Turfgrass management in shaded areas

by John R. Hall, III

One of the constant problems facing the superintendent today is maintaining quality turfgrass in shaded areas. Some of the reasons for difficulty in producing quality turf in shade are understood, while others remain unknown. The competition for light, water, and nutrients obviously creates plant stresses which can predispose the plant to disease attacks. The fact that people seek shade for its cooling effect and that people tend to compact soil certainly does not diminish the problem.

Here are 10 points to consider in developing plans for the establishment or maintenance of turf in shaded areas.

Tall, old, stately trees provide a beautiful backdrop for holes such as the 16th at Kingsmill on the James outside Williamsburg, Va., but tough turf problems can come with the dense shade they create.

1) Select shade-tolerant grasses. The fine-leaf fescues such as Pennlawn and Jamestown are considered the most shade-tolerant cool season grasses in the transition zone. Varying degrees of shade tolerance have been observed in the Kentucky bluegrasses. However, as a group of grasses, the fine fescues will generally persist better in shade than Kentucky bluegrasses. The most popular cool season grass mixture for shade in the transition zone is a mixture containing 50 to 80 percent of two or three Kentucky bluegrasses and 20 to 50 percent fine-leaf fescues. Tall fescue is capable of persisting in moderate shade where good drainage prevails.

There is a real need for shade-tolerant warm season grasses. St. Augustinegrass, Pensacola bahiagrass, and zoysiagrass are the most shade tolerant warm season grasses. However, St. Augustinegrass and bahiagrass cannot consistently survive the transition zone winters and zoysiagrass is slow to establish and exhibits only moderate shade tolerance.

2) Seed shaded areas in the fall. Fall seedings of shaded areas are generally more successful than spring seedings, because by the time the fall seeded grasses have completed germination, the leaves are off the trees and full sunlight is available. Obviously a strong leaf raking or sweeping program is essential to successful establishment.

3) Maintain adequate soil nutrition. Turfgrass plants in shade generally require less total nitrogen than plants in full sunlight simply because of the reduced rates of photosynthetic activity. Nitrogen overstimulation of shaded grasses contributes significantly to depletion of stored food reserves and thin cell walls which

Dr. John Hall is an extension specialist in turf at Virginia Polytechnic Institute and State University in Blacksburg. He has written and published many articles and papers on turfgrass management.

Large, beautiful tree near the 8th green at Eagle Ridge Golf Club, Galena, Ill., was preserved in golf course design — but green is positioned so it is mostly in the sun. BELOW: Irrigation can be a real problem when part of the course is in the sun and part is well-shaded. Automated, programmable irrigation system at Los Angeles' Bel Air Country Club helps overcome problems.

predispose the turfgrass plant to disease attack.

Late fall fertilization (after the tree leaves have fallen and are raked up) of cool season grasses is extremely important in shaded areas because this is essentially the only time of the year when the grass plants under trees can efficiently utilize the applied nitrogen in the absence of tree competition for soil moisture and sunlight. Soluble sources of nitrogen in the November/December time frame are most efficient and benecial. Slow release sources (more than 50 percent water insoluble nitrogen) applied at this time tend to remain available into spring and can cause overstimulation.

Maintaining an adequate pH (6.5) appears to be more important for some plants than others. Kentucky bluegrass, tall fescue, and perennial ryegrass appear to be favored by a soil pH near 6.5 while there is research evidence which suggests that Pennlawn fine fescue might do better at pH 5.5 than at pH 6.5 (see Pallazzo and Duell, *Agronomy Journal*, Vol. 65, pp. 678-682).

4) Raise the mowing height. In a reduced-light situation the objective is to maximize the health of the individual plant. Low mowing heights tend to increase plant density, but this occurs at the cost of the reduced health of individual plants. In other words, the increased mowing height provides less plants per unit area, but the individual plants are larger and healthier.

5) Irrigate infrequently but heavily. An irrigation program which minimizes the amount of time shaded areas are moist will be beneficial in reducing disease incidence. Infrequent watering will also tend to minimize the probability of compaction and not favor shallow surface rooting.

6) Maintain strict traffic control. Maintaining traffic control is more important in shaded areas than it is in full-sun areas because of the lack of recuperative potential in shade and inability of the thin-cell-walled grass to bear traffic without injury.

In areas where traffic is uncontrollable, annual fall sodding is a reasonable solution. Fall sodding of these areas is preferred to maximize sod rooting and food storage before tree leaves emerge in the spring.

7) Maintain an adequate tree care program. Remove unnecessary trees that are not essential to the golf course design or landscape plan. Judiciously prune trees as much as possible to maximize light penetration to the turf. Periodic tree root pruning may be necessary where excessive tree root surface feeding is occurring. Utilize tree "spike" methods of fertilizing trees as opposed to surface area feeding of trees.

8) Provide good soil and air drainage to shaded areas. Installation of drainage tile is necessary in any situation where quality turf is desired and drainage is inadequate. Providing adequate channels for wind entry and passage through shaded areas is essential to reduce humidity and disease incidence.

9) Remove leaves and debris promptly. Quick removal of leaves and debris all year long is essential as they only serve to shade the turfgrass plant and reduce its food-making potential. Fall leaf removal is most critical to the production of quality turf in shade.

10) Provide appropriate pesticide protection. Powdery mildew on shaded Kentucky bluegrass and *Helminthosporium* diseases on the fine fescues are severe. Periodic application of fungicides for controlling these pathogens and others may be necessary. Control of weeds and damaging insects will improve the appearance of the turf and reduce the competition for light, water, and nutrients. □