



Better Turf for Better Golf

TURF MANAGEMENT

from the USGA Green Section

Important Diseases of Ryegrass Greens

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THERE HAVE BEEN no comprehensive investigations conducted on diseases of ryegrass under green management. Most of the diseases of ryegrass and symptoms they cause have been described for conditions where the grass is managed for forage or for lawns. Under intensive turf management, the disease symptoms as well as the role of pathogens in the disease complex seem to be somewhat different.

Cottony Blight

Cottony blight is a warm weather seedling disease of ryegrass caused by a soil inhabiting fungus which occurs in many southern soils and is known to scientists as *Pythium aphanidermatum*. In the early stages this disease is characterized by the presence of small irregular white spots in the turf. As the disease progresses, the small white spots become more pronounced, taking on a definite cottony appearance with the turf appearing as if someone had scattered cotton over the affected areas (Fig. 1). This appearance is due to an unusual amount of light colored aerial

fungus growth. The disease develops very rapidly during periods of high humidity and high temperature. A turf that appears perfectly healthy on one afternoon may, under favorable conditions for the pathogen, be completely overrun by the disease the following morning. This is especially true where the pathogen has been introduced in topdressing material. Affected areas rapidly turn brown and may range from a few inches to several feet in diameter. The disease has been reported as causing considerable damage, often completely destroying early seedlings on ryegrass greens from North Carolina to Florida.

Attempts to control cottony blight with a number of fungicides have not been satisfactory. Fumigation of infested topdressing material with a heavy rate of methyl bromide (5 pounds per 50 cubic feet of soil) has been effective, however, in eradicating the pathogen from infested material. It is believed that the rate of application of methyl bromide can be reduced considerably and still be effective. Since cot-

Cooperative investigations at Tifton, Ga., of the Field Crops Research Branch, Agricultural Research Service, U. S. Department of Agriculture, the Georgia Coastal Plain Experiment Station, the Georgia Experiment Station, the Southern Golf Association and USGA Green Section.

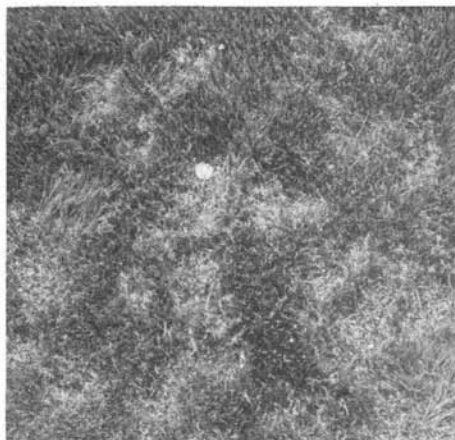


Figure 1: Cottony blight on two week old ryegrass seedlings.



Figure 2: *Helminthosporium* spots on ryegrass turf.

tony blight is a warm weather disease of ryegrass seedlings and is most active at high temperatures (day temperatures of 80° F. and above with the low night temperature not below 50° F.), the most effective means of preventing the disease at present is to delay the overseeding until the onset of cool weather.

Helminthosporium Spots of Ryegrass

During the past two years a study has been conducted on the green plots at Tifton, Ga., on the cause of the ryegrass disease which has commonly been referred to as "dollar spot" in this area. Symptoms that characterize this difficulty are: The turf is completely killed out in small circular areas from one-half to two inches in diameter (Fig. 2). Oftentimes numerous spots come together, resulting in large bare areas in the turf. During humid weather the centers of the affected areas are usually covered with a profuse fungus growth, producing a webby appearance. This is caused by organisms of decay which are not the cause of the disease. Leaves at the margin of the damaged area are covered with small brown spots which rapidly spread and blight the entire blades. *Sclerotinia homeocarpa*, the fungus that causes the dollar spot disease, has not been found associated with the disease commonly called "dollar spot" on the plots at Tifton or on

specimens received from golf courses in this area.

On the other hand, two species of *Helminthosporium*, *Helminthosporium siccans* and *Helminthosporium sativum*, which have long been recognized as pathogens of ryegrass managed for forage production, have consistently been associated with the "dollar-spot-like" symptoms on ryegrass. The first of these pathogens, *H. siccans*, seems to be most abundant during fall and winter; whereas *H. sativum* is most abundant during the spring and is primarily responsible for the early loss of ryegrass greens during this period.

As a general rule these pathogens cannot positively be identified in the field. An accurate diagnosis is dependent on a microscopic examination of the diseased specimens. Under a microscope one can observe short stalks (sporophores) emerging from the leaf surface. These bear the typical long, narrow, cross-septate spores which are typical of the genus *Helminthosporium*. These pathogens can be differentiated by the fact that the spores of *H. siccans* are widest at the base and taper toward the tips. When placed in a drop of water the spores germinate at practically all segments. On the other hand, spores of *H. sativum* are widest just below the middle and taper toward either

end, and when placed in a drop of water germinate at the end segments only.

Since the causal organism of the dollar spot disease has not been found in association with the disease commonly called "dollar spot" in this area, it is highly desirable that this common name not be used in association with the disease unless the responsible pathogen is identified. The term, "Helminthosporium spots of ryegrass" is suggested for the common name of the Helminthosporium diseases on ryegrass greens. It is suggested that golf course superintendents and greenkeepers send fresh specimens of diseased ryegrass greens to the laboratory at the Georgia Coastal Plain Experiment Station, Tifton, Ga., for diagnosis. This will give golf clubs information on the disease with which they are confronted and give the laboratory much needed information on the distribution and damage caused by these pathogens.

Very little information from planned experiments is available on the control of Helminthosporium spots of ryegrass. Limited experiments and observations, however, indicate that the damage from these diseases can be significantly reduced. Observations on rates of seeding and rates of nitrogen fertilization experiments have shown that a medium rate of seeding (40 pounds of ryegrass per 1,000 square feet) coupled with a high rate of nitrogen (2 pounds actual N per thousand square

feet at the time of seeding) resulted in significantly less disease damage than a high rate of seeding (80 pounds ryegrass for 1,000 square feet) and a low rate of nitrogen (no additional nitrogen). In general the fungicides containing mercury have been very effective in controlling these diseases. Limited experiments have indicated that Acti-dione may also be effective. Cadminate, which is a very effective control for dollar spot, has not proven to be effective against the Helminthosporium spots of ryegrass and, consequently, should be used only on the true "dollar spot" disease. It may be desirable to practice a preventive spray schedule (application at the recommended rates at two-week intervals throughout the ryegrass season). Many clubs, however, may think that the disease is not sufficiently destructive to warrant spraying at two-week intervals throughout the winter months. These clubs should be on the look-out for disease build-up in early spring and start their spray schedule at that time. There are indications that golf clubs can maintain excellent ryegrass greens until late spring or until it is sufficiently warm to get a rapid conversion to bermuda greens by practicing a good fungicidal program. It is anticipated that more comprehensive fungicide investigations on ryegrass diseases will result in specific and reliable information on the control of Helminthosporium turf spots of ryegrass.

Now Is the Time

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LATE SUMMER AND early fall is the best time to do many jobs on the golf course. The weather in most of the United States will become more pleasant and will become much more favorable to plant growth. The early fall season is the time to build next year's turf.

Cool-Season Grasses

For cool-season grasses, late summer and early fall is the time for seeding new fair-

ways or tee areas which are to be established in turf, and it is the time for fertilizing existing turf. The treatment that you give the turf now, for the next few months, will determine the quality of your turf next spring. If your turf is composed of cool-season grasses, late summer and early fall is the time for renovation.

1. Mow the existing turf as closely as possible.