Interval Protocol Efficacy of Canadian Bioherbicide Against Dandelions and Other Broadleaf Weeds

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Introduction:

The objective of this study was to establish the optimum interval between two applications of the Canadian Bioherbicide for maximum control against broadleaf weeds in established "Park" Kentucky bluegrass turf. This trial was located at the Iowa State University research station near Gilbert, Iowa.

Materials and Methods:

This study was conducted as a randomized complete block design with 4 replications. There were 8 different treatments in this study including the control (Table 1). The 6 Bioherbicide treatments all had the same rate with different intervals between the treatments. The first application took place on the same day for all of the treatments, May 31. After the first application, the following applications were made in weeks 1-6 following the first date. The dates of the second treatment are treatment 1-Jun7, treatment 2-Jun 14, treatment 3-Jun 21, treatment 4-Jun 28, treatment 5-Jul 5, and treatment 6 Jul 12. Treatment number 7 was treated with Weed-B-Gon on May 31, and treatment number 8 was an untreated control (Table 1). Application of the Bioherbicide product was made with a shaker box.

The original protocol called for treatments at 6 and 8 week intervals (treatments 5 and 6). Due to an error in interpretation, these were made at 5 and 6 weeks after the first treatment, as is reflected in table 1.

Pre-counts of weeds were made before the first application (Table 2 and 3). Count of dandelion and clover percentage was taken on biweekly intervals throughout the season. Injury ratings were taken 2 week intervals after the first treatment. Weed damage was based on a scale of 5 to 0 with 0 being no injury to weeds and 5 being all weeds dead.

Results:

Weed-B-Gon provided the best weed control throughout the study. The early repeated treatments of the bioherbicide initially reduced dandelion counts as compared to the control. This generally lasted approximately 4 to 6 weeks, at which time the dandelions recovered. The wider treatment intervals of 6 weeks provided the best reduction of dandelion throughout the 18 weeks of the trial, however, at no time did this treatment completely eliminate dandelions. Plots treated with Weed-B-Gon had reduced dandelion numbers up to the 16th week of the trial. This product completely eliminated dandelion in weeds 4 and 6, but some dandelions returned in later weeks.

Clover was quite variable through the study period and nearly disappeared in mid summer during the high stress, dry period, even though the area was irrigated. There was a significant effect of treatment on clover percentage throughout the study period.

There was no phytotoxicity observed on the bluegrass at any time during the study. Weed injury was greatest from the Weed-B-Gon, as would be expected. The bioherbicide generally had a detrimental effect on weeds for 3 to 4 weeks after treatment.

Table 1 Treatment No., Formulation, Treatment, and Rate of Product						
Trt. No.	Formulation	Treatment	Hplc/100mg	Hplc/m2	g product/m2	g/9ft2
1	S 12643	2 apps 1 wk apart	20	12800	64	53.5
2	S 12643	2 apps 2 wks apart	20	12800	64	53.5
3	S 12643	2 apps 3 wks apart	20	12800	64	53.5
4	S 12643	2 apps 4 wks apar	20	12800	64	53.5
5	S 12643	2 aps 5 wks apart	20	12800	64	53.5
6	S 12643	2 aps 6 wks apart	20	12800	64	53.5
7	Weed-B-Gon					
8	Untreated					

Table 2. Count of Dandelion over the 20 weeks that data were taken										
	Pre-Count	2 WAT	4 WAT	6 WAT	8 WAT	10 WAT	12 WAT	14 WAT	16 WAT	18 WAT
1	31	28	13	14	29	31	20	38	26	30
2	33	28	6	6	15	24	30	29	28	26
3	38	29	20	7	18	26	22	29	32	34
4	31	26	12	9	11	17	23	24	20	27
5	34	34	24	22	10	23	25	28	36	29
6	27	21	14	15	6	8	15	14	15	17
7	41	1	0	0	1	5	8	8	14	13
8	31	28	26	21	28	24	28	26	33	29
LSD	NS	15	6	10	12	NS	12	15	14	NS

Table 3. Percent Clover over the 20 weeks that data were taken

	Pre-Count	2 WAT	4 WAT	6 WAT	8 WAT	10 WAT	12 WAT	14 WAT	16 WAT	18 WAT
1	9	11	6	6	0	1	2	1	1	1
2	5	6	1	1	0	1	1	1	0	0
3	14	10	9	6	1	1	1	1	1	0
4	6	5	6	9	0	2	2	1	1	1
5	13	9	10	20	1	1	2	1	1	1
6	6	5	3	11	4	2	2	1	1	0
7	10	0	0	0	0	0	0	0	0	0
8	6	9	11	23	5	14	7	5	4	8
LSD	NS	5	NS	9	3	5	3	1	1	3

Table 4. Weed Injury over the 18 weeks that data were taken

	2 WAT	4 WAT	6 WAT	8 WAT	10 WAT	12 WAT	14 WAT	16 WAT	18 WAT
1	3	3	1	1	1	0	1	1	0
2	3	4	3	1	1	0	1	1	1
3	3	3	3	1	1	0	1	1	0
4	3	2	4	2	1	0	1	1	1
5	3	2	3	2	1	0	1	1	1
6	3	2	1	4	1	0	2	2	3
7	5	5	5	0	0	0	1	1	0
8	0	0	0	1	1	0	1	0	0
LSD	NS	1	1	1	NS	NS	NS	1	1