

control of traffic during periods of adversity, and for re-routing traffic to avoid damage to critical areas.

Once such information is made available to the "owners," they must make the decision affecting themselves as players. You, as manager, must then abide by the owners' decision and do the best with what is available. For even if you were the owner-manager, as we discussed earlier, you still would have to decide whether you could risk denying good customers the privilege of playing in order to protect your turf.

In summary, always remember that the customer is the "King of the Marketplace." Continued customer preference for a service or for a product is the key to a successful business—

whether it be a golf course or the manufacture of automobiles—recognizing, of course, that the product of service must be satisfactorily produced at a profit.

The golf course superintendent is unique in the respect that the customers he serves also are the owners. There are both advantages and disadvantages in such a situation. As customer, the golfer does not care how you do your job. As owner, he expects the maximum benefit from his investment. But first of all, and most of all, he expects to play golf under the best conditions possible.

Because you know "for whom you manage," you must know that your job is not to provide the best turf but the best *playing* turf.

Bermudagrass in the Northeast

By **HOLMAN M. GRIFFIN**, Northeastern Agronomist, Green Section, The United States Golf Association

Since 1938, U-3 bermudagrass has found favor and has been used more and more as a fairway and tee grass in the transition zone of the Northeast. This grass is adapted to the northern extremes of the bermudagrass region where other bermuda strains winter-kill, and it works well in the southern extremes of the bluegrass-fescue-bentgrass region where cool-season grasses do poorly in summer.

Although climatic factors handed U-3 bermudagrass a severe setback in many areas last winter, this grass remains a good answer to the difficult problem of what to grow where winters are too cold for warm-season grasses and the summers too hot for cool-season grasses.

Because of increasing interest in U-3 bermudagrass, it might be well to consider the maintenance program it requires. U-3 is not unlike other ber-

mudagrasses except for its cold hardness and medium texture. It makes its maximum growth during the hot summer months when crabgrass is a serious pest in the cool-season grasses, and forms a dense, vigorous turf that discourages weed invasion of any type.

U-3 is seldom damaged by insects or disease and is highly resistant to damage from herbicides, fungicides, and insecticides. Occasional attacks of grubs, cutworms or sod webworms are easily controlled with standard insecticides on the market.

Most serious of the U-3 problems is the thatch condition which develops if this material is not removed. Cutting heights above 3/4 inch tend to cause a fluffy condition and encourage thatch.

Removal of thatch is a time-consuming and laborious task but results are rewarding. The vertical mower and the thatching machine are most fre-

quently used for direct thatch removal, but aeration, frequent mowing, and liming where needed all help to discourage thatch formation. These practices are best accomplished when bermudagrass is actively growing, as disturbing the soil at other times encourages weed invasion. In some instances a drag has been helpful on fairways when they are dry to break up clippings and get them down through the grass into contact with the soil.

Bermudagrass begins to grow when temperature reaches 50° F. or above and will continue to grow even at cooler night temperatures provided the daytime temperatures are sufficiently high, 70° F. or above. From this point in early spring when U-3 begins to grow, it needs feeding and will require about 1 pound of nitrogen per 1,000 square feet at 20 to 30-day intervals for the period when it is actively growing. No quick release or soluble nitrogen should be applied to the grass for approximately three weeks before frost to allow the grass to harden off before it becomes dormant.

Normally about 4 to 5 pounds of nitrogen per 1,000 square feet per season is sufficient and approximately one-half of this amount should be supplied in the form of a complete fertilizer containing phosphorus and potash. For best results the complete fertilizers should be applied in spring and fall. The spring application will increase root growth and make the plant more vigorous to compete with spring weeds, and the fall application will strengthen the plant going into winter.

Although the U-3 is a drought-tolerant grass as compared with the cool-season grasses normally grown in this area, good watering practices are essential. When watering U-3, adequate moisture should be applied to soak into the soil to a depth of 6 or 8 inches, and

no more water should be applied until the turf begins to exhibit signs of moisture stress during the warmest part of the day. Too much water can cause shallow rooting with resulting droughty turf and may cause rotting of roots and rhizomes under conditions of poor drainage.

During the past few years many different methods of planting U-3 bermudagrass have been used and there are numerous machines manufactured for this purpose. U-3 is propagated by vegetative means only and may be planted by strip sodding, plugging or sprigging. Of the three methods, sprigging is by far the most popular because it gives the most efficient use of planting material, produces a fast cover and offers very little interference to play. Ideally, sprigs should be chopped up into lengths which have a minimum of three nodes and planted so that about one-third of the sprig remains above ground. Since air spaces around the sprig can cause rotting of the sprig, it is necessary to insure firm contact with the soil.

U-3 probably will find its greatest use throughout the "crabgrass belt" but there are indications that it will do well beyond this point. It would be foolish to disregard the possibility of winterkill in the northern extremes of the bermudagrass zone; however, this condition is not usually produced by cold weather alone. U-3 bermudagrass has withstood freezing tests to 28° below zero, so from this we can only suspect that actual winterkill must come from a poor combination of climatic factors such as cold weather and a lack of moisture such as experienced in the Philadelphia area this year.

We would do well to remember that U-3 is not a miracle grass, but with good management practices we can expect a very rewarding turf.