

ITALIAN RYEGRASS CONTROL IN PIONEER 2552 WHEAT (UKREC 2001-2002)

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INTRODUCTION:

Italian ryegrass is increasing as a problem weed in wheat. The cost of control and risk of developing Accase resistance are issues that growers may need to address as we move further into the future in managing this weed in wheat. The number of herbicide options for wheat are limited, however, the pesticide industry is developing several products that have potential for managing this problem weed.

The objective of this research was to compare and evaluate products recently registered for ryegrass control as well as experimental herbicides being developed for ryegrass control in wheat.

METHODS:

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

Pioneer 2552 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.

Information on the herbicides included in this study are listed in Table 1.

Table 1. Herbicides used in this study

Product	Active Ingredient	Mode of Action
Achieve 40 DG	tralkoxydim	Accase inhibitor
Axiom 68 DF	flufenacet + metribuzin	Accase inhibitor + Photosynthesis inhibitor
Discover 2 EC	clodinafop-propargyl	Accase inhibitor
Domain 60 DF	flufenacet + metribuzin	Meristem inhibitor + Photosynthesis inhibitor
Everest 70 DG	flucarbazone	ALS inhibitor
Hoelon 3 EC	diclofop-methyl	Accase inhibitor
Sencor 75 DF	metribuzin	Photosynthesis inhibitor
AEF-13006000 75WG*	mesosulfuron	ALS inhibitor
AEF-13006003 60WG*	mesosulfuron + iodosulfuron	ALS inhibitor ALS inhibitor
* AEF 10789200 (mefenpyr-diethyl) was included as a safener with AEF 13006000 and AEF-13006003.		

Achieve, Everest, and Hoelon are currently registered for ryegrass control; whereas, Axiom, Discover, Domain, AEF-13006000 and AEF-13006003 are not approved for use in wheat in Kentucky.

The timing of application varied with herbicides and were as follows:

- 2-3 leaf wheat (W 2-3 LF) on 11/10/01
- 2-4 leaf ryegrass (2-4 LF) on 11/16/01
- 2 tillered ryegrass (2 TIL) on 12/15/01
- Fully tillered ryegrass (FTIL) on 3/13/02

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

block design was used with 3 replicates. Plot size was 10 ft wide by 25 ft long.

Visual ratings were made for wheat injury (on 12/20 and 3/13), henbit control (on 12/20 and 3/13) and ryegrass control (on 12/20, 3/13, and 6/8/02). Wheat was harvested on 06/20 with a plot combine.

RESULTS:

Achieve applied at 9.5 oz/A to fully tillered plants provided 87% ryegrass control, which was better than in previous studies with this herbicide for this large of ryegrass (Table 2).

Axiom applied at 10 and 12 oz/A provided 90 and 100% ryegrass control, respectively. Wheat injury, in the form of stunted plants, was observed with both rates of Axiom on December 20. Injury remained the same with the high rate of Axiom, but appeared to decrease slightly with the low rate by March 13. Axiom at both rates provided 100% henbit control.

Discover at 12.8 oz/A provided at least 92% ryegrass control regardless of timing of application.

Ryegrass control with Everest at 0.61 oz/A was 83% when applied to 2 to 4 leaf ryegrass. However, ryegrass control with Everest was only 70% when the application was delayed until plants had two tillers.

Ryegrass control with Hoelon varied depending on herbicide rate and stage of ryegrass. Control was only 77% when the low rate of 1.33 pt/A was applied to 2 tillered plants; however applying Hoelon at 2 pt/A and 2.66 pt/A to 2-tillered ryegrass provided 85 and 92% control, respectively. Hoelon at 2.66 pt/A was more effective when it was applied to ryegrass with 2 tillers compared with delaying application until plants were fully tillered.

The sequential application of Axiom at 10 oz/A followed by Sencor DF at 5.33 oz/A provided 100% ryegrass control by June 8. The sequential application of Sencor at 3 oz/A followed by 5.33 oz/A provided only 77%

ryegrass control. Wheat injury for these sequential treatments on December 20 tended to be greater compared with most of the other treatments. Some stunting was still observed by March 13. Both sequential treatments provided 100% henbit control.

Domain applied alone at 4 oz/A provided only 60% ryegrass control. However including Everest with Domain increased the level of ryegrass control to 86%.

Domain applied alone did not injure wheat and provided 100% control of henbit.

AEF-13006000 and AEF-13006003 provided at least 92% ryegrass control when applied to 2 to 4 leaf ryegrass. At least 95% henbit control was achieved with either AEF-13006000 or AEF-13006003. Wheat injury observed on March 13 did not exceed 5% with AEF-13006000 or AEF-13006003. AEF 10789200 (mefenpyr-diethyl) was included as a safener with AEF-13006000 and with AEF-13006003.

The wheat yield of the non treated check was 71.3 bu/A. Plots that were treated with a herbicide yielded 30 to 59 bu/A better than the non treated check. As a general rule, the high wheat yields were associated with a high level of ryegrass control.

SUMMARY:

Most herbicide treatments provided at least 80% ryegrass control by June 8. Both fall and spring applications of Achieve, Discover, and Hoelon provided good control of ryegrass. However, in previous studies, ryegrass control with spring applications has been less consistent than with fall applications, especially with Achieve. Everest provided better control when applied as an early postemergence treatment to small ryegrass plants. Axiom provided good control of both ryegrass and henbit when applied early in the season. The crop injury that occurred with Axiom did not affect wheat yield. AEF-13006000 and AEF-13006003 provided good control of ryegrass and henbit.

Table 2. Effect of Postemergence Herbicides on Wheat Injury, Henbit and Ryegrass Control and Wheat Yield. (UKREC, Princeton, KY 2001-0002).

Herbicide	Rate	Timing	Wheat injury (%)		Henbit Control (%)		Ryegrass Control %			Yield (Bu/A)
			12/20	3/13	12/20	3/13	12/20	3/13	6/8	
Achieve Supercharge	7 oz/A 0.5 %	R2-4LF	0	0	0	0	82	80	80	122.7
Achieve Supercharge	9.5 oz/A 0.5 %	R2-4LF	0	0	0	0	83	83	80	115
Achieve Supercharge	7 oz/A 0.5 %	R 2TIL	0	0	0	0	0	83	83	120.5
Achieve Supercharge	9.5 oz/A 0.5 %	R 2TIL	0	0	0	0	0	80	80	115.4
Achieve Supercharge	9.5 oz/A 0.5 %	R FTIL	0	2	0	33	0	32	87	104
Axiom	10 oz/A	W 2-3 LF	8.3	2	100	100	82	87	90	130.5
Axiom	12 oz/A	W 2-3 LF	5	5	100	100	87	87	99	124.4
Discover DSV Adjuvant	4 oz/A 12.8 oz/A	R2-4LF	3	3	0	0	96	92	92	122.7
Discover DSV Adjuvant	4 oz/A 12.8 oz/A	R 2TIL	0	0	0	33	0	95	93	126.9
Discover DSV Adjuvant	4 oz/A 12.8 oz/A	R FTIL	0	0	0	0	0	0	95	106.8
Everest Surfactant	0.61 oz/A 0.25%	R2-4LF	7	0	7	0	58	83	83	109.8
Everest Surfactant	0.61 oz/A 0.25%	R 2TIL	0	0	0	0	0	47	70	102.3

AEF-13006003 AEF-10789200 Crop Oil Conc. Liquid N	0.35 oz/A 1/71 oz/A 1.5 pt/A 1 qt/A	R2-4LF	5	5	100	100	85	97	98	120.7
Non treated Check	—	—	0	0	0	0	0	0	0	71.3
LSD (.05)			5	5	31	36	22	23	10	12.5
<p>WH 2-3 LF: Applied 11/10/01; Ryegrass 1-leaf and 1- 1.5 inches tall, Henbit cotyledon stage.</p> <p>R 2 - 4 LF: Applied 11/16/01; Wheat 3 leaves, 4 inches tall, and roots 2 inches long; Ryegrass 1 leaf - 2 tillers, averaged 2 leaves and 2 inches tall; Henbit cotyledon to 1 pair of leaves.</p> <p>R 2 TIL: Applied 12/15/01; Wheat 2 tillers and 3.5 inches tall; Ryegrass 2 tillers and 2 - 2.5 inches tall; Henbit 4-6 leaves, and 1-1.5 inches in diameter; Common chickweed 0.5 to 1 inch in diameter (not a uniform density in field.)</p> <p>R FTIL: Applied 3/17/02; Wheat 5 tillers/plant (feekes 5) and 4-5 inches tall; Ryegrass up to 9 tillers/plant and 2-5 inches tall; Henbit 2 inches tall and 3 - 5 inches in diameter; Common chickweed 1 inch tall and 3-5 inches in diameter.</p>										