

Project Title: Wild Oat 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 22, 2005 at a seeding rate of 75 lb/ac in 6" rows to a depth of 1.5 inches. Wild buckwheat was planted between wheat rows at a rate of 20 plants per square foot before winter dormancy.

Treatments included five rates of Beyond (1X, 1/2X, 1/4X, 1/8X and 1/16X) and an untreated check. The herbicide treatments were applied on May 17, 2006 when the crop was at the early flag leaf stage and wild buckwheat plants were at the 3-5 leaf stage. The delayed herbicide application was due to the late population establishment of wild buckwheat. Herbicide treatments were applied using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA.

Winter wheat injury was significant when the herbicide was applied at the 1X rate. This injury likely occurred due to the late application timing. Nonetheless, Beyond provided very good wild buckwheat control and resulted in low weed biomass. Even at the 1/16X rate, wild buckwheat control was greater than 60%.

Herbicide rate had a significant effect on yield and grain quality. The 1X rate resulted in shorter plants, and lower yield and test weight as compared to other rates due to the associated crop injury. Treatment with Beyond did not affect winter wheat plant density or biomass.

Summary:

Beyond herbicide provided good control of wild buckwheat in winter wheat. Although herbicide efficacy was reduced at lower rates, the 1/16X rate still resulted in 65% weed control. The 1X rate resulted in crop injury and yield reduction. However this was attributed to the late application.

Table 1. Effect of Beyond herbicide rates on winter wheat injury and wild oat control in 2006 season.

Treatment	Rate lb ai/ac	Winter wheat		Wild oat			
		% injury		% control		Plants	Biomass
		5/31/06	6/12/06	5/31/06	6/12/06	No./m ²	g/m ²
						----- 6/29/06 -----	
Beyond 1X	0.047	10.0	6.3	55.0	93.8	23.0	0.7
Beyond 1/2X	0.0234	6.3	3.8	55.0	91.3	71.9	2.6
Beyond 1/4X	0.0117	5.0	1.3	50.0	67.5	101.4	5.1
Beyond 1/8X	0.00586	1.3	0.0	37.5	45.0	176.1	12.4
Beyond 1/16X	0.00293	0.0	0.0	30.0	32.5	167.8	14.5
Check		0.0	0.0	0.0	0.0	174.2	20.9
LSD (P=.05)		5.39	3.62	12.07	7.9	66.19	4.77
CV		95.32	128.04	21.13	9.53	36.89	33.8
Treatment F		5.09	4.66	27.81	192.09	8.467	24.631
Treatment Prob(F)		0.0063	0.0091	0.0001	0.0001	0.0006	0.0001

Table 2. Effect of Beyond herbicide rates on winter wheat plant density, biomass, yield and grain quality in 2006 season.

Treatment	Rate lb ai/ac	Plants	Biomass	Plant height cm	Yield bu/ac	Grain moisture %	Test weight lb/bu	Protein %	Dockage %
		----- 6/29/06 ----- No./m ²	g/m ²						
Beyond 1X	0.047	213.5	977.8	65.8	41.7	9.4	61.8	15.4	1.01
Beyond 1/2X	0.0234	214.6	912.9	75.0	56.1	9.1	64.2	14.3	0.47
Beyond 1/4X	0.0117	195.7	799.2	75.5	57.1	9.2	65.4	14.0	0.69
Beyond 1/8X	0.00586	263.6	993.4	75.5	60.9	9.3	65.7	14.0	0.75
Beyond 1/16X	0.00293	233.5	1011.5	81.0	64.5	9.3	65.8	13.8	0.49
Check		241.3	960.0	80.8	62.8	9.2	65.9	13.6	0.72
LSD (P=.05)		93.78	234.17	6.33	11.63	0.31	0.71	0.69	0.463
CV		27.41	16.49	5.56	13.5	2.24	0.72	3.23	44.66
Treatment F		0.60	1.00	6.941	4.563	0.41	44.98	8.29	1.64
Treatment Prob(F)		0.702	0.4486	0.0015	0.0099	0.8354	0.0001	0.0006	0.21