

ALTERNATIVES FOR FUSARIUM INFESTED LAWNS

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After several years of having Fusarium blight devastate a lawn, many people are looking at the alternatives. Three things are needed to have a disease outbreak: 1) a fungal pathogen (Fusarium), 2) a favorable environment (hot, dry periods) and 3) a susceptible host (Merion, Fylking or Pennstar Kentucky bluegrass.)

Since the summer environment can be altered very little and continued application of Benomyl to reduce pathogen populations is becoming very expensive, much consideration is being given to establishing a resistant or much less susceptible host. Total re-establishment or turfgrass renovation are the alternatives to be considered. The following research was conducted to determine the effectiveness of glyphosate (Round Up) in turfgrass renovation.

Glyphosate, N-(phosphonomethyl) glycine, was applied at 2 pounds AI/acre to a mature Merion Kentucky bluegrass turf highly infested with creeping bentgrass. Manhattan perennial ryegrass was planted using five reseeding techniques at both four days after and two days before Glyphosate treatment. Glyphosate was also sprayed at rates of 1, 1/2, 1/4, and 1/8 pound AI/acre to determine the minimum rate for effective kill and was applied to a bare soil at 2 pounds AI/acre having just been seeded with three cool season turfgrass species to study residual effects on germination and early seedling growth. Glyphosate had significantly better kill of the original grasses when applied four days before renovation compared to two days after (Table 1). In some cases this also improved the establishment of the perennial ryegrass (Table 2). Effectiveness of kill was limited at the 1/4 and 1/8 pound rate (Table 3). The 1 and 1/2 pound rate killed the original grasses, and since perennial ryegrass was not seeded in the plot, Poa annua was found to be the predominant species. Glyphosate sprayed on seed had no deleterious effect on germination or seedling growth of Merion and Newport Kentucky bluegrass, Pennlawn red fescue and Manhattan perennial ryegrass (Table 4). Renovation treatments which insured good seed-soil contact resulted in significantly improved stands of perennial ryegrass.

TABLE 1: The effect of Glyphosate application timing relative to renovation treatment on the control of Kentucky bluegrass and creeping bentgrass.

Renovation treatments October 17, 1973	Timing (2 Lbs. AI/A)	
	4 days before	2 days after
1. Seed alone	2.4 abc*	1.6 a
2. Verticut 1 direction, seed	2.0 ab	2.2 ab
3. Verticut 2 directions, seed	2.4 abc	3.6 c
4. Renovate 1 direction	2.0 ab	3.2 bc
5. Renovate 2 directions	1.6 a	3.2 bc

*Cover rating (1-9;1-best) taken on May 30, 1974. Values having the same letter are not significant at the 5% level (DMRT).

TABLE 2: The effect of Glyphosate application timing relative to renovation treatments in establishing perennial ryegrass.

Renovation treatments October 17, 1973	Timing (2 Lbs. AI/A)	
	4 days before	2 days after
1. Seed alone	6.6 c*	8.4 e
2. Verticut 1 direction, seed	7.2 cd	8.0 de
3. Verticut 2 directions, seed	6.2 bc	8.6 e
4. Renovate 1 direction	5.2 b	6.8 cd
5. Renovate 2 directions	3.6 a	3.4 a

*Cover rating (1-9;1-best) taken on May 30, 1974. Values having the same letter are not significant at the 5% level (DMRT).

TABLE 3: The effect of Glyphosate rate of application on control of Kentucky bluegrass and creeping bentgrass and later development of *Poa annua*.

Glyphosate treatment (Lbs. AI/A)	Perennial grasses	Annual bluegrass
1.0	8.2 b*	7.2 a
0.50	8.2 b	7.4 ab
0.25	7.8 b	8.2 b
0.125	6.0 a	8.0 ab

* Values having the same letter within vertical columns are not significant at the 5% level (DMRT). Cover rating (1-9;1-most)

TABLE 4: Seed germination and five week growth response of selected cool-season grasses to Glyphosate sprayed on soil immediately after seeding.

Species and cultivar	Rate Lbs. AI/A	Quality rating (1-9;1-best)
Manhattan perennial ryegrass	2	2.3 a*
	0	2.3 a
Pennlawn red fescue	2	3.0 ab
	0	3.7 bc
Newport Kentucky bluegrass	2	5.0 cd
	0	4.7 cd
Merion Kentucky bluegrass	2	6.0 d
	0	6.0 d

* Values having the same letter are not significant at the 5% level (DMRT).

Conclusions from this and other research for renovation of Fusarium blighted lawns include the following:

1. Stop mowing the lawn for two weeks to allow enough leaf surface to adequately absorb Round Up.
2. Do not remove thatch or otherwise disturb the area prior to Round Up application.
3. Uniformly spray Round Up on the leaves at 1 pound active ingredient per acre. Higher rates are not needed as complete kill is not critical.
4. Wait at least three days for Round Up to translocate to underground portions of the plant.
5. Remove thatch.
6. Re-seed with Fusarium resistant varieties. The establishment rate is greatly improved by using a renovation (thatcher-seeder) machine. The Jacobsen Model 524 or 548 are the only machines of this type available.