

EFFECT OF TANK MIXING HARMONY EXTRA WITH POSTEMERGENCE GRASS HERBICIDES ON RYEGRASS CONTROL (UKREC 2002-2003)

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INTRODUCTION:

Some of the herbicides used for Italian ryegrass control do not control broadleaf herbicides or wild garlic, consequently, there is interest in using tank mix combinations of herbicides in order to control a broad spectrum of weeds. However ryegrass control can be impaired when certain tank mix combinations are used.

The objective of this research was to compare the effectiveness of various registered and experimental herbicides for controlling Italian ryegrass when applied alone or in tank mix combination with Harmony Extra.

METHODS:

Two experiments were conducted at UKREC in the fall of 2002 and spring of 2003. The first study was conducted in the fall in wheat whereas the second study was done in the spring in a fallow area heavily infested with ryegrass. It is important to recognize that any benefits or disadvantages for having a crop canopy could not be determined from the second experiment.

Details on timing and plant size are listed below:

STUDY 1: Pioneer 2552 wheat

Treated 12/14/02

Wheat 2 tillers 3 inches

Ryegrass 1 tiller 2 inches

STUDY 2: Fallow

Treated 3/14/03

Ryegrass averaged 4 tillers 3 ½ inches
Herbicides included in this study are listed in Table 1.

Table 1. Grass Herbicides Evaluated ¹.		
Product (Rate/A)	Active Ingredient	Mode of Action
Achieve 40 WG (7 oz /A)	tralkoxydim	ACCCase inhibitor
Discover 2 EC (3.2 oz/A)	clodinofof- propargyl	ACCCase inhibitor
Everest 70 WG (0.61 oz/A)	flucarbozone	ALS inhibitor
Hoelon 3 EC (2 pt/A)	diclofop - methyl	ACCCase inhibitor
Osprey ² (0.29 oz/A)	mesosulfuron	ALS inhibitor
<p>¹ The above herbicides were applied alone or in combination of Harmony Extra (thifensulfuron & tribenuron) at 0.5 oz/A.</p> <p>² The formulation of Osprey in this study was AEF-13006000 75WG. The safener AEF 10789200 (mefenpyr-diethyl) was included with all Osprey treatments.</p>		

RESULTS: Ryegrass Control

At least 83% ryegrass control occurred where Discover, Hoelon or Osprey were applied alone; regardless whether treatments were applied to 1-tiller or 4-tillered ryegrass (Table 2 on page 28). The maximum control observed with Achieve applied alone was 77% compared with 53% for Everest applied alone.

Results of both studies showed that Italian ryegrass control with Achieve at 9.5 oz/A was reduced by at least 34% by including Harmony Extra at 0.5 oz/A. Combining Hoelon at 2 pt/A with Harmony Extra at 0.5 oz/A resulted in a reduction of 15% ryegrass control in the second study, but did not affect ryegrass control in the first study.

RESULTS: Broadleaf Control

The populations of broadleaf weeds in the first experiment were sporadic, consequently ratings were variable. Treatments containing Harmony Extra provided at least 82% control of henbit and common chickweed. The fact that Everest and Osprey provided at least 50% control of henbit and common chickweed indicated that these herbicides may have some broadleaf weed activity.

Based on this research, severe antagonism in Italian ryegrass control occurred when Harmony Extra was tank mixed with Achieve. Combining Harmony Extra with Hoelon reduced ryegrass control where treating plants that had overwintered and had multiple tillers but did not occur where ryegrass was treated in the fall and had only one tiller. Tank mix antagonism with Achieve and Hoelon have been observed in previous studies.

RESULTS: Wheat Injury

Visual ratings made in mid April indicated that mixing Harmony Extra with either Discover or Osprey increased injury by 10 to 13 % compared with the non-treated check.

RESULTS: Wheat Yield

Due to the heavy ryegrass pressure, wheat yield in the non-treated check was only 32.2 bu/A. At least 73.2 bu/A was observed where Achieve, Discover, Hoelon, or Osprey were applied alone. However, Everest treated plots had only 18.8 bu/A. The reduction in ryegrass control by mixing Harmony Extra with Achieve resulted in a yield loss of 7.7 bu/A.

SUMMARY

TABLE 2. ITALIAN RYEGRASS AND BROADLEAF WEED CONTROL WITH POSTEMERGENCE GRASS HERBICIDES COMBINED WITH HARMONY EXTRA (UKREC 2003)								
Chemicals	Rate	Wheat		Study No 1				Study No 2
		Injury %	Yield Bu/A	Control %	Seed heads per ft ²	Henbit Control %	Chickweed Control %	Ryegrass Control %
		19-Apr	20-Jun	19-Jun	29-May	19-Apr	19-Apr	3-May
Achieve	9.5 oz/A	0	93.2	77	5	0	0	77
Supercharge	0.50%							
Achieve	9.5 oz/A	13	55.5	43	14	82	82	40
Harmony Extra	0.5 oz/A							
Discover	4 oz/A	0	96.8	83	4	0	0	98
DSV Adjuvant	1%							
Discover	4 oz/A	13	92.2	87	4	96	96	90
Harmony Extra	0.5 oz/A							
DSV Adjuvant	1%							
Everest	0.61 oz/A	3	58.8	53	20	50	56	30
Activator 90	0.25%							
Everest	0.61 oz/A	3	73.5	63	10	97	97	53
Harmony Extra	0.5 oz/A							
Activator 90	0.25%							
Osprey	0.29 oz/A	0	100.3	83	5	63	65	93
Destiny	1.5 pt/A							
Osprey	0.29 oz/A	10	94.9	83	4	98	100	95
Harmony Extra	0.5 oz/A							
Destiny	1.5 pt/A							
Hoelon	2 pt/A	7	99.9	92	2	0	0	92
Harmony Extra	0.5 oz/A							
Hoelon	2 pt/A	7	97	92	3	98	78	77
Harmony Extra	0.5 oz/A							
Harmony Extra	0.5 oz/A	0	32.3	10	10	97	67	0
Surfactant	0.25%							
Nontreated Check		0	32.2	0	11	0	0	10
LSD		9	18.8	16	4	40	48	14

Study No 1: 10/18/02: Planted Pioneer 2552 (Stand 34 plants/ft²)
 12/14/02 Applied treatments. Wheat 2 tillers 3 inches,
 Ryegrass 1 tiller 2 inches

Study No 2: Fallow no wheat
 Applied 3/14/03
 Ryegrass 1-9 tillers (Avg 4 tillers)

