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 oat to Beyond in the Clearfield winter wheat system.

Results:

This experiment was conducted, to determine the optimum rate of Beyond for wild oat 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 oat was planted in between winter wheat rows at a rate of 25 plants per square foot when winter wheat was at tillering stage (April 11, 2007).

Treatments included five rates of Beyond (1X, 1/2X, 1/4X, 1/8X and 1/16X of the labeled rate) and an untreated check. Herbicide applications were made on May 8, 2007 when the crop was at jointing stage (10-12 inches tall) and wild oat plants were at the 2-3 main stem leaf stage (2 inches tall). Treatments were applied using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA.

Crop injury was minimal when Beyond was applied at 1/2X rate or lower. However, the 1X rate still resulted in 5% wheat injury and was principally evident as a reduction in plant height. The 1/2X and 1X rates generally provided good wild oat control (>89%) and resulted in very low wild oat biomass (< 5 g/m^2). However, herbicide efficacy declined as application rates were further reduced.

Although wild oat plant densities were substantial, biomass amounts were minor. The insignificant biomass levels are reflective of the differences in relative emergence between the two species and the resulting competitive advantage afforded to the winter wheat crop. Consequently, wild oat competition, as well as the rate of Beyond, had no effect on winter wheat density, the number of spikes, biomass, yield or grain quality.

Summary:

The Clearfield winter wheat Bynum demonstrated excellent crop tolerance toward Beyond. Beyond applied at the1X and 1/2X rates provided good control of wild oat, but did not improve yields.

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

Treatment Name	Rate lb ai/ac	Winter wheat % injury		Wild oat % control		Wild oat Plants No./m^2	Wild oat Panicles No./m^2	Wild oat Biomass g/m^2
		5/22/07	6/4/07	5/22/07	6/4/07	7/3/07	7/3/07	7/3/07
Beyond 1X	0.047	4.8	5.0	72.5	91.3	8.3	5.5	0.4
Beyond 1/2X	0.0234	1.3	0.0	65.0	88.8	39.7	8.3	4.9
Beyond 1/4X	0.0117	0.0	0.0	58.8	62.5	112.5	47.9	35.6
Beyond 1/8X	0.00586	0.0	0.0	45.0	37.5	96.8	51.6	28.3
Beyond 1/16X	0.00293	0.0	0.0	38.8	23.8	166.9	119.8	78.0
Check		0.0	0.0	0.0	0.0	127.2	143.8	92.0
LSD (P=.05)		2.73	3.55	6.88	7.73	71.39	45.52	27.72
CV		181.05	282.84	9.78	10.13	51.57	48.07	46.14
Treatment F		4.42	3.00	130.28	203.72	6.07	14.39	16.77
Treatment Prob(F)		0.0112	0.045	0.0001	0.0001	0.0029	0.0001	0.0001

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	125.7	571.6	1453.9	92.8	77.9	11.6	60.4	0.29	14.2
Beyond 1/2X	0.0234	115.7	504.9	1299.2	98.0	80.2	11.5	60.7	0.29	14.3
Beyond 1/4X	0.0117	126.8	480.4	1296.5	99.5	83.7	11.4	61	0.28	14.3
Beyond 1/8X	0.00586	123.4	570.5	1503	98.3	79.4	11.6	60.9	0.70	14.2
Beyond 1/16X	0.00293	117.9	489.3	1213.5	98.8	77.9	11.6	60.8	0.33	14.4
Check		154.6	550.5	1355.3	101.3	75.5	11.6	60.7	0.74	14.3
LSD (P=.05)		64.37	152.82	419.82	4.69	6.58	0.59	0.62	0.35	0.35
CV		33.55	19.21	20.58	3.17	5.52	3.41	0.67	53.44	1.64
Treatment F		0.43	0.66	0.60	3.39	1.63	0.24	1.18	3.52	0.23
Treatment Prob(F)		0.8189	0.658	0.7007	0.0302	0.2133	0.9371	0.3654	0.0264	0.9445