2007 Evaluation of One and Two Fall Applications of Various Herbicides for the Control of English Daisy (*Bellis perennis*) in Lawns

Oregon State University

Preliminary Report

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February 28, 2008

Purpose

The purpose of this trial is to evaluate one and two applications of various herbicides for the control of English Daisy (*Bellis perennis*) growing in lawns.

Materials & Methods

The trial was initiated on October 12, 2007 and a second application was made 21 days later on November 2, 2007. The site was located on Oak Knoll Golf Course 10 miles west of Salem, Oregon on Highway 22. Oak Knoll is a low cost golf course with a very small maintenance budget. No irrigation or herbicide applications are usually made in rough areas which has resulted in high weed populations.

The trial site was located in a rough area and the plots were adjacent to a similar trial that was conducted in the spring of 2007. Before the spring trial was conducted the site had not been fertilized or irrigated in many years. The primary turf species present was bentgrass with varying populations of rattail fescue (*Vulpia myorus*), a recurring annual, along with some tall fescue, velvet grass (*Holcus lanatus*), and annual bluegrass.

During the course of the spring trial, 3 pounds of nitrogen per 1,000 square feet was applied using Anderson's 23-2-10 PCSCU, and the site was irrigated using a portable sprinkler attached to a quick coupler from an adjacent green. The site was mowed weekly with a 21 inch Snapper lawn mower at 2 ½ inches.

The site had received ample rain before the fall trial was started. Two pounds of nitrogen per 1,000 square feet from a methylene urea based fertilizer (UAP - Signature) was applied on October 26th. No irrigation was applied during the course of the fall trial because of adequate rainfall.

The trial was organized in a randomized complete block design with three replications,

And the individual plots measured 25 square feet (5 X 5). The products were applied with a CO_2 – powered plot sprayer with a 5-foot boom and TeeJet 80015 nozzles applying 1 gallon of solution per 1,000 square feet.

Percent weed cover ratings were taken at the onset of the trial and again on November 9th and 27th, December 10th and 21st, and on January 18th. Percent weed control numbers were calculated as follows:

((Beginning Weed Cover – Ending Weed Cover)/Beginning Weed Cover X 100).

Weed injury ratings were made from 1 – 9 (1 being no injury) on October 26th, November 9th, and 27th, and December 10th.

Percent weed control and injury data were subjected to analysis of variance using a randomized complete block design with 3 replications. Differences between means were determined by LSD at the 5% level

Treatments

				# of
Trt #	**Treatment**	**Rate**	**units**	**Apps**
1	**Check**	**na**	**na**	**na**
2	**Exp 1 + X-77**	**0.010**	**lbs ai/A**	**1**
3	**Exp 1 + X-77**	**0.020**	**lbs ai/A**	**1**
4	**Exp 1 + MSO**	**0.020**	**lbs ai/A**	**1**
5	**Exp 1 + X-77**	**0.010**	**lbs ai/A**	**2**
6	**Exp 1 + X-77**	**0.020**	**lbs ai/A**	**2**
7	**Exp 1 + MSO***	**0.020**	**lbs ai/A**	**2**
8	**EF1343**	**0.013**	**lbs ai/A**	**2**
9	**Confront + X-77**	**2.0**	**pts/A**	**2**
10	**Drive 75 DF + MSO***	**1.0**	**lb PR/A**	**2**
11	**SpeedZone**	**5.0**	**pts/A**	**2**
12	**Q4**	**8.0**	**pts/A**	**2**

- MSO = methylated seed oil
- Second application made 21 days after the first

Results

Weed Control

As of 14 weeks after treatment, all the treatments, with the exception of treatment 3, provided statistically the same control which was above 95.5%. Six of the treatments provided above 99 % control which included treatments 5, 6, 7, 9, 10, and 12.

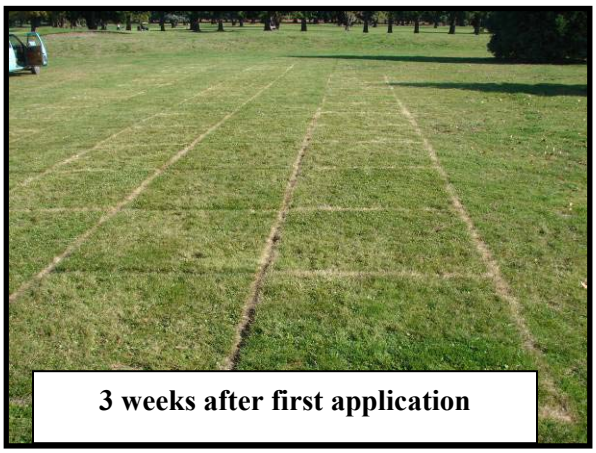
The lowest control came from treatments 2, 3, and 4 which were only applied once.

Speed of Weed Injury

Q4 and SpeedZone were the quickest to show injury in this trial both rating 3.7 two weeks after treatment. At 4 weeks after treatment, Q4 rated 7.0 and SpeedZone rated 6.0. Confront + X-77 and Drive + MSO rated 5.3 and 5.0 respectively. After 6 weeks (note 2nd application (Trts 5 through 12) was made 3 weeks after the first treatment) almost all of the treatments rated 7.0 or higher with Q4, SpeedZone, and Confront + X-77 rating 8.5, 8.5 and 8.3 respectively. At 8 weeks after treatment, all treatments rated 8.3 or higher.

Turf Injury

It is common for herbicide applications to affect turf color slightly. Often times this decrease in color is caused by the weeds turning yellow and then brown which causes the whole plot to look less green as the eye does not differentiate between the green turf color and the off-color of the weeds. This phenomenon is more apparent when weed densities are high.



3 weeks after first application

4 weeks after first application

However, in this trial, the experimental products did produce some turf injury as seen in photo (above right) and in the data shown in Table 3. In the photo, above right, the first plot on the bottom right is the untreated check, followed by treatments 2, 3, 4, 5, etc. A one point reduction (e.g. from 7 to 6) in turf color is typical from an herbicide application. However, in this trial, we see a reduction of 3 points on treatments 5, 6, and

7. All of these treatments were applied twice. Additionally, treatments 2, 3, and 4, which were only applied once, had a turf color rating 2 points below the check.

Treatments 2, 3, & 4 regained their color by December 21st, and treatment 5, 6, & 7 regained their color one month later.

Table 1: Weed Injury Ratings 1 - 9; 1 = no injury

Trt #	Treatment	Rate	units	# of Apps	Weed Injury Ratings 2 WAT 10/26/07	4 WAT 11/9/07	6 WAT 11/27/07	8 WAT 12/10/07
1	Check	na	na	na	1.0	1.0	1.0	1.0
2	Exp 1 + X-77	0.010	lbs ai/A	1	1.0	3.0	7.0	8.3
3	Exp 1 + X-77	0.020	lbs ai/A	1	1.0	3.3	7.0	8.5
4	Exp 1 + MSO	0.020	lbs ai/A	1	1.0	3.2	7.3	8.5
5	Exp 1 + X-77	0.010	lbs ai/A	2*	1.0	3.3	6.5	8.5
6	Exp 1 + X-77	0.020	lbs ai/A	2*	1.0	3.3	7.2	8.5
7	Exp 1 + MSO	0.020	lbs ai/A	2*	1.0	3.3	7.7	8.5
8	EF1343	0.013	lbs ai/A	2*	1.0	3.7	7.7	8.5
9	Confront + X-77	2.0	pts/A	2*	2.3	5.3	8.3	8.5
10	Drive 75 DF + MSO	1.0	lb PR/A	2*	2.0	5.0	7.8	8.5
11	SpeedZone	5.0	pts/A	2*	3.7	6.0	8.5	8.5
12	Q4	8.0	pts/A	2*	3.7	7.0	8.5	8.8
			LSD @ .05		**0.5**	**0.8**	**1.5**	**0.2**

Second application made 21 days after the first application.

Table 2: Percent Weed Control

Trt #	Treatment	Rate	units	# of Apps	Percent Weed Control 4 WAT 11/9/07	6 WAT 11/27/07	8 WAT 12/10/07	10 WAT 12/21/07	14 WAT 1/18/08
1	Check	na	na	na	0.0%	0.0%	0.0%	0.0%	0.0%
2	Exp 1 + X-77	0.010	lbs ai/A	1	0.0%	85.5%	96.0%	95.5%	95.5%
3	Exp 1 + X-77	0.020	lbs ai/A	1	0.0%	73.3%	93.2%	86.7%	93.3%
4	Exp 1 + MSO	0.020	lbs ai/A	1	0.0%	87.2%	96.3%	94.3%	95.8%
5	Exp 1 + X-77	0.010	lbs ai/A	2*	0.0%	81.0%	95.4%	95.3%	99.7%
6	Exp 1 + X-77	0.020	lbs ai/A	2*	0.0%	59.4%	96.5%	96.1%	99.7%
7	Exp 1 + MSO	0.020	lbs ai/A	2*	0.0%	84.3%	95.0%	95.9%	99.2%
8	EF1343	0.013	lbs ai/A	2*	0.0%	89.8%	95.5%	96.0%	97.9%
9	Confront + X-77	2.0	pts/A	2*	0.0%	65.5%	80.9%	96.8%	100.0%
10	Drive 75 DF + MSO	1.0	lb PR/A	2*	0.0%	76.8%	96.3%	96.9%	100.0%
11	SpeedZone	5.0	pts/A	2*	16.7%	97.6%	98.0%	98.4%	97.9%
12	Q4	8.0	pts/A	2*	44.4%	97.0%	99.5%	100.0%	99.5%
			LSD @ .05		**13.2**	**24.6**	**10.8**	**7.3**	**6.0**

*Second application made 21 days after the first application.

Table 3: Plot Color 1 – 9; 9 = dark green

(Note: Second application made on 11/2/07)

Trt #	Treatment	Rate	units	# of Apps	4 WAT 11/9/07
1	Check	na	na	na	7.0
2	Exp 1 + X-77	0.010	lbs ai/A	1	5.0
3	Exp 1 + X-77	0.020	lbs ai/A	1	4.7
4	Exp 1 + MSO	0.020	lbs ai/A	1	5.0
5	Exp 1 + X-77	0.010	lbs ai/A	2*	4.3
6	Exp 1 + X-77	0.020	lbs ai/A	2*	4.0
7	Exp 1 + MSO	0.020	lbs ai/A	2*	4.0
8	EF1343	0.013	lbs ai/A	2*	5.7
9	Confront + X-77	2.0	pts/A	2*	6.0
10	Drive 75 DF + MSO	1.0	lb PR/A	2*	6.0
11	SpeedZone	5.0	pts/A	2*	6.0
12	Q4	8.0	pts/A	2*	5.7
			LSD @ .05		0.6

*Second application made 21 days after the first application (11-2-07).