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Mesotrione: Program for Bentgrass Removal and Overseeding – Fall Timing—2007

Christopher J. Blume and Nick E. Christians

Iowa State University

Objectives:

The objectives of the 2007 Mesotrione: Program for Bentgrass Removal and Overseeding study were to determine if mesotrione will eliminate bentgrass when multiple applications are made, if turf can be overseeded while selectively removing bentgrass from a stand of turf, and if applications are best when made prior to seeding or after turf emergence.

Materials:

The study was conducted on an old stand of mixed cultivars of Kentucky bluegrass adjacent to a fairway height creeping bentgrass area. The creeping bentgrass had grown into the bluegrass area over the past 10 years. The study was arranged in a randomized complete block design. The site is a disturbed Nicollet clay soil, with a pH of 7.35, 4.2% organic matter, 134 ppm K, and 7 ppm P.

The first treatment (Table 1) was applied 6 July and the second treatment applied 28 July. Before the third application was made, the study area was core aerified, verticut, seeded to 'Unique' Kentucky bluegrass (2 lb/1000ft²), and verticut again. The third application was made immediately following the seeding on 17 August. The fourth application was made 12 September and the fifth and final application was made 8 October.

Plots were rated on percentage cover of creeping bentgrass and Kentucky bluegrass at several dates throughout the study period (Tables 4 and 5). Phytotoxicity to both the bluegrass and bentgrass, and percentage control of creeping bentgrass versus the non-treated control plot were also evaluated (Tables 2 and 3).

Results:

Phytotoxicity observed on the bluegrass was negligible, and was only observed during the month of August (Table 2). Phytotoxicity ratings to the bentgrass can be observed in Table 3. The phytotoxicity ratings for the bentgrass are representative of the degree of which the bentgrass is bleached, and on the level of necrosis on the bentgrass tissue.

All treatments provided a reduction in bentgrass percentages and an increase in Kentucky bluegrass (Tables 4 and 5). While there were numeric improvements in creeping bentgrass reduction with multiple applications of mesotrione late in the season, these differences were not statistically significant. Treatment 2 with mesotrione applied at 2 ounces active ingredient (a.i.)/acre 3 weeks before seeding, at seeding and at the first mowing was as effective as the treatments that included more mesotrione in later applications. There was no additional control of bentgrass observed when mesotrione levels were increased to 2.5 ounces a.i./acres (Treatment 3).

It was observed that the process of verticutting during the establishment process appeared to improve the effectiveness of the mesotrione. Further work to evaluate the application of mesotrione with and without verticutting may be useful.

Table 1. Treatment list for bentgrass removal study—2007

Treatment	Chemical	Form. Conc.	Form. Conc. Unit	Converted Rate	Converted Rate Unit	ml per 25 ft ²	Timing	Date of application
1	---	---	---	---	---	---	---	---
2	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	3 weeks prior to seeding	28 July
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at seeding	17 August
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at first mowing	12 Sept.
3	Mesotrione 4SC	480	GA/L	2.5	OZA/A	0.08	3 weeks prior to seeding	28 July
	Mesotrione 4SC	480	GA/L	2.5	OZA/A	0.08	at seeding	17 August
	Mesotrione 4SC	480	GA/L	2.5	OZA/A	0.08	at first mowing	12 Sept.
4	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	3 weeks prior to seeding	28 July
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at seeding	17 August
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at first mowing	12 Sept.
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	3 weeks after mowing	8 Oct.
5	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	6 weeks prior to seeding	6 July
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	3 weeks prior to seeding	28 July
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at seeding	17 August
	Mesotrione 4SC	480	GA/L	2	OZA/A	0.07	at first mowing	12 Sept.

GA/L = grams active ingredient/liter, OZA = ounces active ingredient/acre

Table 2. Phyto to blue (9 = no damage, 1 = worst/dead)

Treatment	14-Jul	20-Jul	27-Jul	3-Aug	6-Aug	25-Aug	21-Sep	15-Oct	19-Oct	24-Oct	27-Oct	19-Nov
1	9a*	9a	9a	9a	9a	9a	9a	9a	9a	9a	9a	9a
2	9a	9a	9a	9a	9a	8b	9a	9a	9a	9a	9a	9a
3	9a	9a	9a	9a	9a	8b	9a	9a	9a	9a	9a	9a
4	9a	9a	9a	8.75a	8.75a	8b	9a	9a	9a	9a	9a	9a
5	9a	9a	9a	8.75a	8.75a	8b	9a	9a	9a	9a	9a	9a

*Means followed by the same letter are not different at $P \geq 0.05$

Table 3. Phyto to bent (9 = no damage, 1 = worst/dead)

Treatment	14-Jul	20-Jul	27-Jul	3-Aug	6-Aug	25-Aug	21-Sep	15-Oct	19-Oct	24-Oct	27-Oct	19-Nov
1	9a	9a	9a	9a	9a	9a	9a	9a	9a	9a	9a	9a
2	9a	9a	9a	4b	3b	3b	4b	4b	9a	9a	9a	9a
3	9a	9a	9a	4b	3b	3b	4b	4b	9a	9a	9a	9a
4	9a	9a	9a	4b	3b	3b	4b	4b	6b	5b	4b	3b
5	4b	3a	5.25b	3c	2c	3b	4b	4b	9a	9a	9a	9a

*Means followed by the same letter are not different at $P \geq 0.05$

Treatment	30-Jun	20-Jul	17-Aug	12-Sep	4-Oct	9-May (08)
1	61.3a	61.3a	72.5a	73.8a	68.8a	68.8a
2	55.0a	55.0a	55.0ab	25.0bc	20.0b	10.8bc
3	74.8a	74.8a	66.3a	35.0b	25.0b	14.0b
4	49.0a	49.0a	47.5b	21.3bc	20.0b	2.3c
5	71.8a	63.8a	40.0b	13.8c	14.0b	5.0bc

*Means followed by the same letter are not different at $P \geq 0.05$

Treatment	30-Jun	20-Jul	17-Aug	12-Sep	4-Oct	9-May (08)
1	38.8a	38.8a	27.5b	26.3c	31.3b	31.3c
2	45.0a	45.0a	45.0ab	75.0ab	80.0a	89.3ab
3	25.3a	25.3a	33.8b	65.0b	75.0a	86.0b
4	51.0a	51.0a	52.5a	78.8ab	80.0a	97.8a
5	28.3a	36.3a	60.0a	86.3a	86.0a	95.0ab

*Means followed by the same letter are not different at $P \geq 0.05$