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

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Objective: To evaluate the response of wild oat to Beyond

Results:

This experiment was conducted to determine the optimum rate of Beyond for wild oat 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, to a depth of 1.5" using a double disk drill equipped with 6" row spacings. Wild oat was immediately planted between spring wheat rows at a rate of 20 plants per square foot.

Beyond was applied at 1X, 1/2X, 1/4X, 1/8X and 1/16X of the normal rate. An untreated control also was included. The treatments were applied on May 15, 2006 when spring wheat plants were at the 4-5 main-stem-leaf stage with 1-2 tillers and wild oat plants were at 3-4 leaf stage with 1-2 tillers. Treatments were applied using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA.

Crop injury from Beyond applications was minimal. Herbicide rate had a significant effect on wild oat control. As the herbicide rate decreased from 1X to 1/16X, percent of wild oat control decreased from 88 to 30 percent. At the same time biomass increased from 0 to 400 g/m^2. Nevertheless, the 1X and 1/2X rates still provided good wild oat control. Wild oat competition reduced spring wheat plant density, biomass, yield and grain test weight, but increased grain protein content. Spring wheat yields increased from 22 bu/A in the untreated check to 53 bu/A at the1X rate, demonstrating the utility of Beyond, as well as the competitive ability of wild oat.

Summary:

Beyond herbicide at 1X and 1/2X rates provided greater than 80 percent wild oat control. However, herbicide efficacy declined sharply as the rate was further reduced. These results indicate that Beyond must be applied at the labeled rate to ensure adequate wild oat control and optimum spring wheat yield.

Table 1. The effect of Beyond herbicide rate on spring wheat injury and wild oat control in 2006 season.

Treatment	Rate	Spring wheat		Wild oat			
	lb ai/ac	% injury		% control		Plants	Biomass
						No./m^2	g/m^2
		5/31/06	6/12/06	5/31/06	6/12/06	------- 7/3/06 ------	
Beyond 1X	0.047	0	1.3	70.0	88.8	0	0
Beyond 1/2X	0.0234	0	0	67.5	82.5	32.3	8.0
Beyond 1/4X	0.0117	0	0	60.0	65.0	104.2	67.1
Beyond 1/8X	0.00586	0	0	47.5	47.5	138.3	247.2
Beyond 1/16X	0.00293	0	0	35.0	30.0	123.5	401.5
Check		0	0	0	0	152.1	672.4
LSD (P=.05)		0	1.54	11.99	8.62	38.98	75.17
CV		0	489.9	17.05	10.94	28.20	21.44
Treatment F		0	1	43.84	138.38	22.63	113.83
Treatment Prob(F)		1	0.45	0.0001	0.0001	0.0001	0.0001

Table 2. The effect of Beyond herbicide rate on spring wheat plant density, biomass, yield and other agronomic variables in 2006 season.

Treatment	Rate lb ai/ac	Plants ------- 7/3/06 -------	Biomass	Plant height	Yield	Grain moisture	Test weight	Dockage	Protein
		No./m^2	g/m^2	cm	bu/ac	%	lb/bu	--------- % ---------	
Beyond 1X	0.047	231.3	813.8	88.8	53.3	10.1	62.1	0.5	14.1
Beyond 1/2X	0.0234	175.7	778.6	84.8	46.1	10.2	61.9	0.9	14.0
Beyond 1/4X	0.0117	140.1	707.1	87.0	48.1	9.9	61.9	4.0	13.8
Beyond 1/8X	0.00586	171.3	620.0	89.3	40.1	9.9	61.1	10.6	14.1
Beyond 1/16X	0.00293	192.4	549.9	88.8	33.2	9.8	60.6	13.9	14.4
Check		208.0	395.6	87.0	21.9	10.0	59.4	24.0	15.0
LSD (P=.05)		49.62	108.45	4.14	8.62	0.54	0.43	7	0.45
CV		17.66	11.17	3.14	14.14	3.62	0.47	51.68	2.11
Treatment F		3.70	18.85	1.50	15.92	0.76	53.57	15.25	7.79
Treatment Prob(F)		0.0223	0.0001	0.2475	0.0001	0.5941	0.0001	0.0001	0.0009