

Postemergence tank-mixture applications of lactofen plus glyphosate in soybean, Ames, IA, 2004. Owen, Micheal D.K., James F. Lux, and Damian D. Franzensburg. The purpose of this study was to evaluate postemergence applications of lactofen plus glyphosate for soybean phytotoxicity and effect on yield. The soil was a Canisteo, Harps clay loam with a pH 7.8 and 4.7% organic matter. The experimental design was a randomized complete block with nine replications and plots were 10 by 25 ft. The 2003 crop was corn. Tillage included fall chisel plowing and spring field cultivation. Crop residue on the soil surface was 30% at planting. "Asgrow variety AG 2403" soybean was planted 1.5 inches deep on June 4, at 151,000 seeds/A in 30-inch rows. Preemergence (PRE) treatment was applied on June 5 at 20 gpa and 30 psi using flat fan nozzles. Conditions on June 5 were: air temperature 24 C, soil temperature at the 4-inch depth 21 C, 3 mph wind, 90% cloud cover, 54% relative humidity. Postemergence (POST) treatments were applied on July 8 at 20 gpa and 30 psi using flat fan nozzles. Conditions on July 8 were: air temperature 23 C; soil temperature at the 4-inch depth 21 C, 3 mph wind, 50% cloud cover, 67% relative humidity. Soybean growth was V 4 and 10 inches tall. Weed species, average size, and number per ft² in the untreated control included: giant foxtail one to four leaves, three tillers, 1 to 12 inches tall, five to twenty plants; velvetleaf cotyledon to eight leaves, 0.5 to 12 inches tall, zero to two plants; common waterhemp numerous leaves, 0.5 to 12 inches tall, zero to three plants; common lambsquarters numerous leaves, 0.5 to 9 inches tall, zero to three plants; common cocklebur numerous leaves, 8 to 12 inches tall, less than one plant. A sequential application of glyphosate plus AMS was applied at 0.77 lb ae/A plus 17.0 lb/100 gal to the entire experiment area on July 27. This application was to assist in maintaining weed free conditions in the experiment. June rainfall included: 0.01, 0.25, 0.27, 0.41, 0.33, 0.7, 0.92, 0.21, 0.05, and 0.01 inches on June 6, 10, 11, 12, 14, 16, 21, 24, 27, and 28, respectively. Total rainfall for June was 3.16 inches. July rainfall included: 1.51 inches and 0.18 inches from July 1 through 15 and 16 through 31, respectively. Total rainfall for July was 1.69 inches. Rainfall total for August was 4.54 inches.

PRE applied s-metolachlor & metribuzin resulted in 10 and 5% soybean injury on June 30 and July 8, respectively. Injury from s-metolachlor & metribuzin persisted at 5 and 4% on July 11 and 17, respectively. On July 11, three days after the POST application, glyphosate plus lactofen at 0.094 and 0.063 lb/A caused 19 and 16% soybean injury, respectively. Injury from glyphosate, alone, was not significant. Soybean injury from the 0.094 and 0.063 lb/A rates of lactofen was 26 and 21% on July 17 and 21 and 15% on July 28, respectively.

Although the study was kept weed free following the July 8 POST applications, early weed control observations were made on July 8 (prior to POST) and July 11 (three days following POST). On July 8, s-metolachlor & metribuzin provided good to excellent giant foxtail, velvetleaf, common waterhemp and common lambsquarters control, while common cocklebur control was fair. On July 11, following POST applied glyphosate, control with PRE s-metolachlor & metribuzin remained excellent for all species except velvetleaf and common cocklebur. POST tank-mixture applications of lactofen plus glyphosate provided good to excellent control of all the species on July 11. POST glyphosate applied alone did not provide the level of control on July 11 as that of lactofen plus glyphosate. On July 17, excellent overall weed control was observed with all treatments. These weed-free conditions were maintained through the growing season with a sequential postemergence glyphosate application over the entire experiment area on July 27.

Soybean senescence and defoliation were delayed for the lactofen plus glyphosate treatments compared to the others when observed on September 14, 24, and 28. Soybean yields for s-metolachlor & metribuzin plus glyphosate and glyphosate, alone, were significantly greater than the high lactofen treatment rate plus glyphosate (55, 57 and 51 bu/A, respectively). The lower treatment rate of lactofen plus glyphosate yielded 53 bu/A. (Dept. of Agronomy, Iowa State University, Ames).

Table 1. Postemergence tank-mixture applications of lactofen plus glyphosate in soybean, Ames, IA, 2004 (Owen, Lux, Franzenburg)

Treatment	Rate (lb/A)	Appl. time	Soybean					Soybean							
			Injury		SETFA	ABUTH	AMATA	CHEAL	XANST	Injury	SETFA	ABUTH	AMATA	CHEAL	XANST
			6/30/04	7/8/04	7/8/04	7/8/04	7/8/04	7/8/04	7/8/04	7/11/04	7/11/04	7/11/04	7/11/04	7/11/04	7/11/04
			----- (%) -----		----- (%weed control) -----					----- (%) -----					
S-metolachlor&metribuzin/ glyphosate ^a +AMS ^b	1.97&0.47/ 0.77+17.0	PRE/ POST	10	5	99	95	99	99	79	5	99	75	99	96	76
Lactofen+ glyphosate+AMS	0.094+ 0.77+17.0	POST POST	0	0	0	0	0	0	0	19	89	94	98	94	96
Lactofen+ glyphosate+AMS	0.0625+ 0.77+17.0	POST POST	0	0	0	0	0	0	0	16	87	88	96	91	93
Glyphosate+AMS	0.77+17.0	POST	0	0	0	0	0	0	0	3	76	64	75	71	72
LSD (P=0.05)			0	0	1	2	0	0	5	2	2	4	4	5	4

^a Glyphosate rate in lb ae/A.^b AMS = Ammonium sulfate rate in lbs/100 gal.

Table 2. Postemergence tank-mixture applications of lactofen plus glyphosate in soybean, Ames, IA, 2004 (Owen, Lux, Franzenburg)

Table 2. Postemergence tank mixture applications of acetone plus glyphosate in soybean, Ames, IA, 2004 (Crown, Lax, Panzera)													
Treatment	Rate	Appl. time	Soybean						Soybean	Soybean	Soybean		Soybean yield
			Injury 7/17/04	SETFA 7/17/04	ABUTH 7/17/04	AMATA 7/17/04	CHEAL 7/17/04	XANST 7/17/04	Injury 7/28/04	Senescence 9/14/04	Defoliation 9/24/04	Defoliation 9/28/04	
	(lb/A)		-- (%) --	----- (%weed control) -----						--- (%) ---	----- (%) -----	----- (%) -----	(bu/A)
S-metolachlor&metribuzin/ glyphosate ^a +AMS ^b	1.97&0.47/ 0.77+17.0	PRE/ POST	4	99	99	99	99	99	3	28	72	93	55
Lactofen+ glyphosate+AMS	0.094+ 0.77+17.0	POST POST	26	99	99	99	99	99	21	7	32	82	51
Lactofen+ glyphosate+AMS	0.0625+ 0.77+17.0	POST POST	21	99	99	99	99	99	15	8	32	81	53
Glyphosate+AMS	0.77+17.0	POST	0	99	99	99	99	99	0	29	73	93	57
LSD (P=0.05)			2	0	0	0	0	0	2	4	5	3	2

^a Glyphosate rate in lb ae/A.^b AMS = Ammonium sulfate rate in lbs/100 gal.