

Volunteer corn competition in glyphosate and glufosinate-resistant corn. DeKalb, Illinois, 2005.

Hager, Aaron G., Douglas J. Maxwell, and James L. Moody. The objective of this research was to evaluate volunteer corn competition in glyphosate and glufosinate-resistant corn. The study was established at the Northern Illinois Agronomy Research Center at DeKalb, IL. The soil was a Flanagan silt loam with a pH of 6.2 and 6.0% organic matter. Pioneer 35Y62 glyphosate and glufosinate-resistant corn was planted 2 inches deep on April 27 in 30 inch rows. Treatments were arranged in randomized complete blocks with four replications of plots 10 by 40 feet. Herbicides were applied with a CO₂ backpack sprayer delivering 20 gpa and equipped with 80025 air induction nozzles. Conventional corn was spread ahead of the planter to establish a final volunteer corn stand of approximately 67,000 plants per acre. Application information is listed below:

Date	April 28	May 24	June 8	June 15
Application	pre	epost	post	lpost
Temperature (F)				
Air	53	69	86	73
Soil	50	66	78	70
Soil Moisture	moist	dry	dry	dry
Wind (mph)	5-W	8-NE	6-SW	12-W
Sky Cover (%)	50	50	50	100
Precip. after application				
Week 1 (inch)	0.00	0.00	0.00	0.16
Week 2 (inch)	0.42	0.65	0.16	1.10
Relative humidity (%)	36	32	46	57
Corn				
Leaf no.	-	4	6	7
Height (inch)	-	9	13	24
Volunteer Corn				
Leaf no.	-	4	5	6
Height (inch)	-	7	11	19

Corn tolerance to all soil-applied and foliar-applied treatments was excellent. No observable corn injury was noted with any of the treatments. Control of volunteer corn with glufosinate applied postemergence was improved when applications were made at the two latest application timings compared with the earliest application timing. By mid-July, control of volunteer corn with glufosinate was 90 to 92 percent from applications made to 13- and 24-inch volunteer corn, respectively, but only 29 percent when applied to 9-inch volunteer corn. Glyphosate provided complete control of volunteer corn. Corn yield was significantly reduced by interference of volunteer corn. Allowing volunteer corn to interfere the entire season reduced corn yield from 223 bushels per acre to 94 bushels per acre. Treatments containing glyphosate or glufosinate applied to 13-inch volunteer corn resulted in corn yields not different than the weed free control. Corn yields were reduced when glufosinate was applied to 9-inch or 24-inch volunteer corn. These results were likely attributable to poor control of volunteer corn and prolonged interference resulting from the earliest application timing and prolonged interference of volunteer corn from the latest application timing. (Dept. of Crop Sciences, University of Illinois, Urbana).

Table. Volunteer corn competition in glyphosate and glufosinate-resistant corn. DeKalb, Illinois, 2005. (Hager, Maxwell, and Moody).

Treatment	Appl Rate (lb/A)	Time	Zeamd	Zeamx	Zeamd	Zeamx	Yield Bu/A
			6-23 % inj	6-23 % con	7-14 % inj	7-14 % con	
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	1.35+0.67	pre	0	46	0	29	188.0
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	0.45+2.5%	epost					
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	2.03+1.0	pre	0	93	0	90	204.7
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	0.45+2.5%	post					
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	2.03+1.0	pre	0	84	0	92	188.0
Acetochlor&atrazine&Mon4660 ¹ +glufosinate+N-Pak AMS ²	0.45+2.5%	lpost					
Acetochlor&atrazine&Mon4660 ¹	2.03+1.0	pre	0	0	0	0	93.8
Acetochlor&atrazine&Mon4660 ¹ +glyphosate ³ +N-Pak AMS ²	2.03+1.0	pre	0	99	0	99	218.8
Acetochlor&atrazine&Mon4660 ¹ +glyphosate ³ +N-Pak AMS ²	0.75+2.5%	post					
Weed Free	-	-	0	99	0	99	223.0
LSD (0.05)			0	5	0	10	24

¹ Degree Xtra; ² N-PaK AMS is an ammonium sulfate solution from Agrilience LLC; ³ Weathermax.