

Comparisons of residual and non-residual herbicide systems in glyphosate-resistant corn.
Urbana, Illinois, 2005. Nordby, Dawn E., Aaron G. Hager, and Jeremy T. Lake. The objective of this research was to evaluate residual and non-residual herbicide systems for weed control in glyphosate-resistant corn. The study was established at the Crop Sciences Research and Education Center, Urbana, IL. The soil was a Drummer silt-clay loam with a pH of 6.1 and 5.5% organic matter. Asgrow 715 corn was planted 2 inches deep on April 19 in 30 inch rows. Treatments were arranged in randomized complete blocks with four replications of plots 10 by 30 feet. Herbicides were applied with a CO₂ backpack sprayer delivering 20 gpa and equipped with 80025 air induction nozzles. Application information is listed below:

Date	April 19	May 25	May 31	June 3	June 9	June 24
Application	pre	epost	post	lpost	vlpost	podir
Temperature (F)						
Air	73	72	83	72	90	95
Soil	65	69	79	68	80	82
Soil Moisture	dry	dry	dry	dry	moist	dry
Wind (mph)	9-S	6-N	7-E	4-SE	3-SW	4-SW
Sky Cover (%)	0	0	0	100	0	0
Precip. after application						
Week 1 (inch)	2.29	0.00	0.03	0.06	1.67	0.37
Week 2 (inch)	0.05	0.03	1.67	1.61	0.00	0.07
Relative humidity (%)	45	33	21	70	29	36
Corn						
Leaf no.	-	3	4	5	6	9
Height (inch)	-	5	6	8	14	32
Giant foxtail						
Leaf no.	-	2	3	4	5	6
Height (inch)	-	3	4	5	8	15
Common waterhemp						
Leaf no.	-	8	>9	>9	>9	>9
Height (inch)	-	3	4	6	8	12
Tall Morningglory						
Leaf no.	-	2	4	8	>9	>9
Height (inch)	-	1	2	3	4	6

Corn yield was highest at 149 to 175 bushel/A in the dimethenamid-p plus atrazine followed by glyphosate; S-metolachlor plus atrazine, mesotrione, and benoxacor followed by glyphosate; atrazine plus S-metolachlor plus glyphosate; glyphosate; and the glyphosate followed by glyphosate treatments. The dimethenamid-p plus atrazine plus isoxaflutole; dimethenamid-p plus atrazine followed by dicamba plus atrazine; and S-metolachlor plus atrazine, mesotrione, and benoxacor followed by dicamba plus atrazine yielded lower, but not as low as the weedy check. Grass biomass was comparable to the weedy check for preemergence; preemergence followed by dicamba plus atrazine; and preemergence plus dicamba, diflufenzapyr, and nicosulfuron treatments. Remaining treatments reduced grass biomass similar to the weed-free treatment (4.8 g). Preemergence treatments were the only treatments with broadleaf biomass comparable to the weedy check. Remaining treatments reduced broadleaf biomass (3.7 to 52.0g) to near that of the weed-free treatment. Total biomass of broadleaves and grass was the smallest with preemergence followed by postemergence treatments, and postemergence treatments with the exception of S-metolachlor, atrazine, mesotrione, and benoxacor followed by dicamba plus atrazine. (Dept. of Crop Sciences, University of Illinois, Urbana).

Table. Comparisons of residual and non-residual herbicide systems in glyphosate-resistant corn. Urbana, Illinois, 2005. (Nordby, Hager, and Lake).

Treatment	Appl Rate (lb/A)	Time	grass biomas grams	bdlvs biomas grams	total biomas grams	Yield 9-28 Bu/A
Dimethenamid-p&atrazine	0.98+1.9	pre	115.5	621.9	737.4	89.4
+isoxaflutole	0.047					
S-metolachlor&atra&meso&bcor ¹	1.523+1.523+0.194	pre	346.7	132.2	478.9	128.0
Dimethenamid-p&atrazine	0.85+1.65	pre	188.6	52.1	240.6	114.1
+dicamba&atrazine+Activator90 ²	0.41+0.79+0.25%	epost				
S-metolachlor&atra&meso&bcor ¹	1.307+1.307+0.166	pre	482.9	33.1	516.1	108.6
+dicamba&atrazine+Activator90 ²	0.41+0.79+0.25%	epost				
Dimethenamid-p&atrazine	0.85+1.65	pre	15.3	52.0	67.3	149.6
+glyphosate ³ +N-Pak AMS ⁴	0.41+0.79+2.5%	lpost				
Dimethenamid-p&atrazine	0.43+0.82	pre	9.7	31.2	40.9	120.0
+glyphosate ³ +N-Pak AMS ⁴	0.41+0.79+2.5%	post				
S-metolachlor&atra&meso&bcor ¹	1.307+1.307+0.166	pre	4.6	17.3	21.9	164.8
+glyphosate ³ +N-Pak AMS ⁴	0.41+0.79+2.5%	lpost				
S-metolachlor&atra&meso&bcor ¹	0.653+0.653+0.084	pre	31.5	47.3	78.7	165.2
+glyphosate ³ +N-Pak AMS ⁴	0.41+0.79+2.5%	post				
Dimethenamid-p&atrazine	0.43+0.82	pre	83.6	25.7	109.3	138.3
+dica&diflufenzapyr&nicosulfuron	0.13+0.05+0.03	post				
+Activator 90 ² +28%N	0.25%+2.5%					
S-metolachlor&atra&meso&bcor ¹	0.653+0.653+0.084	pre	190.8	19.0	209.8	140.3
+dica&diflufenzapyr&nicosulfuron	0.13+0.05+0.03	post				
+Activator 90 ² +28%N	0.25%+2.5%					
Atrazine&s-metolachlor&glyphosate	1.6+1.3+0.76	post	3.5	3.7	7.3	154.8
+N-Pak AMS ⁴	2.5%					
Acetochlor&atrazine&glyphosate	2.1+1.57+0.58	post	42.7	16.1	58.8	138.1
+N-Pak AMS ⁴	2.5%					
Glyphosate ³ +N-Pak AMS ⁴	0.75+2.5%	post	23.5	28.3	51.8	150.3
Glyphosate ³ +N-Pak AMS ⁴	0.75+2.5%	post	0.9	3.7	4.6	149.7
+Glyphosate ³ +N-Pak AMS ⁴	0.75+2.5%	podir				
Check	-	-	175.9	329.3	502.2	19.0
Hand Weeded	-	-	4.8	33.1	37.8	175.6
LSD (0.05)			120	164	214	27

¹ Lexar; ² Activator 90 is a non-ionic surfactant blend from Loveland Products, Inc.; ³ Weathermax; ⁴ N-PaK AMS is an ammonium sulfate solution from Agrilience LLC.