

2008 Spring Seeding Study

Christopher Blume, research associate
Nick Christians, university professor
Department of Horticulture

Introduction

The objectives of this study were to determine if mesotrione (Tenacity) is safe to apply at the time of spring seeding, to determine if mesotrione is safe to apply after the first mowing, and to evaluate the weed control.

Materials and Methods

This study was conducted at the Iowa State University Horticulture Research Station, Ames, IA, on a freshly prepared seed bed. The soil is a disturbed Nicollet clay-loam soil, with a pH of 7.1, 3.6% organic matter, 120 ppm K, and 18 ppm P. Plots were arranged in a split-plot randomized complete block design with four replications.

Main plots were the individual treatments (Table 1), and subplots were perennial ryegrass and Kentucky bluegrass. Catalina II perennial ryegrass was seeded at a rate of 4 lb pure live seed (PLS)/1000ft², and Unique Kentucky bluegrass was seeded at a rate of 1 lb PLS/1000ft². Plots were seeded on May 19, 2008.

Initial treatments were applied May 19, and the entire study was mown and the second application was made July 3. Treatments were applied using a CO₂ backpack sprayer at 40 psi and at a spray volume equivalent to 3 gallons/1000 ft².

Results and Discussion

All of the seeded ryegrass plots that received herbicide treatments had higher percentage ryegrass cover than the untreated control at the end of the season (Table 2). On the last rating date, plots treated with the highest rates of

mesotrione, both the single application and repeat application (treatments 4 and 7), had a higher percentage cover of ryegrass than plots treated with siduron. All other plots receiving herbicide treatments did not differ from each other on the last rating date.

All of the seeded bluegrass plots that received herbicide treatments had higher percentage bluegrass cover than the untreated control at the end of the season (Table 3). At the last rating date, plots treated with the lowest rate of mesotrione as a single preemergence application (treatment 2 – 175 gai/ha) had less bluegrass cover than all other herbicide treatments, with the exception of the second-lowest rate of mesotrione (treatment 3 – 210 gai/ha). All other herbicide-treated plots did not differ from each other.

Following the second application of mesotrione, after the first mowing, there was some slight phytotoxicity to the perennial ryegrass (Table 4).

The first three weed rating dates (June 2, 14, and 20) indicate that all plots receiving herbicide treatments had less weed populations than the untreated controls (Table 5). The first three weed ratings took into account all weed species in the plots. The last rating date for weed populations indicate no difference in purslane cover for plots receiving treatments. All herbicide treated plots had more purslane cover than the control, most likely due to the high population of crabgrass in the untreated control. All plots receiving herbicide treatments had less crabgrass than the untreated controls at the end of the season. Barnyard grass counts revealed no difference among main plots.

Table 1. Treatment list and application timing for spring seeding study.

Treatment	Product	Form. conc.	Form. conc. unit	Product/AI rate	Product /AI rate unit	Application date
1	Control					
2	Mesotrione NIS	480	GA/L	175 0.25	GA/HA %V/V	5/19
3	Mesotrione NIS	480	GA/L	210 0.25	GA/HA %V/V	5/19
4	Mesotrione NIS	480	GA/L	280 0.25	GA/HA %V/V	5/19
5	Siduron			6700	GA/HA	5/19
6	Mesotrione NIS	480	GA/L	175 0.25	GA/HA %V/V	5/19
	Mesotrione NIS	480	GA/L	175 0.25	GA/HA %V/V	7/3
7	Mesotrione NIS	480	GA/L	210 0.25	GA/HA %V/V	5/19
	Mesotrione NIS	480		210 0.25	GA/HA %V/V	7/3

Table 2. Percentage cover of perennial ryegrass for spring seeding study.

Treatment	June 2	June 14	June 20	July 3	July 19	Oct 10
1	28.8	51.3	58.8	81.3	76.3	66.3
2	28.8	45.0	58.8	82.5	87.5	91.3
3	30.0	46.3	57.5	80.0	87.5	91.3
4	28.8	50.0	65.0	91.3	88.8	93.8
5	20.0	37.5	51.3	77.5	86.3	87.5
6	30.0	43.8	55.0	78.8	88.8	90.0
7	28.8	41.3	53.8	78.8	87.5	92.5
LSD	4.5	11.0	14.7	NS	7.2	4.9

Table 3. Percentage cover of Kentucky bluegrass for spring seeding study.

Treatment	June 2	June 14	June 20	July 3	July 19	Oct 10
1	2.5	3.3	4.0	2.0	1.0	6.3
2	4.3	5.0	11.3	33.8	50.0	60.0
3	5.3	8.8	12.5	43.8	60.0	68.8
4	5.8	8.8	12.5	42.5	62.5	75.0
5	5.3	8.0	16.3	48.8	63.8	73.8
6	5.0	8.0	13.0	42.5	62.5	73.8
7	5.0	5.8	10.0	36.3	56.3	73.8
LSD	1.3	4.1	7.7	15.4	12.3	10.4

**Table 4. Phytotoxicity ratings following second application
(9 = no damage; 1 = worst damage; 6 = minimum acceptable).**

Treatment	July 19
1	9.0
2	9.0
3	9.0
4	9.0
5	9.0
6	8.0
7	8.0
LSD	0.0

Table 5. Weed data for spring seeding study.

Treatment	Percentage cover of weeds [¶]			Purslane [§]		Crabgrass [§]		Barnyard grass [‡]	
	June 2	June 14	June 20	July 3	July 19	July 3	July 19	July 3	July 19
1	0.0	16.3	32.5	6.3	3.0	47.5	62.5	2.5	6.3
2	0.0	0.0	3.3	16.3	26.3	3.3	6.3	3.8	8.3
3	0.0	0.3	3.0	18.8	18.8	1.3	4.5	5.5	17.0
4	0.0	0.0	1.8	8.8	18.8	1.0	3.3	1.5	4.0
5	0.0	0.0	1.3	8.8	25.0	1.0	7.3	0.8	3.8
6	0.0	0.0	2.8	17.5	25.0	2.5	3.3	3.0	4.3
7	0.0	0.0	2.0	18.8	23.8	2.8	4.0	2.3	3.3
LSD	0.0	5.8	6.9	6.0	8.4	2.2	6.4	NS	NS

[¶]Percentage cover of all weeds in plot; untreated controls contained mostly crabgrass – treated plots contained mostly purslane.

[§]Ratings are percentage cover.

[‡]Ratings are counts of plants in plot.