

TREES – THE BIGGEST PROBLEM OF GOLF COURSE TURF

**James T. Snow
USGA Green Section
Far Hills, NJ**

Trees clearly are important assets on most golf courses in the northern sections of the United States, providing a great deal of beauty and strategic interest and serving a variety of other important functions. On the other hand, the effects of trees are a major cause of poor quality turf on parts of many courses. In some cases, trees have come to overwhelm the courses from both an agronomic and playability standpoint, causing widespread turf problems and imposing restrictions on the strategic intent of the original golf course architect.

While it could easily be argued that trees are not the biggest (most important) turf problem on many courses, there can be no denying that they are the biggest (size) problem on most courses. On a few courses they are both. In essence, the negative impact of trees on turf quality can be summarized as follows (play considerations aside):

- Shade
- Poor air circulation
- Tree root competition
- Interfering limbs and branches

SHADE

The effect of shade is an important cause of turf weakness or failure on many types of areas. The combination of shade and traffic, though, can be deadly. Turfgrass plants need light to photosynthesize and produce food for growth and regeneration. When light levels are inadequate for too long a period, carbohydrate reserves are depleted and the turf becomes too weak to quickly recover from traffic injury. There also is good evidence that shade predisposes the turf to ceratin diseases that would not be a problem were the turf located in full sun. The effects of shade are especially noticeable on greens and tees, where foot and mower traffic is concentrated on relatively small areas, and in roughs where cart traffic is quite heavy.

The lack of direct sunlight on a turf area also prolongs the drying out period after rainfall or irrigation, leading to greater disease activity and greater soil compaction. Not surprisingly, *Poa annua* follows closely on the heels of these problems, bringing with it another set of difficulties.

The wholesale clear-cutting of trees from around a green or tee is usually not necessary to overcome a shade problem. Instead, begin by removing selected canopy and understory trees to increase sunlight intensity. Trees on the southeast, south and southwest sides of the turf area should be the first to be removed. If this work does not resolve the problem to your satisfaction, then try thinning the canopy in some of the remaining trees to further increase light intensity. The removal of more trees may be required in some instances. Continue this removal and thinning process until healthy, wear resistant turf is restored.

POOR AIR CIRCULATION

Another of the consequences of too many trees in close proximity to important play areas on a golf course is poor air circulation. It usually is quite easy to determine which greens or tees are suffering from this problem; just tour the course on a hot, muggy day and note the areas where you feel the most uncomfortable. The temperature of the air is often significantly higher in these areas, and a breeze to relieve high humidity symptoms is usually lacking as well. Also, soil temperature and moisture levels tend to remain higher for a longer period of time relative to other areas, due to the lack of good conditions for drying.

As a result of these factors, disease activity, heat stress and soil compaction effects are common on turf growing in such an environment. Again, *Poa annua* often takes over in these areas, performing poorly during periods of stress.

A key to resolving air circulation problems is to open passageways for air to move through the area. Oftentimes, the removal of shrubs and understory trees is enough to significantly improve the situation. A general thinning of the canopies of some of the remaining trees also can be of great benefit. The removal of some of the larger trees, especially those that block prevailing winds, can prove helpful if previous effects fail.

Though shade and air circulation problems tend to go hand-in-hand, this is not always the case. Some greens, for example, receive full sunlight throughout the day, yet suffer greatly from poor air movement. This is particularly true on poorly drained soils. The message, then, is not to rely on shade as a symptom of poor air circulation, but to look for the problem based on its own merit.

TREE ROOT COMPETITION

One of the great hidden dangers of trees on golf courses concerns the effects of their roots on nearby turf. Like turf, trees absorb water and nutrients through their roots to sustain life and promote growth. And like turf, the tree roots that are active and functional are those located in the well aerified soils in the upper few inches of the profile. Thus, turfgrass roots and tree roots are very often in direct competition for available water and nutrients, and usually the turf areas suffer greatly during periods of stressful weather.

A good method of reducing or eliminating tree root competition is to mechanically prune the tree roots so they no longer compete with turf roots in the area where problems are being encountered. Greens and tees are the important play areas where root pruning is most often done, but pruning along the edges of fairways and near the tree lines in the roughs is becoming much more common as golf cart use increases. As suggested earlier, the combination of tree effects and heavy traffic can be deadly; thus the need to root prune in the roughs.

Mechanical tree root pruning can be accomplished by several means. The most common method is to cut a 2-foot deep trench at a convenient site between the trees and the turf area of concern. For best effect, several layers of tar paper, sheet metal or some other barrier should be placed vertically along the wall of the trench prior to backfilling to discourage new tree roots from encroaching too quickly. Nevertheless, root pruning usually must be repeated every few years, as the tree roots eventually manage to find their way through or under the barrier.

Other methods involve the use of vibratory plows, stump grinders, or blade attachments to backhoes to cut a narrow slice in the soil that severs tree roots and temporarily benefits the turf. However, this practice must be done every year or two because a physical barrier cannot be installed.

Unfortunately, many turf managers are not fully aware of the extent to which tree roots can affect the turf, often blaming disease, insects, traffic or some other common problem for what is largely tree root competition. A common response to a recommendation to root prune trees is a blank stare and a few non-committal mumbles about how they might give it a try if they have a chance. However, the word about the successes of those who have tried it is getting around, and more and more golf courses are adopting root pruning as an important annual practice in needed areas.

TREE LIMB INTERFERENCE

It might at first seem hard to imagine how tree limbs that interfere with a golf shot would cause agronomic problems for the grounds crew, but that is exactly what happens on golf tees. Trees planted years ago off the right front side of a tee, for example, eventually grow to the extent that their limbs interfere with a tee shot from the right side. Golfers will instinctively compensate for this interference by hitting most of their tee shots from the left side of the tee. As a result, the right side receives less and less play, while the left side is eventually subjected to most of the traffic. It is not uncommon in these instances to see the right side develop thatch problems and the left side become consistently thin, weak, and dominated by *Poa annua* or crabgrass.

There is a simple solution to this problem, involving the pruning back of interfering tree limbs or the removal of trees that are hopelessly in the way. However, because trees grow slowly, most golfers don't realize what is happening to their teeing area until interference becomes extreme. Even then, they are often reluctant to spend the money to prune or remove trees unless the situation becomes desperate. Instead, they usually ask the golf course superintendent to put forth a bit more effort to keep the tee in better condition. Obviously, tree work is the best solution.

SUMMARY

Trees can greatly affect the quality of turf on a golf course by the shade they cast, the air circulation they block, and the roots they produce. In addition, they can reduce the useable area on a tee by 30% – 50% or more by producing limbs that interfere with play off one or both sides of the tee. The best means of preventing these problems is to use care when planting trees on a course. For established trees, a good program of tree removal or branch thinning can increase sunlight penetration and air circulation to a great degree, and interfering limbs can be removed as needed to allow full use of tees. Finally, careful attention should be paid to root pruning around greens, tees, and other important turf areas where tree roots obviously are having a negative impact.

The effects of trees can be a significant extra stress at a time when the turf is already under great stress due to heavy traffic, difficult weather conditions, and many other factors. By giving careful consideration to the concerns noted above, it should be possible to improve the health and playability of the turf on any course where trees are an integral part of the scene.