

# Weed control in Roundup Ready hard red spring wheat, Carrington, 2003

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The experiment was conducted on a loam soil with 6.8 pH and 3.9% organic matter at the NDSU Carrington Research Extension Center. The experimental design was a randomized complete block with three replicates. An experimental line of glyphosate-resistant HRS wheat was planted at approximately 60 lb seed/A on May 16. Herbicide treatments were applied with a CO<sub>2</sub>-hand-boom plot sprayer delivering 10 gal/A at 30 psi through 8001 flat fan nozzles to the center 6.7 ft of 10 by 25 ft plots. EPOST treatments were applied on June 6 with 5 F, 90 % RH, 100% cloudy sky, and 10 mph wind to 2.5- to 3-leaf wheat, 1- to 3-leaf yellow and green foxtail, 1- to 4-inch tall common lambsquarters, 0.5-inch tall redroot and prostrate pigweed, and 1- to 2-inch tall wild mustard. POST treatments were applied on June 13 with 76 F, 45 % RH, 65% clear sky, and 5 mph wind to 4.5- to 5-leaf wheat, 1-leaf to tillering yellow and green foxtail, 1- to 6-inch tall common lambsquarters, 0.5- to 1-inch tall redroot and prostrate pigweed, and 2-inch tall to flowering wild mustard. Average wheat density was 39 plants/ft<sup>2</sup>, foxtail density was 18 plants/ft<sup>2</sup>, and common lambsquarters, pigweed, and wild mustard density was 1 plant/ft<sup>2</sup>. Weed control and wheat response were visually estimated. The trial was harvested for seed yield with a plot combine on August 18.

Glyphosate treatments including tank mixtures provided good to excellent (84 to 99%) foxtail control (Table 1). Tralkoxydim and flucarbazone provided less foxtail control 14 and 21 days after treatment than glyphosate and glyphosate tank mixtures. POST (4.5- to 5-leaf application timing) glyphosate at 0.375 lb/A provided similar control of all weeds compared to higher rates or sequential application of glyphosate.

Table 1. Weed control in glyphosate-resistant wheat.

Treatment <sup>a</sup>	Rate (lb/A)	14 days after treatment				21 days after treatment				Harvest
		Fxtl <sup>b</sup>	Colq	Pigweed <sup>c</sup>	Wimu	Fxtl	Colq	Pigweed	Wimu	Fxtl
----- (% control) -----										
<b>EPOST</b>										
Glyphosate	0.375	90	94	95	96	90	85	93	98	84
Glyphosate	0.56	92	98	97	97	88	93	93	96	86
Glyphosate	0.75	91	97	96	97	93	95	96	95	88
<b>POST</b>										
Glyphosate	0.375	95	98	99	98	96	99	98	98	95
Glyphosate	0.56	96	96	98	99	97	92	96	98	97
Glyphosate	0.75	96	98	96	92	96	96	93	99	97
Glyphosate(EPOST)/glyphosate	0.375/0.375	97	94	99	99	97	96	99	99	98
Clodinafop+bromoxynil&MCPA+DSV	0.06+0.5+1%	91	99	98	99	91	98	98	99	94
Fenoxaprop+bromoxynil&MCPA	0.08+0.5	87	99	97	99	90	98	93	99	91
Tralkoxydim+Supercharge+bromoxynil &MCPA	0.18+0.5%+0.5	76	99	97	99	75	99	87	99	83
Flucarbazone+bromoxynil&MCPA+NIS	0.026+0.5+0.25%	77	99	99	99	76	99	99	99	80
Glyphosate+2,4-De	0.375+0.25	98	99	99	99	94	98	99	99	97
Glyphosate+bromoxynil&MCPA	0.375+0.5	95	99	99	99	94	99	99	99	97
Glyphosate+thifensulfuron	0.375+0.023	96	98	99	98	94	98	99	99	96
Glyphosate+dicamba	0.375+0.06	97	98	99	98	95	96	98	99	95
Glyphosate+clopyralid&2,4-D	0.375+0.58	94	99	97	99	95	99	96	99	95
Untreated	---	0	0	0	0	0	0	0	0	0
LSD (0.05)		6	4	3	5	8	5	5	3	7

<sup>a</sup>Glyphosate=Roundup UltraMax (3.7 lb ae/gal); All glyphosate treatments included ammonium sulfate at 5% v/v; DSV and Supercharge=adjuvants from Syngenta Crop Protection, Greensboro, SC; NIS=Preference, a nonionic surfactant from Agrilliance, St. Paul,

<sup>b</sup>Foxtail spp.=Yellow and green.

<sup>c</sup>Pigweed spp.=Redroot and prostrate.

Minimal or no wheat injury occurred with glyphosate when visually evaluated for chlorosis and growth reduction (Table 2). Wheat seed yield was highest with POST glyphosate, ranging from 53.0 to 59.4 bu/A.

Table 2. Glyphosate-resistant wheat response to herbicide treatments.

Treatment <sup>a</sup>	Rate (lb/A)	Crop response (DAT <sup>a</sup> )					Seed yield (bu/A)
		Chlorosis			Growth reduction		
		7	14	21	14	21	
		----- (%) -----					
<u>EPOST</u>							
Glyphosate	0.375	0	0	0	0	0	51.1
Glyphosate	0.56	0	0	0	0	0	47.9
Glyphosate	0.75	0	0	0	0	0	49.9
<u>POST</u>							
Glyphosate	0.375	0	0	0	0	0	54.0
Glyphosate	0.56	0	0	0	0	0	56.1
Glyphosate	0.75	0	0	0	0	0	57.1
Glyphosate(EPOST)/glyphosate	0.375/0.375	0	0	0	0	0	53.0
Clodinafop+bromoxynil&MCPA+DSV	0.06+0.5+1%	0	0	0	2	1	50.2
Fenoxaprop+bromoxynil&MCPA	0.08+0.5	17	0	0	0	0	46.8
Tralkoxydim+Supercharge+bromoxynil &MCPA	0.18+0.5%+0.5	0	0	0	0	0	51.6
Flucarbazone+bromoxynil&MCPA+NIS	0.026+0.5+0.25	0	0	0	7	2	54.2
Glyphosate+2,4-De	0.375+0.25	0	0	0	0	0	54.3
Glyphosate+bromoxynil&MCPA	0.375+0.5	0	0	0	0	0	59.4
Glyphosate+thifensulfuron	0.375+0.023	0	0	0	5	2	54.3
Glyphosate+dicamba	0.375+0.06	0	0	0	0	0	55.5
Glyphosate+clopyralid&2,4-D	0.375+0.58	0	0	0	0	0	57.2
Untreated	---	0	0	0	0	0	41.9
LSD (0.05)		2	0	0	3	2	7.6

<sup>a</sup>DAT=Days after treatment.

<sup>b</sup>Glyphosate=Roundup UltraMax (3.7 lb ae/gal); All glyphosate treatments included ammonium sulfate at 5% v/v; DSV and Supercharge=adjuvants from Syngenta Crop Protection, Greensboro, SC; NIS=Preference, a nonionic surfactant from Agrilience, St. Paul, MN.