

Preemergence applied flumioxazin, flufenacet & metribuzin, cloransulam, and s-metolachlor & metribuzin followed by glyphosate for weed control in soybean, Ames, IA, 2002. Owen, Micheal D.K., James F. Lux, and Damian D. Franzenburg. The purpose of this study was to evaluate crop phytotoxicity, efficacy, and soybean yield from preemergence applications of flumioxazin, flufenacet & metribuzin, cloransulam, and s-metolachlor & metribuzin followed by postemergence applied glyphosate. The soil was a Canisteo, Clarion, Hayden-Storden clay loam with a pH 6.85 and 3.8% organic matter. The experimental design was a randomized complete block with four replications and plots were 10 by 25 ft. The 2001 crop was corn. Tillage included a fall chisel plowing and spring field cultivation. Crop residue on the soil surface was 10 to 15% at planting. "Asgrow variety AG 2402 RR" soybeans were planted 1.5 inches deep on May 28, at 154,000 seeds/A in 30-inch rows. Preemergence (PRE) and postemergence (POST) treatments were applied on May 29 and July 1, respectively, at 20 gpa and 30 psi using flat fan nozzles. Conditions on May 29 were: air temperature 26 C, soil temperature at the 4-inch depth 21 C, 8 mph wind, 100% cloud cover, 76% relative humidity. Conditions on July 1 were: air temperature 32 C, soil temperature at the 4-inch depth 29 C, 13 mph wind, 5% cloud cover, 62% relative humidity. Soybean growth was V4 to V5 and 7 inches tall. Weed species, size and number per ft² in the untreated control included: giant foxtail two to four leaves, several tillers, 8 to 15 inches tall, zero to twenty-five plants; velvetleaf five to eleven leaves, 6 to 13 inches tall, zero to five plants; common waterhemp and common lambsquarters with numerous leaves, 6 to 15 inches tall, zero to ten plants; common cocklebur numerous leaves, 6 to 12 inches tall, zero to five plants. May rainfall included: 0.45, 0.01, 0.07, 2.60, 0.12, 0.19, 0.23, 0.09, 0.66 inches on May 1, 2, 5, 11, 15, 16, 23, 24, and 25, respectively. Total rainfall for May was 4.42 inches. June rainfall included: 0.54, 0.83, 1.41, 0.01, and 0.01 inches on June 2, 11, 12, 13, and 20, respectively. Total rainfall for June was 2.8 inches. July rainfall included: 4.8 inches and 0.46 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 5.26 inches. Rainfall total for August was 4.89 inches.

Soybean injury from soil applied (PRE) herbicides was observed on June 21, twenty-three days after application. No injury was apparent on July 3, 25, or August 26 following the POST applications of glyphosate on July 1. Giant foxtail control with PRE applied treatments was 64 to 91% when observed on July 3. The best giant foxtail control was provided by flufenacet & metribuzin and s-metolachlor & metribuzin. Flumioxazin, flufenacet & metribuzin, and cloransulam achieved 85 to 97% velvetleaf control on July 3, while s-metolachlor & metribuzin provided 76% control. Generally, common waterhemp and common lambsquarters control was good to excellent with PRE treatments, except cloransulam did not control common waterhemp. No PRE treatment provided acceptable common cocklebur control on July 3. Excellent broad-spectrum weed control was observed on July 25 and August 26 from PRE treatments followed by POST applied glyphosate. Where glyphosate did not follow a residual treatment, velvetleaf, common waterhemp, and common lambsquarters control on August 26 was significantly less compared to all other treatments. All treatments yielded significantly more soybean than the untreated control. No significant differences in yield were determined between the PRE followed by POST glyphosate treatments. All of these treatments, however, demonstrated considerably higher soybean yields when compared to POST glyphosate not following a residual treatment. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Preemergence applied flumioxazin, flufenacet & metribuzin, cloransulam, and s-metolachlor & metribuzin followed by glyphosate for weed control in soybean, Ames, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Soybean injury		SETFA	ABUTH	AMATA	CHEAL	XANST
			6/21/02	7/3/02	7/3/02	7/3/02	7/3/02	7/3/02	7/3/02
			----- (%) -----		----- (% weed control) -----				
Untreated	-	-	0	0	0	0	0	0	0
Glyphosate ^a +	1.02+	POST	0	0	0	0	0	0	0
ammonium sulfate	2.5	POST							
Flumioxazin/	0.056/	PRE/	5	0	79	89	97	90	39
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flumioxazin/	0.064/	PRE/	5	0	83	97	97	95	45
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flumioxazin/	0.048/	PRE/	5	0	79	90	96	84	46
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flufenacet&metribuzin/	0.144&0.216/	PRE/	1	0	91	85	83	88	54
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Cloransulam ^b /	0.0157/	PRE/	1	0	64	87	55	79	64
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
S-metolachlor&metribuzin/	0.63&0.15/	PRE/	1	0	91	76	88	80	50
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
LSD (P=.05)			2	0	8	10	8	11	14

^a Glyphosate = Roundup UltraMAX from Monsanto Company.

^b Cloransulam = Amplify from Monsanto Company.

Table 2. Preemergence applied flumioxazin, flufenacet & metribuzin, cloransulam, and s-metolachlor & metribuzin followed by glyphosate for weed control in soybean, Ames, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Soybean inj. 7/25/02	SETFA 7/25/02	ABUTH 7/25/02	AMATA 7/25/02	CHEAL 7/25/02	XANST 7/25/02
			---- (%) ----	----- (% weed control) -----				
Untreated	-	-	0	0	0	0	0	0
Glyphosate ^a + ammonium sulfate	1.02+ 2.5	POST POST	0	98	97	89	88	99
Flumioxazin/ Glyphosate+	0.056/ 1.02	PRE/ POST	0	99	99	99	97	99
ammonium sulfate	2.5	POST						
Flumioxazin/ Glyphosate+	0.064/ 1.02	PRE/ POST	0	99	99	99	99	99
ammonium sulfate	2.5	POST						
Flumioxazin/ Glyphosate+	0.048/ 1.02	PRE/ POST	0	99	99	99	98	99
ammonium sulfate	2.5	POST						
Flufenacet&metribuzin/ Glyphosate+	0.144&0.216/ 1.02	PRE/ POST	0	98	99	99	96	99
ammonium sulfate	2.5	POST						
Cloransulam ^b / Glyphosate+	0.0157/ 1.02	PRE/ POST	0	99	99	98	98	99
ammonium sulfate	2.5	POST						
S-metolachlor&metribuzin/ Glyphosate+	0.63&0.15/ 1.02	PRE/ POST	0	98	99	99	95	97
ammonium sulfate	2.5	POST						
LSD (P=.05)			0	2	2	3	3	1

^a Glyphosate = Roundup UltraMAX from Monsanto Company.

^b Cloransulam = Amplify from Monsanto Company.

Table 3. Preemergence applied flumioxazin, flufenacet & metribuzin, cloransulam, and s-metolachlor & metribuzin followed by glyphosate for weed control in soybean, Ames, IA, 2002 (Owen, Lux, and Franzenburg).

Treatment	Rate (lb/A)	Appl. time	Soybean inj. 8/26/02 ---- (%) ----	SETFA 8/26/02 -----	ABUTH 8/26/02 -----	AMATA 8/26/02 -----	CHEAL 8/26/02 -----	XANST 8/26/02 -----	Soybean yield (bu/A)
					----- (% weed control) -----				
Untreated	-	-	0	0	0	0	0	0	15
Glyphosate ^a +	1.02+	POST	0	95	95	81	75	99	42
ammonium sulfate	2.5	POST							
Flumioxazin/	0.056/	PRE/	0	99	99	99	94	98	47
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flumioxazin/	0.064/	PRE/	0	99	99	99	99	96	47
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flumioxazin/	0.048/	PRE/	0	99	99	99	97	99	53
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Flufenacet&metribuzin/	0.144&0.216/	PRE/	0	98	98	99	95	99	53
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
Cloransulam ^b /	0.0157/	PRE/	0	96	99	98	97	99	47
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
S-metolachlor&metribuzin/	0.63&0.15/	PRE/	0	98	99	99	95	97	48
Glyphosate+	1.02	POST							
ammonium sulfate	2.5	POST							
LSD (P=.05)			0	4	2	7	7	3	11

^a Glyphosate = Roundup UltraMAX from Monsanto Company.

^b Cloransulam = Amplify from Monsanto Company.