Project Title: Wild Buckwheat Control by Beyond Herbicide in Clearfield Spring Wheat: Dose Response

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Objective: To evaluate the response of wild buckwheat and other broadleaf weeds to Beyond.

Results:

This experiment was conducted to determine the optimum rate of Beyond for broadleaf weed control in the Clearfield spring wheat system. Clearfield spring wheat (cv. Gunner 2-gene) was planted on April 14, 2006 at a seeding rate of 75 lb/ac in 6" rows to a depth of 1.5 inches. Wild buckwheat was immediately planted between the rows at a rate of 20 plants per square foot. In addition, high densities of common lambsquarters and redroot pigweed also were present in the study area.

Beyond was applied at 1X, 1/2X, 1/4X, 1/8X, and 1/16X of the normal use rate. An untreated check also was included. The treatments were applied on May 23, 2006 when spring wheat plants were at the 4-main-stem-leaf stage with 1-2 tillers. At the same time, wild buckwheat plants were at the 1-4 leaf stage, common lambsquarters were 2 inches tall, and redroot pigweed was 1 inch tall. Treatments were applied using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA.

Beyond demonstrated excellent crop tolerance. The 1/2X and 1X rates provided excellent control of wild buckwheat, common lambsquarters and redroot pigweed. Although control decreased as the herbicide rate decreased, the lowest rate (1/16X) still afforded greater than 50% control of all three weed species. Weed biomass data showed similar trends.

There were no differences in spring wheat density, height, yield or test weight among treatments. However, weed competition increased grain moisture and dockage but reduced protein content.

Summary:

Beyond provided excellent control of wild buckwheat, lambsquarters and redroot pigweed. Although herbicide efficacy was reduced at lower rates, the 1/16X rate still resulted in more than 50% weed control.

Table 1. Effect of Beyond herbicide on spring wheat injury and wild buckwheat control in 2006 season.

Treatment	Rate	Spring wheat		Wild buckwheat			
	lb ai/ac	% injury		% control		Plants	Biomass
						No./m^2	g/m^2
		6/5/06	6/19/06	6/5/06	6/19/06	------ 7/5/06 -----	
Beyond 1X	0.047	0	0	94.3	95	4.9	0.6
Beyond 1/2X	0.0234	0	0	88.8	90	46.7	2.1
Beyond 1/4X	0.0117	0	0	80	76.7	71.3	3.6
Beyond 1/8X	0.00586	0	0	60	63.3	79.9	4.8
Beyond 1/16X	0.00293	0	0	45	60	73.7	4.1
Check		0	0	0	0	127.8	35.3
LSD (P=.05)		0	0	13.27	5.75	54.57	15.09
CV		0	0	14.35	4.93	44.51	98.75
Treatment F		0	0	64.14	354.58	5.47	7.66
Treatment Prob(F)		1	1	0.0001	0.0001	0.0111	0.0034

Table 2. Effect of Beyond herbicide on labmsquarters and redroot pigweed control in 2006 season.

Treatment	Rate	Lambsquarters			Redroot pigweed		
	lb ai/ac	% control	Plants No./m^2	Biomass g/m^2	% control	Plants No./m^2	Biomass g/m^2
		6/19/06	------ 7/5/06 ------		6/19/06	------ 7/5/06 ------	
Beyond 1X	0.047	98.3	0	2.5	100	0	0
Beyond 1/2X	0.0234	100	0	2.5	100	2.5	0
Beyond 1/4X	0.0117	90	2.5	2.5	75	0	0.4
Beyond 1/8X	0.00586	90	4.9	0	80	0	3.6
Beyond 1/16X	0.00293	63.3	6.1	2.9	50	7.4	3.7
Check		0	7.4	12.3	0	94.6	68
LSD (P=.05)		19.63	10.37	6.7	30.25	59.99	45.49
CV		14.66	163.66	97.78	22.43	189.39	198.47
Treatment F		37.99	0.92	4.10	18.82	3.97	3.55
Treatment Prob(F)		0.0001	0.5084	0.0277	0.0013	0.0303	0.042

Table 3. Effect of Beyond herbicide on spring wheat yield and agronomic performance in 2006 season.

Treatment	Rate	Plants	Biomass	Plant	Yield	Grain	Test	Dockage	Protein
	lb ai/ac	------ 7/5/06 --------		height		moisture	weight		
		No./m^2	g/m^2	cm	bu/ac	%	lb/bu	%	%
Beyond 1X	0.047	187.9	836.7	85.5	47.2	9.5	59.8	0.8	15.0
Beyond 1/2X	0.0234	184.6	945.1	88.3	53.2	9.9	60.4	0.5	14.4
Beyond 1/4X	0.0117	195.7	869.2	86.3	50.7	10.1	60.1	2.3	14.4
Beyond 1/8X	0.00586	160.1	772.7	85.8	47.2	10.5	59.3	3.3	14.6
Beyond 1/16X	0.00293	180.2	773.1	86.3	44.3	10.4	58.9	3.0	14.9
Check		182.4	873.7	86.0	46.6	13.0	57.6	14.1	14.0
LSD (P=.05)		41.9	98.52	4.21	10.36	2.25	3.06	9.33	0.73
CV		15.29	7.74	3.23	14.27	14.11	3.42	153.14	3.34
Treatment F		0.74	4.10	0.50	0.87	2.85	1.01	2.74	2.22
Treatment Prob(F)		0.6078	0.0152	0.7746	0.526	0.0526	0.4475	0.0628	0.1065