

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

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Objective: To evaluate the response of wild buckwheat to Beyond in the Clearfield winter wheat system.

Results:

This experiment was conducted to determine the optimum rate of Beyond for wild buckwheat control in the Clearfield winter wheat system. Bynum Clearfield winter wheat was planted on September 18, 2006 at a seeding rate of 75 lb/ac in 6" rows to a depth of 1.5 inches. Wild buckwheat was planted between the wheat rows at a rate of 20 plants per square foot on April 11, 2007 when wheat growth had resumed.

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 8, 2007 when the crop was at the jointing growth stage and wild buckwheat plants were at the first true leaf stage. Herbicides were applied using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA. In addition to wild buckwheat, henbit and flixweed were also present. As a result, control and biomass of these two weeds were also evaluated.

Crop injury was minimal, yet could be detected at the 1X rate. This crop injury effect was reflected in the crop height data, where height was slightly reduced at 1X rate. Beyond provided acceptable control of wild buckwheat when applied at the 1X and 1/2X rates. However, control declined as herbicide rates were further reduced. Wild buckwheat biomass was insignificant and a rate response to Beyond could not be detected. In contrast, the rate of Beyond had a significant effect on flixweed and henbit biomass reductions. There were no differences in winter wheat biomass, yield or grain quality.

Summary:

Consistent with the previous year's results, Beyond applied at 1X and 1/2 X rates provided very good control of wild buckwheat. In addition, these higher rates of Beyond also were effective in reducing flixweed and henbit biomass.

Table 1. The effect of Beyond rate on winter wheat injury and broadleaf control in 2007.

Treatment	Rate lb ai/ac	Winter wheat		Broadleaf weeds						Biomass (g/m ²)		
		% injury		% control								
				WB		FW		HB		WB	FW	HB
		5/22/07	6/4/07	5/22/07	6/4/07	5/22/07	6/4/07	5/22/07	6/4/07	7/3/07		
Beyond 1X	0.047	3.8	2.5	67.5	82.5	60.0	75.0	50.0	66.3	0.2	4.1	1.9
Beyond 1/2X	0.0234	1.3	0.0	72.5	70.0	60.0	70.0	47.5	67.5	0.0	4.7	6.1
Beyond 1/4X	0.0117	0.0	0.0	52.5	47.5	--	--	52.5	52.5	0.1	0.0	16.6
Beyond 1/8X	0.00586	0.0	0.0	62.5	47.5	46.7	60.0	50.0	45.0	0.8	58.3	16.0
Beyond 1/16X	0.00293	0.0	0.0	45.0	40.0	37.5	47.5	37.5	40.0	0.6	87.8	13.8
Check		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	179.1	10.4
LSD (P=.05)		2.10	1.78	17.25	14.96	15.74	7.54	11.32	11.00	0.57	125.96	9.55
CV		167.33	282.84	22.90	20.72	23.05	9.33	18.97	16.14	108.55	150.20	58.59
Treatment F		4.71	3.00	21.36	32.80	27.63	163.35	28.63	46.02	2.72	2.82	3.42
Treatment Prob(F)		0.0087	0.045	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0606	0.0545	0.0294

WB: Wild buckwheat; FW: Flixweed; HB: Henbit.

Table 2. The effect of Beyond rate on winter wheat agronomic variables in 2007.

Treatment	Rate lb ai/ac	Plants	Spikes	Biomass	Height	Yield	Grain moisture	Test weight	Dockage	Protein
		No./m ²		g/m ²	cm	bu/ac	%	lb/bu	%	%
		----- 7/3/07 -----	-----	-----	7/10/07	-----	-----	7/25/07	-----	-----
Beyond 1X	0.047	119.0	467.1	1221.2	97.0	77.0	11.8	61.1	0.17	14.2
Beyond 1/2X	0.0234	151.3	573.8	1438.5	100.3	79.4	11.8	61.6	0.21	14.1
Beyond 1/4X	0.0117	170.1	542.7	1430.6	102.8	77.1	11.9	61.4	0.28	14.3
Beyond 1/8X	0.00586	119.0	526.0	1423.4	99.0	78.3	12.0	61.5	0.21	14.2
Beyond 1/16X	0.00293	97.9	501.5	1334.5	103.0	78.4	11.8	61.4	0.35	14.1
Check		183.5	544.9	1339.4	102.8	70.2	11.7	61.2	0.39	14.0
LSD (P=.05)		60.76	92.20	221.00	4.57	8.01	0.41	0.42	0.13	0.69
CV		28.78	11.63	10.75	3.01	6.92	2.33	0.46	31.82	3.25
Treatment F		2.75	1.50	1.32	2.65	1.56	0.43	1.39	4.12	0.30
Treatment Prob(F)		0.059	0.25	0.31	0.0656	0.23	0.82	0.28	0.0148	0.91