

Weed control and crop response to POST glyphosate tank mixtures in glyphosate-resistant soybean, Carrington, 2001

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The experiment was conducted on a loam soil with 8.0 pH and 2.5% organic matter at the NDSU Carrington Research Extension Center. The experimental design was a randomized complete block with three replicates. Glyphosate-resistant Pioneer '90B72' soybean was planted on May 25 at 150,000 seeds/A in 30-inch rows. Herbicide treatments were applied with a CO₂-hand-boom plot sprayer delivering 10 gal/A at 30 psi through 8002 (PPI trts) or 8001 (POST trts) flat fan nozzles to 10 by 25 ft plots. PPI treatments were applied on May 24 with 56 F, 63% RH, and 9 mph wind and immediately incorporated with a Melroe culti-harrow. EPOST treatments were applied on June 26 with 76 F, 49% RH, 50% clear sky, and 7 mph wind to 1-trifoliolate soybean, 3- to 5-leaf yellow and green foxtail, 0.5- to 6-inch tall redroot and prostrate pigweed, 1- to 6-inch tall common lambsquarters, and 0.25- to 2-inch tall eastern black nightshade. MPOST treatments were applied on July 5 with 60 F, 76% RH, 100% clear sky, and 8 mph wind to 2-trifoliolate soybean, 2- to 6-inch tall yellow and green foxtail, 1- to 15-inch tall redroot and prostrate pigweed, 1- to 12-inch tall common lambsquarters, and 0.5- to 3-inch tall eastern black nightshade. LPOST treatments were applied on July 20 with 84 F, 62% RH, 35% clear sky, and 6 mph wind to R2 soybean, 1- to 12-tall yellow and green foxtail, 1- to 15-inch tall redroot and prostrate pigweed, 2- to 12-inch tall common lambsquarters, and 0.5- to 3-inch tall eastern black nightshade. Average soybean density was 6 plants/ft², foxtail density was 13 plants/ft², redroot and prostrate pigweed density was 7 plants/ft², and common lambsquarters and eastern black nightshade density was 2 plants/ft². Weed control and soybean response were visually estimated two and four WAA (weeks after treatment application).

Weed control was good to excellent with all herbicide treatments. Sequential application of glyphosate generally improved broadleaf weed control compared to glyphosate applied MPOST at 0.75 lb/A. Treatments containing imazamox reduced soybean growth.

Table. Weed control and crop response in glyphosate-resistant soybean.

Herbicide	Rate	Weed control ^a								Soybean growth	
		2 wk after application				4 wk after application				reduction	
Treatment ^b	lb/A ^c	SETSS	AMASS	CHEAL	SOLPT	SETSS	AMASS	CHEAL	SOLPT	2WAA	4WAA
		%									
PPI/EPOST:											
Pendimethalin/Imazamox+NIS	1.25/0.031+0.25%v/v	95	99	95	98	97	99	98	99	11	3
Pend/Immx+glyphosate1+NIS	1.25/0.031+0.25%v/v	98	99	99	98	99	99	99	99	22	18
EPOST:											
Immx+glyphosate1+NIS	0.031+0.56+0.25%v/v	94	97	97	96	97	98	98	95	25	17
Immx+glyphosate1+NIS	0.039+0.56+0.25%v/v	96	98	99	99	92	94	96	97	15	10
Dimethenamid-P+glyphosate1+NIS	0.56+0.75+0.25%v/v	96	96	98	95	98	98	98	95	0	0
Chloransulam+glyphosate2	0.016+0.75	93	98	97	98	95	99	94	97	0	0
MPOST:											
Glyphosate2	0.75	98	90	88	84	98	96	92	84	0	0
EPOST/LPOST:											
Glyphosate2/glyphosate2	0.56/0.56	98	99	99	99	98	98	99	98	0	0
Untreated		0	0	0	0	0	0	0	0	0	0
LSD (0.05)		4	3	3	8	3	4	4	8	9	8

^aSETSS=yellow and green foxtail; AMASS=redroot and prostrate pigweed; CHEAL=common lambsquarters; SOLPT=eastern black nightshade.

^bNIS=Induce, a nonionic surfactant from Helena Chemical Company, Memphis, TN; Glyphosate1= Glyphosate Original, from Griffin LLC, Valdosta, GA; Glyphosate2=Glyphomax Plus, from Dow AgroSciences, Indianapolis, IN. All treatments include AMS at the equivalent of 12 lb/100 gal spray carrier.

^cGlyphosate rates=acid equivalent.