

Evaluation of glyphosate programs in corn. Abendroth, Julie A., Alex R. Martin, and Jess J.

Spotanski. A field study was conducted to evaluate the efficacy and crop response of herbicide programs in conventionally tilled, glyphosate tolerant corn. A randomized complete block design with three replications per treatment was utilized. The study was conducted on a Kennebec silt loam with 2.4% organic matter and a pH of 6.9. Seedbed preparation consisted of disking prior to planting and one field cultivation the day of planting. Individual plots consisted of six 30-inch rows, each 30 feet long. 'Dekalb 6017 RR' corn was planted May 16 at a population of 24,200 seeds/acre. Treatments were applied with a tractor-mounted sprayer traveling 3.0 mph. Application, crop, weed, and weather data are presented:

Date	May 16	June 10	June 14
Treatment	PRE	EPOST	MPOST
Sprayer			
gpa	15	15	15
psi	30	30	30
Temperature (°F)			
Air	66	78	66
Soil (4 inch)	61	79	66
Soil Moisture	Adequate	Dry	Dry
Wind (mph)	8	11	7
Sky (% cloudy)	95	95	5
Relative Humidity (%)	45	76	57
Precip. after appl.			
Week 1 (inch)	0.51	0.08	0.0
Week 2 (inch)	2.09	0.0	0.0
Corn			
Leaf no.	--	3	5
Height (inch)	--	10	13.5
Common sunflower			
Leaf no.	--	4-6	6
Height (inch)	--	2-3	6
Infestation (m ²)	--	2-5	8
Velvetleaf			
Leaf no.	--	5-6	7
Height (inch)	--	2-4	4
Infestation (m ²)	--	25-29	50
Annual grasses			
Leaf no.	--	1-4	3
Height (inch)	--	1-3	3
Infestation (m ²)	--	<1-1	<1
Pigweed species			
Leaf no.	--	3-9	4
Height (inch)	--	1-4	1
Infestation (m ²)	--	<1-104	1

Summary comments: The amount of precipitation received this summer was far below normal, with 3 inches during April, 4.8 inches in May, 0.08 inches in June and 0.6 inches during July. The majority of annual grasses, GGGAN, were green and giant foxtail with some large crabgrass. Amaranthus species, AMASS, were primarily composed of Palmer amaranth with some waterhemp. Since precipitation was low, a second flush of weeds did not occur and efficacy was good for all the treatments. The PRE-only and PRE + POST programs, without glyphosate, did not perform as well as those with glyphosate, specifically in regards to velvetleaf and common sunflower control. On June 4th, crop injury was noted only with the two isoxaflutole treatments; however, injury symptoms disappeared quickly. Isoxaflutole (0.07 lb/a) with atrazine had 31% chlorosis, 4.5% necrosis, and 13% growth reduction. Isoxaflutole (0.047 lb/a) with S-metolachlor and atrazine resulted in 4% chlorosis, 0.4% necrosis, and 1.8% growth reduction. Results of the study are summarized in the following table. (Dept. of Agronomy and Horticulture, University of Nebraska-Lincoln)

Table. Evaluation of glyphosate programs in corn (Abendroth, Martin, and Spotanski).

Treatment	Application		-----ABUTH-----		-----AMASS ^a -----		-----GGGAN ^b -----		-----HELAN-----	
	Rate (lb/A)	Timing	6/20	7/8	6/20	7/8	6/20	7/8	6/20	7/8
-----% weed control-----										
Glyphosate ^c + AMS ^d	1.016 2.55	EPOST	99	100	99	99	100	100	100	100
Acetochlor& atrazine ^e / glyphosate ^c + AMS	1.18 0.59 1.016 2.55	PRE/ EPOST	100	100	100	100	100	100	100	100
Acetochlor& atrazine ^e + glyphosate ^c + AMS	1.18 0.59 1.0156 2.55	EPOST	100	100	99	100	100	100	100	100
S-metolachlor&CGA-154281/ atrazine& dicamba+ NIS ^f	1.62 0.92 0.48 0.25%	PRE/ EPOST	90	76	96	99	97	99	94	100
S-metolachlor&CGA-154281& atrazine	1.56 2.02	PRE		17		97		98		92
S-metolachlor&CGA-154281& atrazine/ primisulfuron& CGA-152005+ NIS+ 28-0-0 ^g	1.56 2.02 0.027 0.0089 0.25% 2.5%	PRE/ MPOST	75	95	100	100	96	97	100	100
S-metolachlor&CGA-154281& atrazine/ dicamba& San 1269H+ NIS+ 28-0-0	1.56 2.015 0.27 0.107 0.25% 1.125%	PRE/ EPOST	85	94	97	100	97	98	94	100
S-metolachlor&CGA-154281& atrazine/ glyphosate ^h + AMS	0.78 1.008 0.94 2.55	PRE/ MPOST	98	100	100	100	100	100	100	100
S-metolachlor&CGA-154281& atrazine/ glyphosate ^h + AMS	0.78 1.008 0.47 2.55	PRE/ MPOST	92	99	100	100	97	100	100	100
Acetochlor& atrazine ⁱ / glyphosate ^j + AMS	1.20 0.80 1.0 2.55	PRE/ MPOST	98	100	100	100	100	100	99	100
Dimethenamid& atrazine/ rimsulfuron& nicosulfuron& atrazine+ COC ^k + 28-0-0	0.655 0.75 0.012 0.012 0.72 1.67% 6.67%	PRE/ EPOST	69	84	100	100	94	99	71	98
Dicamba& San 1269H& nicosulfuron+ NIS+ 28-0-0+	0.13 0.052 0.031 0.25% 6.67%	EPOST	93	97	94	94	4	95	86	100

(continued)

Table. Evaluation of glyphosate programs in corn (Abendroth, Martin, and Spotanski), continued.

Treatment	Application		----ABUTH----		-----AMASS ^a -----		-----GGGAN ^b -----		-----HELAN-----	
	Rate	Timing	6/20	7/8	6/20	7/8	6/20	7/8	6/20	7/8
	(lb/A)		-----% weed control-----							
S-metolachlor&CGA-154281& atrazine/ mesotrione+ atrazine+ COC+ 28-0-0	1.56 2.015 0.094 0.25 1.0% 2.5%	PRE/ EPOST	100	100	98	100	96	99	99	100
Dimethenamid& atrazine/ nicosulfuron& rimsulfuron+ dicamba+ COC+ 28-0-0	0.655 0.75 0.023 0.012 0.125 1.0% 3.33%	PRE/ EPOST	94	99	100	100	98	100	95	100
Acetochlor& atrazine/ flumetsulam& clopypirid+ glyphosate ⁱ + NIS+ AMS	1.20 0.80 0.035 0.113 1.0 0.25% 1.9	PRE/ MPOST	98	100	100	100	100	100	100	100
Acetochlor&ICIA-25788/ flumetsulam& clopypirid+ glyphosate ⁱ + NIS+ AMS	0.60 0.035 0.113 1.0 0.25% 1.9	PRE/ MPOST	98	99	100	100	100	100	99	100
Acetochlor&ICIA-25788/ glyphosate ⁱ + AMS	0.60 1.0 1.9	PRE/ MPOST	99	100	100	100	100	100	100	100
Glyphosate ⁱ + AMS	1.0 1.9	EPOST	100	100	99	99	100	100	99	100
Flufenacet& metribuzin/ glyphosate ^c + AMS	0.270 0.068 1.016 2.55	PRE/ MPOST	98	100	100	100	100	100	100	100
Isoxaflutole+ atrazine	0.07 1.0	PRE		75		95		90		82
S-metolachlor&CGA-154281& atrazine+ isoxaflutole	1.56 2.02 0.047	PRE		84		98		97		63
Check			0	0	0	0	0	0	0	0
LSD (P=.05)			5	5	2	4	3	3	5	4

^aAMASS= mostly Palmer amaranth, with some waterhemp^bGGGAN= green and giant foxtail, with some large crabgrass^cGlyphosate= Roundup UltraMAX^dAMS= N Pa-K by Agrilliance^eAcetochlor&atrazine = Degree Xtra^fNIS= Preference by Agrilliance^g28-0-0= Class by Agrilliance^hGlyphosate= Touchdown IQⁱAcetochlor&atrazine = FulTime^jGlyphosate= Glyphomax Plus^kCOC= Prime Oil by Agrilliance