Stop #15

Preemergence Control of Annual Bluegrass

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For the Michigan golf course superintendent, controlling weeds is not a difficult problem. Annual bluegrass though is probably the most difficult weed to control. Several strategies exist for annual bluegrass control and given time may be successful. Once the annual bluegrass has been controlled the next step is to prevent reinvasion of the annual bluegrass. Preemergence control of annual bluegrass germination is a possible approach to preventing reinvasion, but as of yet has not been used or researched extensively.

Last fall a study was initiated to evaluate preemergence control of annual bluegrass and, if possible, begin developing a preemergence control strategy for annual bluegrass. Six commercial and one experimental preemergence herbicides were chosen to be evaluated. Evaluations were done by counting the number of germinants in six, 11.4 cm^2 observation circles within the plot area. Only three circles were used during an evaluation, and the remaining three were used in the next evaluation. This gave the mean of germinants per plot. The treated plots were then compared to the check plots to give a percent control. Each evaluation was done every two weeks. After counting, the circles where sprayed with Roundup to kill any germinants present. The last evaluation taken on 11/5 showed all plots had 100% control which indicated that germination of annual bluegrass had ceased.

Treatments applied in the fall gave us excellent control of annual bluegrass when compared to the check plots (Table 1). The two evaluations taken in October showed significantly more control in the treated plots from the check plots.

The spring treatments were applied to increase preemergence activity during the heavy germination of annual bluegrass which occurs in the spring. Unfortunately there was germination of annual bluegrass before the spring application was applied. Carry-over of the fall application was still evident in the evaluation taken at the time of the spring application. The low rates of Pre-M and Balan were not significantly different than the check plots however, all other treatments had significantly less annual bluegrass than the check plots. Ronstar 2G at 4 lbs AI/A, Dimension 0.25 G at 0.38 lb AI/A, and prodiamine 65 WDG at both rates tested were the only treatments to provide significant (>80%) control in the early spring from the fall applications.

Spring treatments gave excellent control on the 5/30 evaluation with Lescosan being the only exception. On the 6/17 evaluation, almost ten weeks after application, all herbicides applied at high rates were still giving good control with Dimension(EC) and Balan being the only exception. Pre-M and Balan applied at low rates allowed significant germination. The 7/1 evaluation showed that all herbicides had germination with no significant difference from the control plots. The spring application was applied on 4/12 and gave almost 12 weeks of annual bluegrass germination control. The first evaluation after the spring application taken on 5/10 had no germination in any of the treatments including the control plots. The explanation for this is that the weeks following the spring application and prior to the 5/10 evaluation were cool, dry and not conducive to annual bluegrass germination.

Success in controlling annual bluegrass germination requires knowledge of when germination occurs. Besides evaluating preemergence herbicides for control of annual bluegrass germination, this study also examined the fluctuations in annual bluegrass germination with time (Fig. 1). A marked increase in annual bluegrass germination occurs during the spring which declines to near zero during the summer. Spring weather is warm and the soil is relatively moist, not easily dried out, and gradually increasing in temperature. Summers tend to be hot and the soil can dry out quickly even when irrigated and is probably not the best environment for germination. This may explain why annual bluegrass germination declines during the summer.

Preemergence control of annual bluegrass appears to be a possible approach to control annual bluegrass. The benefits of preemergence control for the superintendent could be important. If you have just renovated your fairways or are in a conversion program, the control of seed within the soil will be important. If the fairway(s) were predominantly annual bluegrass then large quantities of seed will remain viable in the soil for several years. Control of germination would be an excellent method to prevent reinvasion of annual bluegrass.

Table 1.

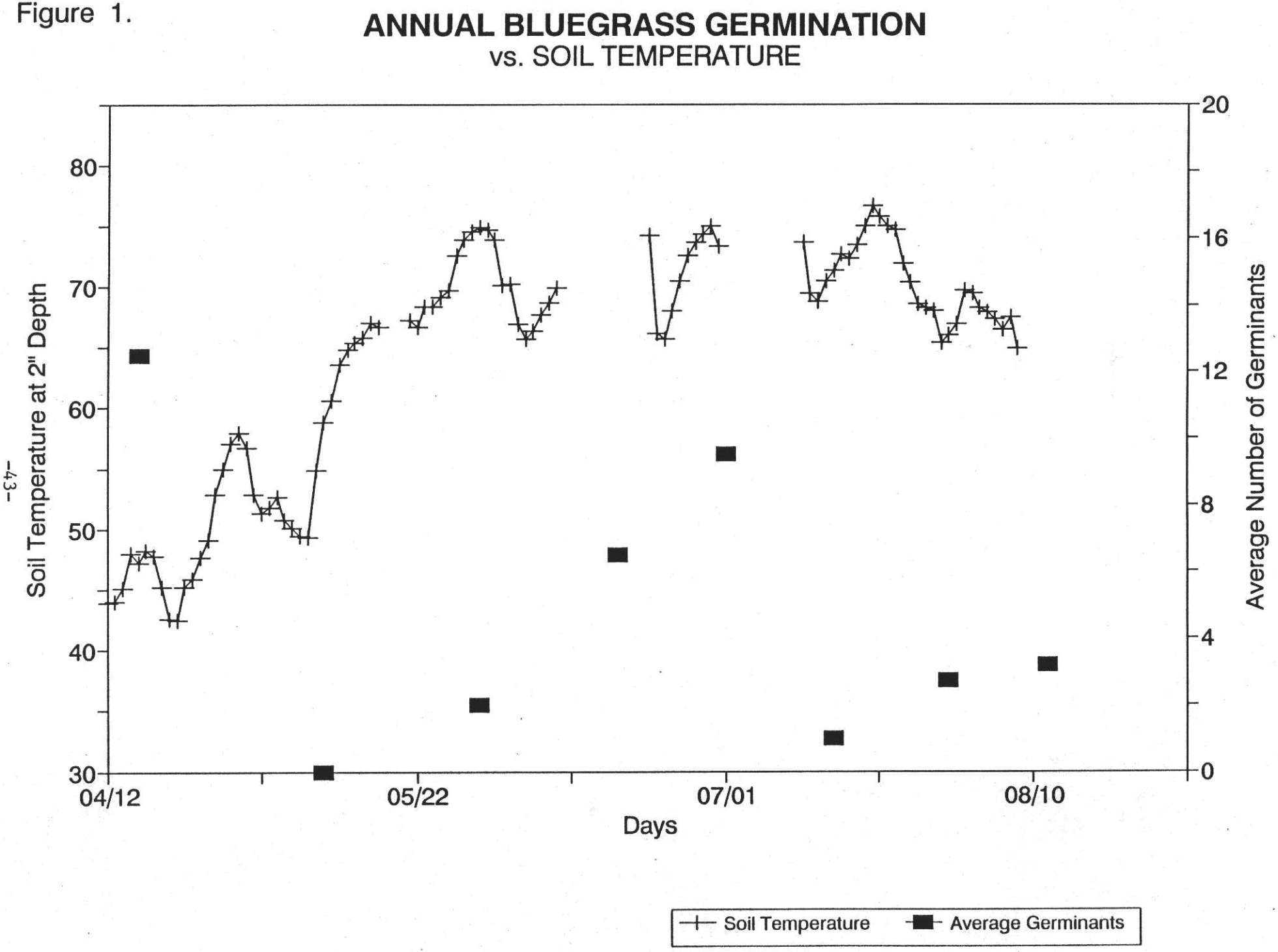
ANNUAL BLUEGRASS PREEMERGENCE TRIAL
PERCENT CONTROL

		FORMULATION		RATE lbs AI/A	FALL TREATMENTS[+]				SPRING TREATMENTS[++]			
					10/6	10/22	11/5	4/16	5/10	5/30	6/17	7/1
1	Control				0	0	100	0	100	0	0	0
2	Ronstar	2	G	2.0	94	100	100	79	100	90	77	20
3	Ronstar	2	G	4.0	100	100	100	98	100	94	67	57
4	Pre-M	60	WDG	2.0	100	94	100	24	100	88	40	21
5	Pre-M	60	WDG	3.0	100	100	100	68	100	100	57	14
6	Dimension	0.25	G	0.25	98	89	100	67	100	67	55	29
7	Dimension	0.25	G	0.38	98	97	100	86	100	100	90	58
8	Dimension	1	EC	0.38	100	99	100	56	100	100	50	58
9	Dimension	1	EC	0.50	100	100	100	62	100	100	33	13
10	Balan	2.5	G	2.0	93	83	100	34	100	67	28	22
11	Balan	2.5	G	3.0	100	100	100	60	100	80	35	30
12	prodiamine	65	WDG	0.50	100	100	100	82	100	100	82	55
13	prodiamine	65	WDG	0.75	100	100	100	85	100	94	50	40
14	Lescosan	4	EC	12.5	100	100	100	73	100	37	76	64
15	Dacthal	75	WP	10.5	100	100	100	61	100	95	58	50
16	Dacthal	75	WP	15.0	100	100	100	56	100	81	61	45
		LSD	(P=0.05)		10	22	NS	35	NS	38	41	NS

[+] - 9-11-91 Date of Fall Application

[++] - 4-12-91 Date of Spring Application

Figure 1.


ANNUAL BLUEGRASS GERMINATION
vs. SOIL TEMPERATURE
Soil Temperature at 2" Depth
Average Number of Germinants
80
70
60
50
40
30
20
16
12
8
4
0
04/12
05/22
07/01
08/10
Days
Soil Temperature
Average Germinants