or control, and 99% = complete crop kill or control.

### Results and Discussion

The results of the study are summarized in Tables 1 and 2. None of the treatments caused corn injury (data not shown). Rainfall totaled only 0.32 in. for 13 days immediately following the PRE application. PRE Maverick and Helmet Maxx provided 62-68% giant foxtail control on June 14, 38 days after PRE (Table 1). Acuron, Fearless, and Harness provided 80-88% control. However, all PRE treatments gave at least 91% common waterhemp control. PRE Fearless and Harness provided only 37-60% common lambsquarters and Pennsylvania smartweed control, while PRE Maverick and Acuron afforded at least 9% control.

PRE Maverick or Acuron + POST2 Roundup PowerMAX provided at least 96% control of all weeds on July 15, 27 days after POST2 (Table 2). PRE Fearless + POST1 Katagon + Aatrex and PRE Harness + POST1 Shieldex + Aatrex provided at least 95% control of all weeds. However, PRE Fearless + POST1 Katagon, alone, gave significantly lower common lambsquarters and Pennsylvania smartweed control with 93% and 70%, respectively. PRE Helmet Maxx provided excellent common lambsquarters and Pennsylvania smartweed control, but only 60% and 86% giant foxtail and common waterhemp control, respectively. POST1 Helmet Maxx gave excellent common waterhemp, common lambsquarters, and Pennsylvania smartweed control. However, it had no effect on giant foxtail.

One-pass herbicide programs gave less total weed control than the two-pass programs. Preemergence plus postemergence herbicide programs help to ensure early weed control, and therefore, protect corn yield. These programs also provide more opportunity to use multiple herbicide “families” and further delay herbicide resistance.

**Table 1. Preemergence Plus Postemergence Herbicide Programs for Weed Control in Corn.**

Treatment	Rate product/acre	Timing	Setfa <sup>a</sup>	Amata	Cheal	Polpy
			% weed control			
Untreated			0	0	0	0
Maverick <sup>a</sup> +	1.0 qt +	PRE +	62	99	98	93
Roundup PowerMAX +	1.0 qt +	POST2)				
Induce + AMS <sup>b</sup>	0.25% v/v <sup>c</sup> + 3 lb					
Maverick + Aatrex 4L +	1.0 qt + 0.75 qt +	PRE +	67	99	99	98
Roundup PowerMAX +	1.0 qt +	POST2				
Induce + AMS	0.25% v/v + 3 lb					
Acuron +	3.0 qt +	PRE +	87	99	99	99
Roundup PowerMAX +	1.0 qt +	POST2				
Induce + AMS	0.25% v/v + 3 lb					
Helmet Maxx	2.25 qt	PRE	68	91	98	98
Helmet Maxx + NIS <sup>d</sup>	3.5 qt + 0.25% v/v	POST1	0	0	0	0
Fearless +	1.1 pt +	PRE +	88	98	50	37
Katagon + Destiny HC	3.2 fl oz + 1.0% v/v	POST1				
Fearless +	1.1 pt +	PRE +	85	98	47	47
Katagon + Aatrex 4L +	3.2 fl oz + 1.5 qt +	POST1				
Destiny HC	1.0% v/v					
Harness +	1.1 pt +	PRE +	80	95	60	57
Shieldex + Aatrex 4L +	1.35 fl oz + 1.5 qt +	POST1				
MSO <sup>e</sup> + UAN 28% <sup>f</sup>	0.5% + 2.5% v/v					
LSD (P=.05)			12	6	9	13

<sup>a</sup> Maverick is not for sale at the time of this report. EPA registration is pending.

<sup>b</sup> AMS = ammonium sulfate fertilizer.

<sup>c</sup> v/v = volume of product per volume tank mix.

<sup>d</sup> NIS = Preference Nonionic Surfactant.

<sup>e</sup> MSO = Succeed Ultra High Surfactant Methylated Seed Oil.

<sup>f</sup> UAN 28% = Chem-N Urea Ammonium Nitrate.

<sup>g</sup> Setfa = giant foxtail, Amata = common waterhemp, Cheal = common lambsquarters, Polpy = Pennsylvania smartweed.

Percent weed control evaluation was conducted Jun 14, 38 days after PRE

**Table 2. Preemergence Plus Postemergence Herbicide Programs for Weed Control in Corn..**

Treatment	Rate product/acre	Timing	Setfa <sup>a</sup>	Amata	Cheal	Polpy
			% weed control			
Untreated			0	0	0	0
Maverick <sup>a</sup> +	1.0 qt +	PRE +	98	98	99	99
Roundup PowerMAX +	1.0 qt +	POST2				
Induce + AMS <sup>b</sup>	0.25% v/v <sup>c</sup> + 3 lb					
Maverick + Aatrex 4L +	1.0 qt + 0.75 qt +	PRE +	99	96	99	99
Roundup PowerMAX +	1.0 qt +	POST2				
Induce + AMS	0.25% v/v + 3 lb					
Acuron +	3.0 qt +	PRE +	99	98	99	99
Roundup PowerMAX +	1.0 qt +	POST2				
Induce + AMS	0.25% v/v + 3 lb					
Helmet Maxx	2.25 qt	PRE	60	86	99	98
Helmet Maxx + NIS <sup>d</sup>	3.5 qt + 0.25% v/v	POST1	0	96	99	99
Fearless +	1.1 pt +	PRE +	98	96	93	70
Katagon + Destiny HC	3.2 fl oz + 1.0% v/v	POST1				
Fearless +	1.1 pt +	PRE +	95	99	99	98
Katagon + Aatrex 4L +	3.2 fl oz + 1.5 qt +	POST1				
Destiny HC	1.0% v/v					
Harness +	1.1 pt +	PRE +	96	99	99	96
Shieldex + Aatrex 4L +	1.35 fl oz + 1.5 qt +	POST1				
MSO <sup>e</sup> + UAN 28% <sup>f</sup>	0.5% + 2.5% v/v					
LSD (P=.05)			6	9	3	12

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Percent weed control evaluation was conducted Jun 15, 27 days after POST2

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