Evaluation of postemergence applications of carfentrazone with glyphosate for crop phytotoxicity and weed control in corn, Ames, IA, 2003. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate postemergence applied tank-mixtures of carfentrazone and glyphosate for crop phytotoxicity, weed control and corn yield. The soil was a Canisteo, Nicollet, Clarion and Webster clay loam with a pH 6.8 and 5.3% organic matter. The experimental design was a randomized complete block with three replications and plots were 10 by 25 ft. The 2002 crop was soybean. Tillage included a fall chisel plowing and a spring field cultivation. Fertilization included 127 lb/A actual N applied as urea. Crop residue on the soil surface was 35% at planting. "Dekalb hybrid DKC 58-24" corn was planted 1.5 inches deep on May 18, at 27,700 seeds/A in 30-inch rows. Postemergence (POST) treatments were applied on June 13 at 20 gpa and 25 psi using flat fan nozzles. Conditions on June 13 were: air temperature 28 C, soil temperature at the 4-inch depth 21 C, 9 mph wind, 30% cloud cover, 25% relative humidity. Corn growth was V4 and 7 inches tall. Weed species, average size and number per ft^2 in the untreated control included: giant foxtail one to four leaves, 2 to 5 inches tall, twenty-five plants; velvetleaf cotyledon to four leaves, 1 to 4 inches tall, zero to two plants; common waterhemp numerous leaves, 1 to 6 inches tall, five to thirty plants; common lambsquarters numerous leaves, 1 to 5 inches tall, three to ten plants. May rainfall included: 1.67, 0.37, 0.99, 0.15, 0.39, and 0.18 inches on May 4, 6, 8, 10, 13, and 14, respectively. Total rainfall for May was 3.75 inches. June rainfall included: 0.36, 0.53, 0.32, 0.23, 0.10, 0.28, and 0.55 inches on June 2, 6, 7, 8, 9, 24, and 25, respectively. Total rainfall for June was 2.37 inches. July rainfall included: 2.38 inches and 1.12 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 3.5 inches. Rainfall total for August was 0.86 inches.

No significant differences in corn stand between herbicide treatments were observed on August 8. POST applied tank-mixtures of carfentrazone plus glyphosate caused 13 to 15% corn injury when observed on June 16, three days after application. Injury symptoms appeared as leaf speckling to more moderate leaf tissue necrosis. Injury remained apparent on June 21 and July 4. No injury was observed from POST glyphosate applied alone. All POST treatments provided 95 to 99% giant foxtail, velvetleaf, common waterhemp and common lambsquarters control when observed on June 21 and July 4. On July 17, giant foxtail and velvetleaf control was no longer acceptable with the treatments following new germination. Common waterhemp and common lambsquarters control, however, did remain 90% or higher with the treatments. Corn yields ranged from 163 to 197 bu/A. Few significant differences were determined between treatments. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Evaluation of postemergence applications of carfentrazone with glyphosate for crop phytotoxicity and weed control in corn, Ames, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn[a] stand	Corn injury 6/16/03	Corn injury 6/21/03	SETFA 6/21/03	ABUTH 6/22/03	AMATA 6/23/03	CHEAL 6/24/03
	(lb/A)			--------- (%) --------		---------- (% weed control) ----------			
Untreated	-	-	27	0	0	0	0	0	0
Carfentrazone+glyphosate[b]+ ammonium sulfate[c]	0.0078 + 0.457+ 17.0	POST	27	15	5	99	99	95	95
Carfentrazone+glyphosate+ ammonium sulfate	0.0078 + 0.615+ 17.0	POST	27	13	5	99	99	96	93
Glyphosate+ ammonium sulfate	0.457+ 17.0	POST	27	0	0	99	95	95	93
Glyphosate+ ammonium sulfate	0.615+ 17.0	POST	27	0	0	99	99	96	96
LSD (P=0.05)			3	2	0	0	4	2	4

[a] Corn stand per 17.5 row feet on August 4.
[b] Glyphosate = Roundup WeatherMAX. Rate in ae/A.
[c] Ammonium sulfate rate in lbs/100 gal.

Table 2. Evaluation of postemergence applications of carfentrazone with glyphosate for crop phytotoxicity and weed control in corn, Ames, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	Corn injury 7/4/03	SETFA 7/5/03	ABUTH 7/6/03	AMATA 7/7/03	CHEAL 7/8/03
	(lb/A)		---- (%) ----	---------- (% weed control) ----------			
Untreated	-	-	0	0	0	0	0
Carfentrazone+glyphosate[a]+ ammonium sulfate[b]	0.0078 + 0.457+ 17.0	POST	5	99	99	95	98
Carfentrazone+glyphosate+ ammonium sulfate	0.0078 + 0.615+ 17.0	POST	5	99	99	95	98
Glyphosate+ ammonium sulfate	0.457+ 17.0	POST	0	99	98	95	98
Glyphosate+ ammonium sulfate	0.615+ 17.0	POST	0	99	99	95	99
LSD (P=0.05)			0	0	2	0	2

[a] Glyphosate = Roundup WeatherMAX. Rate in ae/A.
[b] Ammonium sulfate rate in lbs/100 gal.

Table 3. Evaluation of postemergence applications of carfentrazone with glyphosate for crop phytotoxicity and weed control in corn, Ames, IA, 2003 (Owen, Lux, and Franzenburg).

Treatment	Rate	Appl. time	SETFA 7/17/03	ABUTH 7/18/03	AMATA 7/19/03	CHEAL 7/20/03	Corn yield
	(lb/A)		---------- (% weed control) ----------				--- (bu/A) ---
Untreated	-	-	0	0	0	0	9
Carfentrazone+glyphosate[a]+ ammonium sulfate[b]	0.0078 + 0.457+ 17.0	POST	77	77	92	95	163
Carfentrazone+glyphosate+ ammonium sulfate	0.0078 + 0.615+ 17.0	POST	78	73	90	93	170
Glyphosate+ ammonium sulfate	0.457+ 17.0	POST	78	73	90	93	165
Glyphosate+ ammonium sulfate	0.615+ 17.0	POST	78	72	90	92	197
LSD (P=0.05)			3	8	4	5	32

[a] Glyphosate = Roundup WeatherMAX. Rate in ae/A.
[b] Ammonium sulfate rate in lbs/100 gal.