

# Battling the Bermudagrass Blitz

*Several key practices can help you win the war against bermudagrass encroachment.*

by CHRIS HARTWIGER



*Hybrid bermudagrass can encroach rapidly into a putting green.*

**M**INIMIZING bermudagrass encroachment into bentgrass or bermudagrass putting greens is a constant challenge for golf course superintendents in warm-weather climates. The aggressive hybrid bermudagrasses commonly used on green surrounds can outcompete the bentgrass or bermudagrass used on the greens and often encroach into the putting surface. When this happens, playability can be affected and the original contours of the putting green perimeter can be lost.

A variety of chemical and cultural approaches have been used over the years in an attempt to manage encroachment problems. Unfortunately, many of these methods have had limited success. This article reviews the problems associated with bermudagrass encroachment and discusses the

relative effectiveness of different encroachment control strategies.

## **Understanding Bermudagrass Encroachment**

It is easy to understand why bermudagrass encroachment is a problem on bentgrass and bermudagrass greens in southern climates. In the summer months, when bentgrass growth is slowed by high temperatures and/or humidity, the conditions for bermudagrass growth are optimal. Bermudagrass can and does encroach rapidly into bentgrass putting greens. Bermudagrass greens themselves do not offer much more resistance to encroachment. A more coarse and aggressive hybrid bermudagrass such as Tifway can move into a Tifgreen or Tifdwarf putting surface. After several years of encroachment, the size of a green can

decrease and the original design will be lost.

## **Collars**

Superintendents often select the grass for putting green collars based on its resistance to encroachment. Zoysiagrass and bentgrass are popular choices on bentgrass greens. These grasses do not eliminate encroachment, but act as a buffer between the bentgrass putting surface and the bermudagrass surrounds to slow the movement of bermudagrass into the greens.

Before selecting a grass for the collar, it is important to understand the characteristics of each grass type. A bentgrass collar provides an excellent playing surface most of the year, but is more difficult to maintain in the summer than a zoysia or bermudagrass collar. Specifically, a higher mowing





*The Greens Encroachment Barrier System is installed in 100-foot sections using a vibratory plow.*

height on a bentgrass collar will result in a higher evapotranspiration rate. If the root system is limited and cannot meet the plant's demand for water, wilting can become an ongoing problem. This problem may be magnified by the composition of the soil under the collar. If the rootzone mix is tapered from the green to the collars, the varying mix depth will cause a change in available water to the plant. If some or all of the collar is grown on native soil, a similar water availability problem can occur. Putting green and collar water management under these circumstances is time consuming and labor intensive.

The use of zoysiagrass on collars has become popular in recent years. A properly maintained zoysiagrass collar is aesthetically pleasing and does not detract from playability. Since zoysiagrass is a warm-season grass, the water management difficulties associated with bentgrass are not as great a concern. If a zoysiagrass collar is established, there are a few challenges a superintendent must meet. First, the addition of a zoysiagrass collar creates an environment whereby there are three grasses with three different management requirements within a span of four to five feet. Balancing the water and nutrient needs of each grass within this small area is difficult. Excessive fertilization and watering are common problems on zoysiagrass collars. The slow recuperative rate of zoysiagrass is another concern that must be addressed. Effective management of mower and foot traffic during the fall, winter, and spring is essential to maintaining a high-quality zoysiagrass collar. Weak zoysiagrass will be slow to recover during the warmer months

and will be less competitive with the encroaching bermudagrass.

The use of bermudagrass on collars arguably will provide the best playing conditions with the lowest level of management intensity. A hybrid bermudagrass such as Tifway performs well at collar height, thrives on variable soil conditions, and recovers rapidly from injury. Historically, bermudagrass has not been a popular option due to the aggressive encroachment of the bermudagrass into putting greens. In the upper portion of the transition zone, winter injury on bermudagrass collars is a periodic problem as well. However, bermudagrass may become a more popular choice for putting green collars with the development of a new barrier system that is discussed later in this article.

On courses with bermudagrass greens, bermudagrass is the overwhelming and logical choice for the

collars. To discourage encroachment, most new courses and renovated courses have extended the bermudagrass variety used on the greens and collar at least five feet beyond the collar on all sides of the green. On some new bermudagrass courses designed with closely mowed green slopes in hot climates, the entire green complexes have been established with Tifdwarf. Encroachment in this scenario is highly unlikely.

### **Encroachment Control Measures**

The type of grass used on collars will dictate the encroachment control methods that are available. Outlined below are several encroachment control methods currently being used throughout the South today.

**Chemical Control:** Chemicals such as Tupersan, Cutless, or Prograss have been used for many years to suppress bermudagrass encroachment in a bentgrass green. Dr. Bob Carrow and Dr. B. J. Johnson wrote an excellent article on this topic in the November/December 1991 issue of the *Green Section Record*. Remember that these chemicals offer a means to suppress bermudagrass in a bentgrass green or collar, but they will not eliminate the bermudagrass. Further, these chemical applications normally result in varying degrees of bentgrass thinning or discoloration.

Fusilade is the primary chemical used to suppress bermudagrass in a zoysiagrass collar. Initial use of this product on zoysiagrass collars has given excellent suppression of encroaching bermudagrass.

**Cultural Methods:** A wide variety of cultural methods have been used to



*The 8-inch depth of the barrier blocks rhizome movement into the green and can act as a wicking barrier between green rootzone material and the soil in the surrounds.*



prevent bermudagrass encroachment into bentgrass and bermudagrass greens. If a bermudagrass collar is in place, these methods traditionally have been the only means to manage encroaching bermudagrass since chemical control is not an option.

**Mechanical Edging:** Mechanical edging is a labor-intensive task that must be performed regularly throughout the bermudagrass growing season to maximize its effectiveness. This process can be performed in several ways. Some superintendents physically remove by hand any stolons encroaching into a green. Other superintendents prefer to use a mechanical edger to cut into the soil around the perimeter of the green to sever encroaching stolons or rhizomes. One of the inherent problems associated with mechanical edging is the creation of a new bermudagrass plant when a stolon or rhizome is severed. The majority of the severed stolons can be physically removed from a green or collar, but any severed rhizomes cannot be removed efficiently from beneath the soil. If this occurs, the severed rhizomes can initiate new roots and begin growing in the putting green or collar. When mechanical edging is used, it is extremely difficult to maintain the original perimeter of the green.

**Resodding:** Other golf courses have resigned themselves to periodic striping of contaminated collars, followed by fumigation to eradicate the bermudagrass. Following fumigation, the contaminated areas are resodded. Surprisingly, some areas of bermudagrass may remain following fumigation. Considering the expense and disruption to play, this approach is not a practical and cost-effective solution for most courses.

**Physical Barriers:** Theoretically, the installation of a physical barrier would offer an effective means to control encroachment. Materials such as concrete, aluminum, plastic, and wood have all been used in attempts to stop bermudagrass encroachment. Until recently, the major problem associated with these barriers has been movement following installation and a subsequent disruption to play.

The Greens Encroachment Barrier System developed by Tom Waite appears to be an alternative to the older barrier methods. Mr. Waite has developed a heavy plastic barrier that will block encroachment. When installed, this molded plastic barrier extends eight inches into the soil. The molded



*A line edger is one method used to prevent bermudagrass stolons from encroaching above the barrier.*



barrier is characterized by a small "V" or channel.

This patented system corrects the previous problems associated with physical barriers. Mr. Waite overcame displacement problems by installing the barrier with a vibratory plow in 100-foot sections. Typically, three sections are needed for a green, and these sections are securely fastened together. Once the barrier is installed, it is extremely difficult to move. The eight-inch depth blocks the movement of rhizomes into the green. A reciprocating edger is used once or twice per week to prevent stolons from encroaching above the barrier.

Currently, many courses throughout the Southeast have installed the Greens Encroachment Barrier System. The barrier offers several other benefits in addition to providing an excellent means of encroachment control. Because the barrier is made of a heavy plastic, it can serve as a wicking barrier and help reduce the loss of water from sandy soils when they have direct contact with a clay or other fine-textured soil.

Further, the permanent nature of the barrier ensures that the perimeter of the green will not be lost. Mowing patterns will be more accurate and the green will retain its intended shape much longer than a green with no barrier. Finally, the barrier offers a realistic means to have a bermudagrass collar with little fear of encroachment. At a cost of approximately \$2,000 per green, the barrier is an excellent long-term investment and can eliminate the need for other expensive, time-consuming, and labor-intensive encroachment control measures.

## Conclusion

Battling bermudagrass encroachment is difficult for all superintendents in warm climates. Battling encroachment begins with selecting an appropriate grass for the collars, understanding the methods available for control, and implementing a sound strategy.

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