

# Bermudagrass Decline

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In recent years, a localized disorder of bermudagrass has been observed on golf greens (Fig. 1). The condition has been declined. Since its first occurrence in the early 1970s, the disorder rred to as bermudagrass has become progressively more severe and in 1982-83 was one of the most troublesome problems facing golf course superintendents in Florida.

## SYMPTOMS AND CAUSE

The symptoms of the disorder first appear as chlorotic (yellowish) patches 8 to 24 inches (20 to 61 cm) in diameter (Fig. 2). The grass then begins to thin and a bare spot usually develops in the turf (Fig. 3). It is common to see green shoots of grass next to chlorotic ones in the area around the edge of the patch (Fig. 4). Plants in the affected areas have a very poor root system characterized by short brown roots and an absence of feeder root and root hairs. In addition, there are usually no rhizomes present and very few stolons (Fig. 5). If diseased roots are examined microscopically, coarse brown threads of a fungal growth are virtually always present in and on the root surfce (Fig. 6). Therefore, the disease is considered to be a root and stem rot.

The cause of the disorder has not been definitely established. However, the observed brown fungus is believed to be involved in some manner. Due to the sterile nature of the fungus as it occurs on the plant, no positive identification has been possible, but it is believed to belong to one of two genera of pathogenic fungi, either *Gaeumannomyces* (*Ophiobolus*) or *Leptosphaeria*. It should be noted that other secondary plant pathogenic fungi, especially *Curvularia* spp., are frequently found on declining grass.

## OCCURENCE

Bermudagrass decline occurs throughout the Florida peninsula, but is most acute along the lower east coast of the state. It usually appears from late summer to early winter following periods of overcast, warm-wet weather. It is most often noted on greens where changes in turf quality are more evident than on tees, fairways, and roughs. However, it is very likely the disorder also occurs in these latter areas. All of the bermudagrass varieties used on golf courses are affected, but contaminate grasses may be more severely affected than pure stands of the improved varieties. Grass stressed by other pests, such as nematodes, and physiological imbalances is more severely affected. The decline is more likely to occur on older greens where there is a high organic matter content in the soil and a thatch problem exists.

## CONTROL

To date, there is no recommended chemical control for bermudagrass decline. Currently, the best control is achieved by following certain cultural practices. Aerification is extremely important to open up the soil and allow oxygen into the root zone (Fig. 7). Aerify as frequently as possible - every 3-4 weeks during the growing season. Use an aerifier that will penetrate the soil deeply. Use large tines (5/8 inch) for each aerification until thatch and layering problems are reduced. After aerification, topdressing should be applied and worked into the holes. Topdressing material should be a medium sand with up to 30% organic matter. This material will work into the green easily and help cover any remaining stolons for enhanced rooting. Topdress lightly each week to cover the affected areas. Topdressing also has the benefit of helping mask

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Figure 1



Figure 2 (Left) and  
Figure 3 (Right)



Figure 4





Figure 5

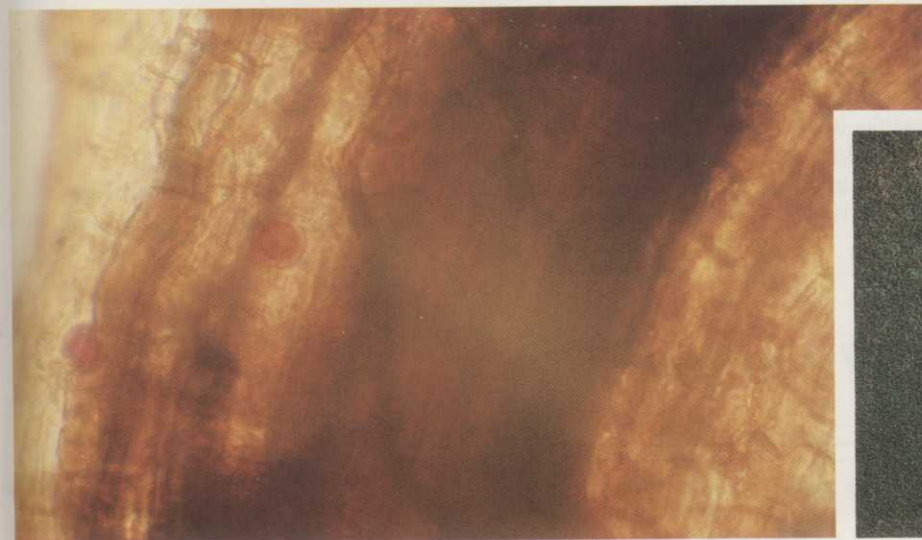


Figure 6



Figure 7

- Figure 1. A golf green severely affected by bermudagrass decline.
- Figure 2. An early symptom of bermudagrass decline is chlorosis of the grass in distinct patches.
- Figure 3. Thinning of grass due to bermudagrass decline.
- Figure 4. Edge of decline patch showing mixture of green and chlorotic shoots.
- Figure 5. Bermudagrass affected by decline. Note lack of rhizomes and the decayed root system.
- Figure 6. Stands of brown fungal growth on roots of declining bermudagrass. Also, note presence of doughnut-shaped *Pythium* oospores.
- Figure 7. Response of declining bermudagrass to aerification. Note green grass growing back in aerification holes.

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some of the damaged areas until the grass can recover. Application of a non-ionic wetting agent is important to help water penetrate into the soil, especially if there is a thatch layer. Temporarily raising the mowing height by 50% is also of benefit. This practice increases the photosynthetic area of the plant which helps it recover from the decline. Double cutting at right angles, can be used to maintain putting speed and provide a smooth surface despite the higher height of cut. If spots are severe, it is important to increase fertility to encourage rapid growth

to cover affected areas. Fertilize with a 1-0-1 ratio fertilizer at 1 pound nitrogen per 1000 square feet per week. Ammonium sulfate is the suggested nitrogen source.

By following these practices when the chlorosis symptom first appears, it is frequently possible to check the decline development. However, if bermudagrass decline is a reoccurring problem, these cultural practices should be followed throughout the growing season. ■

## NGF Projects Another Golf Boom

NORTH PALM BEACH, Fla. -- According to the National Golf Foundation, the long, slow fuse of golf's sluggish growth in the 1970s could lead to a major explosion igniting golf's third and possibly largest boom in growth. The NGF projects that by the year 2000, there could be as many as 21.2 million golfers in the U.S.

In 1980, there were approximately four million golfers in the 35-54 year age group. By 1990, there will be approximately 5.2 million, and by 2000 that group will swell to over seven million, representing a 75 percent increase in just 20 years.

Although NGF statistics did show an increase in golfers during the last decade, the percentage of the growth of golfers averaged just one to two percent a year. But by examining census data and other demographic statistics, the potential for golf's growth becomes evident.

The Foundation is planning a number of new promotional projects intended to increase the percentage of golfers by the turn of the century.

"Golf, like so many other areas, is likely to feel the effects of the 'baby boom' generation," said NGF Director of Research Dr. Joseph Beditz. "Participation in golf is highest in the 35-54 year age group. If current participation rates remain constant, there could be a very large increase in the number of people who play golf because so many more people will enter this age group in the next 15 years."

"Our statistics tell us that the greatest potential market is with the relatively young adult age group," explained NGF President David B. Hueber. "If the percentage of players in that group could be increased over the next five years, which is one of our goals, it would generate a substantial multiplier effect as they moved into the older age categories.

"A small growth in the percentage of young adult golfers could result in 25 million or more players by the year 2000."

## Florida Green Wins First Place 1984

