

ITALIAN RYEGRASS CONTROL IN AP 110 CLEARFIELD WHEAT (UKREC 2001-2002)

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INTRODUCTION:

Clearfield wheat is a non-transgenic line of wheat that is tolerant to imazamox and other imidazolinone herbicides. It is currently available for use in hard-winter wheat and is being introduced in experimental lines of soft red winter wheat. Beyond is a 1 lb/gal formulation of imazamox that is being developed for use in imidazolinone wheat varieties.

A study in a hard red winter wheat variety in 2001 at the UKREC indicated that ryegrass control with Beyond ranged from 53 to 100%. The main objective of the research in 2002 was to continue to evaluate ryegrass control with Beyond applied alone and in tank mix combination with other herbicides in an experimental soft red winter wheat variety.

METHODS:

The site for this study had no-till corn in 2000 and was fallow in 2001. The field was over seeded with ryegrass seed at a rate of 20 lb/A prior to wheat planting.

AgriPro 110 CL was the experimental soft red winter wheat variety that was used in this study. It was planted at UKREC near Princeton, KY on October 22, 2001. A Lilliston drill was used to plant wheat in a conventional tilled seed bed.

Stand counts for wheat and ryegrass were determined on November 23 and were 32 plants/ft² and 24 plants/ft², respectively.

Nitrogen was applied at the rate of 25 units /A on November 23, 30 units/A on February 15, and 70 units/A on March 11. Warrior at 3.5 oz/A was applied on November 21 and March 7. Tilt was applied at 4 oz/A on April 29.

Beyond was applied alone and in

combination with Clarity, Harmony Extra, or Prowl. The timing of application varied with herbicide treatments and were as follows:

- 2-4 leaf ryegrass (2-3 LF) on 11/16/01
- 4-5 leaf ryegrass (4-5 LF) on 12/3/01
- Fully tillered ryegrass (FTIL) on 3/13/02

Treatments were applied in a spray volume of 20 gal/A with a CO₂ back-pack sprayer.

Treatments were replicated 3 times using a randomized complete block design. Plot size was 10 ft wide by 25 ft long.

Visual ratings were made for wheat injury (on 3/13), henbit control (on 3/13) and ryegrass control (on 12/20, 3/13, and 6/8/02). Wheat was harvested 6/20/02 with a plot combine.

RESULTS:

Ryegrass control with Beyond ranged from 77 to 100%. Beyond applied at 4 oz/A to 2 to 3 leaf ryegrass on 11/16 provided 80% control compared with the other fall treatments which provided 98 to 100 % control. Beyond at 4 or 5 oz/A applied to fully tillered ryegrass on 3/17 provided 77 and 80% control, respectively. The use of Clarity or Harmony Extra as tank mix partners with Beyond resulted in antagonism and reduced ryegrass control when treatments were applied to fully tillered ryegrass on 3/13. However, the antagonism did not occur when the tank mix combinations were applied in the fall to 4 to 5 leaf ryegrass.

Wheat injury in the form of stunted plants with reduced tillering occurred when

Beyond was applied in the fall with Prowl, Clarity or Hoelon (Table 1). The injury was less obvious when Beyond was applied alone.

The crop oil concentrate may have enhanced the activity of the tank mix partners. Although the fall application of Beyond + Harmony Extra caused 43% injury, it did not reduce wheat yield when compared with other applications that were made in the fall. Similar injury was observed when this combination was applied in the spring (data not shown).

Applying Beyond in the fall provided 93 to 100% control of henbit. Since the spring applications were made after the last rating of henbit, it was not possible to determine the efficacy of these set of treatments for henbit control. The yield of AgriPro 110 CL wheat ranged from 72.8 to 122 bu/A and tended to be associated with ryegrass control. The average yield of the fall applications of Beyond was approximately 5 bu/A better than the average yield of the spring treatments.

SUMMARY:

Beyond provided control of ryegrass that was comparable with Hoelon. Beyond provided more consistent ryegrass control at 5 oz/A compared with 4 oz/A. Fall treatments of Beyond was more effective in controlling ryegrass and consequently resulted in higher wheat yield than spring treatments. Tank mix antagonism with Beyond occurred when applications were made in the spring to large tillered ryegrass but did not occur when treatments were applied in the fall to small ryegrass.

Table 1. Italian Ryegrass Control in Clearfield Wheat (UKREC 2001-2001).

Herbicide	Rate	Timing	Wheat Injury (%) 3/13	Henbit Control (%) 3/13	Ryegrass Control (%)		Wheat Yield (Bu/A)
					3/13	6/8	
Beyond Crop Oil Conc.	4 oz/A 1%	R 2-3LF	2	100	77	80	113.1
Beyond Crop Oil Conc.	5 oz/A 1%	R 2-3LF	2	93	97	99	112.2
Beyond Crop Oil Conc.	4 oz/A 1%	R 4-5LF	0	93	97	100	122
Beyond Crop Oil Conc.	5 oz/A 1%	R 4-5LF	8	93	98	100	120.9
Beyond Prowl Crop Oil Conc	4 oz/A 2.4 pt/A 1%.	R 2-3LF	17	100	100	98	115.6
Beyond Clarity Crop Oil Conc.	4 oz/A 4 oz/A 1%.	R 4-5LF	8	97	98	100	116.9
Beyond Harmony Extra Crop Oil Conc.	4 oz/A 0.3 oz/A 1%.	R 4-5LF	43	100	100	98	111.3
Hoelon	1.67 pt/A	R 4-5LF	0	0	98	95	116.4
Beyond Crop Oil Conc.	4 oz/A 1%	R FTIL	0	0	0	77	97.8
Beyond Crop Oil Conc.	4 oz/A 1%	R FTIL	0	0	0	80	96.9
Beyond Clarity Crop Oil Conc	4 oz/A 4 oz/A 1%.	R FTIL	0	0	0	63	93.7
Beyond Harmony Extra Crop Oil Conc.	4 oz/A 0.3 oz/A 1%.	R FTIL	0	0	0	60	93.2
Non treated Check			0	0	0	0	72.8
LSD (0.05)			4	7	7	10	16.4