IRRIGATION AND FERTILITY EFFECTS ON HELMINTHOSPORIUM MELTING-OUT AND DOLLARSPOT

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HELMINTHOSPORIUM MELTING-OUT FERTILITY TIMING STUDY

Fertility application timing studies were conducted at the Hancock Turfgrass Research Center in 1983 and 1984 on Kenblue Kentucky Bluegrass maintained at 1 1/2" height cut. Urea treatments were applied foliarly with a CO_2 small plot sprayer.

The first study was begun Fall of 1982 with rates and dates as listed in Table 1. Disease ratings were taken June 14, 1983 with results as listed in Table 1.

The study was repeated in 1984 to further test the hypothesis that application of fertilizer dormantly and in the spring will significantly reduce the severity of Helminthosporium melting-out. Treatments were applied as described above and dates and rates are outlined in Tables 2 and 3.

Discussion

These two studies show significantly lower Helminthosporium melting-out development at moderate levels of dormant and spring fertility. Based on these findings a dormant application followed by 2 spring applications of 3/4 lb to 1 lb N should provide best preventive management of Helminthosporium melting-out.

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Two studies were conducted at the Hancock Turf Research Center to test the effects of different irrigation practices on disease development. One study was established on Adelphi Kentucky Bluegrass (*Poa protensis*) primarily to test for differences in Helminthosporium Melting-out (*Drechslera poae*) development between daily irrigated and less frequently irrigated areas.

The second study was established on an annual bluegrass (*Poa annua*) simulated fairway area, to test for differential dollarspot development (*Lanzia* and *Moellerodiscus* spp.) under three different irrigation regimes.

Ten chemical treatments, including five rates of Aqua-Gro-wetting agent, Green Magic fertilizer, Lawn Restore and Lawnkeeper fertilizers and a check were included as subplots within each irrigation block in both studies.

Establishment

Adelphi Study. Subplots, 4' x 8', were measured within 3 replications of randomized irrigation blocks. The entire experiment was a split-plot 3 x 3 x 10 factorial, with 3 replications, 3 irrigation treatments and 10 chemical subplots within each irrigation block.

Chemical applications were begun 5/10/84. Liquid applications were applied using a CO_2 small plot sprayer at a volume of 48 gal/acre, equipped with 3' boom. A 1 foot strip of each plot received no treatment throughout the season. Granular applications, (Lawn R_x Restore and Lawnkeeper), were applied at the recommended rates with a calibrated 4' Gandy drop spreader.

Irrigation treatments consisted of 20 minutes of irrigation daily at noon, (approx 0.1 inch), 80% of pan replacement as needed, and no supplemental irrigation. Irrigation was begun 5/16/84.

Leaf Spot Counts

All plots were rated 6/6/84 for numbers of leaf lesions within a 3" diameter ring. Three subsamples were counted per plot. By the time of these ratings one application of all the chemical treatments had been applied.

Discussion

Analysis of variance of the data shows significance at the 5% level for the chemical treatments, but no significance for the irrigation treatments (Table 4). Two of three of the reps showed significance at the 5% level for irrigation however, ($F = 26.25$, required $F = 19.0$), Table 5 shows the average number of leaf spots/plot for each irrigation treatment. Not taking into account the variation between replications, the trend is for much less disease in the daily irrigated areas then in less-frequently-watered areas.

Differences among chemical treatments are outlined in Table 6. The Green Magic fertilizer treatments resulted in significantly less disease than the check plot, where the Lawnkeeper and R_x did not. This effect is probably due to the relatively faster action of Green Magic. R_x and Lawnkeeper have been shown to have a slower effect by a longer residual.

At the time of this rating, all Aqua-Gro plots except treatment 9 had received 16 oz (2-8 oz apps). Therefore we should expect no difference between those Aqua-Gro treatments.

Establishment

Annual Bluegrass Study. Subplots 4' x 6' were measured in three replications of randomized irrigation blocks. As in the Adelphi Study, this experiment was set up as a split-plot 3 x 3 x 10 factorial. The same 10 chemical treatments as in the Adelphi study were applied, starting 5/17/84, to subplots within the main irrigation blocks. Irrigation treatments consisted of 75% of pan replacement, daily at 8 am, 110% of pan 3 times weekly and

Table 4. Calculated and required F values (.05) for Irrigation and Chemical.

	Calculated F	Required F
Irrigation	5.24	6.94
Chemical	2.29	2.06

Table 5. Mean number of leaf spots averaged over chemical treatments

Treatment	Mean # Leaf Spots/Plot Sample
Daily Irrigation	29.52
80% Pan	50.13
No Irrigation	73.51

Table 6. Mean number leaf spots averaged over irrigation treatments.

#	Treatment	Rate/1000 ft^2	Mean # Leaf Spots/Plot	Sample
5	Aqua Gro	16 oz plus 8 oz/mo	42.16	A
2	Green Magic	1 app Spr. 64 oz	42.84	A
	Soil Aid	1 app Spr. 12.8 oz		
	Catazyme	1 app Spr. 4 oz		
	Strengthen & Restore	2 app Su. 64 oz		
	Green Magic	1 app Fall 64 oz		
1	Green Magic	64 oz (4-6 wk)	45.28	A
	Soil Aid	1 app Sp. 12.8 oz		
6	Aqua Gro	16 oz plus 4 oz/mo	46.14	AB
4	Lawn Rx Restore	30 lb	51.52	ABC
3	Lawnkeeper	10 lb	52.66	ABC
9	Aqua Gro	2 oz plus 2 oz/mo	58.37	BC
10	Check		58.83	C
8	Aqua Gro	16 oz 1 app	59.91	C

Treatments followed by the same letter are not significantly different at the 5% level.

Table 7. Effect of Irrigation Program on Dollarspot Activity.

Mean # Dollar Spots/Plot Treatment	Averaged over all chemicals Mean # Spot/Plot
1. Daily 80% Pan	106.67
2. 3x weekly 110% Pan	66.57
3. At wilt	37.47