

ITALIAN RYEGRASS CONTROL IN WHEAT

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OBJECTIVE:

This study was conducted to compare and evaluate crop injury and Italian ryegrass control using registered and experimental herbicides in wheat.

METHODS:

Pioneer 2552 was planted at UKREC near Princeton, KY on October 25, 1999. A Lilliston wheat drill was used to plant wheat in a seedbed prepared with conventional tillage practices. Nitrogen was applied at the rate of 40 units/A on February 14 and 60 units/A on March 23, 2000. Quadris at 10.6 oz/A was applied May 5, 2000 for disease control.

Herbicides evaluated in this study were Achieve, Axiom, Everest, Hoelon, and Maverick. The timing of application varied with herbicides and included preemergence (PRE) on October 27, 1999; emerged wheat (EMERG) on November 5, 1999; 1-tillered wheat (1-Till) and 2-leaf (2-LF) ryegrass on November 24, 1999; 4-leaf ryegrass (4-LF) on February 9, 2000. 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 of percent ryegrass control were made on December 30, 1999, February 29, 2000, March 29, 2000, and June 16, 2000. Crop injury was also evaluated for the first three dates, however, ratings for the last date were not made due to scattered infestations of take-all disease. Wheat was harvested June 23, 2000. Harvested samples were screened with a cleaner to partition wheat and ryegrass seed. The partitioned samples were then used to determine the percent contamination of ryegrass seed. Wheat yields are not presented due to high variability caused from infestations of take-all disease. The only data included in this report are summarized in Table 1 and include the percent ryegrass seed contamination and final ratings of crop injury (3/29/00) and ryegrass control (6/16/00).

RESULTS and DISCUSSION:

ACHIEVE 40WG: Achieve contains the active ingredient tralkoxydim which is similar to the ingredient in Hoelon. Achieve is manufactured by Syngenta (formerly Zeneca) and is registered for postemergence applications in wheat. Based on June 16 ratings, Achieve applied at 7 or 9.5 oz/A to 2-LF ryegrass resulted in 67% control of ryegrass. Control was similar when Achieve was applied at the same rates to 4-LF ryegrass. Slight injury in the form of discolored plants was observed in a few of the plots initially, but gradually decreased over time.

AXIOM 68WG: Axiom is developed by Bayer as a premix of flufenacet (54.4%) plus metribuzin (13.6%). Although Axiom is registered for use in field corn and soybeans, it is currently NOT labeled for use in wheat. Axiom should be applied prior to emergence of most weed species, since its control focuses primarily on soil-residual activity. The performance of Axiom for controlling ryegrass depended largely on timing of application. The use of Axiom prior to crop and weed emergence provided 88% control of ryegrass, compared with 60% and 63% for applications made to emerged wheat and 1-tillered wheat. The 1.4 inches of rainfall that

occurred on November 2, 1999 (i.e. 6 days after Pre application) played a major role by moving Axiom from the soil surface and into the top of the soil profile where it could control ryegrass before it emerged. However, by delaying the Axiom application until wheat emergence (Emerg) or 1-tiller (1-Till), ryegrass resulted in substantially less control compared with the Pre treatment. Slight injury in the form of discolored and stunted plants did occur with all Axiom treatments, however symptoms decreased over time.

EVEREST 70 WG: Everest contains the experimental herbicide flucarbazone-sodium (MKH 6562). It is being developed by Bayer for use in wheat. Some of the early research with Everest indicates it has the potential to control several cool-season grasses in wheat. Results of this experiment indicate that applying Everest at 1-Till wheat stage provided 88% ryegrass control during the Dec 30 ratings (data not shown), however, by June 16, control decreased to 77% (Table 1). Applying Everest as a tank-mix partner or in sequential sprays with other herbicides provided mixed results. Including Axiom with Everest at the 1-Till stage helped maintain control throughout the season and resulted in 90% control by June 16. Applying Sencor as a tank-mix partner with Everest at the 1-Till wheat stage resulted in 70% ryegrass control by June 16. Applying Axiom at the 1-Till wheat stage followed by Everest at the 4-LF ryegrass stage resulted in 77% ryegrass control.

HOELON 3EC: Hoelon contains the active ingredient diclofop-methyl. It is manufactured by Aventis and is registered for preemergence and postemergence control of annual ryegrass in wheat. According to the June 16 ratings, Hoelon applied at 1.33 and 2.66 pt/A to 2-leaf ryegrass resulted in 87% and 95 % control, respectively. Delaying the application of Hoelon at these same rates until ryegrass reached the 4-leaf stage resulted in a slight reduction in control, however, differences were not significant compared with the 2-leaf treatments. Slight injury in the form of discolored plants was observed with the early applications, and appeared to decrease over time.

MAVERICK 75WG: Maverick contains the active ingredient sulfosulfuron. It is manufactured by Monsanto and is registered for preemergence and early postemergence control of grasses and broadleaf weeds. The one-year rotation restriction on the current label limits the opportunity for using Maverick in Kentucky's crop rotations. Results of this research indicated that Maverick applied at 0.5 oz/A to 2-LF ryegrass resulted in 60 % control. Only 7% control was achieved when Maverick was applied to 4-LF plants.

CONCLUSIONS:

The ryegrass infestation level in this experiment was extremely heavy, consequently the results reported here may be different compared with areas where the weed density is less. Hoelon appears to be the most effective in controlling ryegrass compared with the other postemergence herbicides, particularly when applied to 4-leaf weeds. Achieve and Everest may control small emerged ryegrass, but it is unclear if a single application will provide long-term control of heavy infestations. Axiom appears to have the potential to provide preemergence control of ryegrass in wheat, however, its success will likely depend on timing of application relative to rainfall and weed emergence. The use of Axiom for preemergence control followed by a postemergence herbicide will likely result in optimum long-term ryegrass control, but it is questionable if this program is practical or economical. Maverick applied as a postemergence spray may suppress small ryegrass, but does not appear to provide much benefit in managing large ryegrass.

TABLE 1. EFFECT OF HERBICIDES ON WHEAT INJURY, RYEGRASS CONTROL, AND RYEGRASS SEED CONTAMINATION. (UKREC 1999-2000)

CHEMICALS	RATE/A	GROWTH STAGE ¹	WHEAT % INJURY (3/29/00)	RYEGRASS	
				% CONTROL ² (6/16/00)	% SEED CONTAMINATION ³ (6/23/00)
Axiom	10 oz pr/A	PRE	0	88	02.4
Axiom	10 oz pr/A	EMERG	0	60	20.0
Axiom	10 oz pr/A	1-TILL	0	63	07.7
Everest Activator 90	0.62 oz pr/A 0.5 % v/v	1-TILL 1-TILL	3	77	05.0
Everest Sencor Activator 90	0.62 oz pr/A 2.0 oz pr/A 0.5 % v/v	1-TILL 1-TILL 1-TILL	10	70	10.4
Axiom Everest Activator 90	7.3 oz pr/A 0.62 oz pr/A 0.5 % v/v	1-TILL 1-TILL 1-TILL	3	90	01.8
Axiom Everest Activator 90	10 oz pr/A 0.62 oz pr/A 0.5 % v/v	1-TILL 4-LF 4-LF	3	77	03.7
Achieve Supercharge	7 oz pr/A 0.5 % v/v	2-LF 2-LF	0	67	06.0
Achieve Supercharge	9.5 oz pr/A 0.5 % v/v	2-LF 2-LF	0	67	07.5
Achieve Supercharge	7 oz pr/A 0.5 % v/v	4-LF 4-LF	3	70	05.6
Achieve Supercharge	9.5 oz pr/A 0.5 % v/v	4-LF 4-LF	3	67	08.3
Hoelon	1.33 pt pr/A	2-LF	3	87	02.0
Hoelon	2.66 pt pr/A	2-LF	7	95	00.8
Hoelon	1.33 pt pr/A	4-LF	0	83	05.4
Hoelon	2.66 pt pr/A	4-LF	0	90	00.4
Maverick Activator 90	0.5 oz pr/A 0.25 % v/v	2-LF 2-LF	0	60	06.5
Maverick Activator 90	0.5 oz pr/A 0.25 % v/v	4-LF 4-LF	0	07	07.4
Weedy Check			0	0	23.7
LSD (0.05)			9	14	12.5

¹ Planted wheat (10/25/99), PRE = Preemergence wheat (10/27/99), EMERG = Emerged wheat (11/05/99), 1-TILL = 1 tillered wheat (11/24/99), 2-LF = 2 leaf ryegrass (11/24/99), 4-LF = 4-leaf ryegrass (2/22/00).

² Ryegrass control is based on visual ratings expressed as percent control of biomass compared with non-treated check.

³ Ryegrass seed contamination is based on % of harvested wheat samples w/w.

