TREES vs. TURF

Manage the trees on the golf course to provide healthier turf.

by JACK SWAYZE

Pruning tree roots and installing a bio-barrier prevent future tree root encroachment into the green.

To a golfer, few things are as satisfying as playing a good game of golf on a picturesque golf course. Not only do players come to a course for the sport of the game, but also to appreciate the calming beauty that a golf course can offer. To drive a ball down a fairway lined with mature trees is just about as good as it gets.

Besides defining the fairways and adding character to a golf course, trees provide shade for player comfort and a degree of safety from errant golf shots. From an architectural standpoint, trees are incorporated into a design as strategic play elements. For example, trees are used to help indicate the course routing by creating the dogleg holes.

Overplanting Trees

Although an abundance of trees may at first seem like a positive attribute, too many trees can cause problems. Tree overcrowding is a common occurrence on golf courses for several reasons. Many times trees are planted for “instant gratification” without thought of their coverage once they have matured. Also, overcrowding is commonplace on older golf courses where additional trees have been planted each year. At times, the number of trees planted is increased to compensate for the lack of tree size. If these trees are not thinned out at a later time, overcrowding and distorted growth can occur. Numerous tree and turf problems are self-inflicted due to a lack of understanding or inadequate planning. This snowball effect eventually leads to more tree overcrowding.

Likewise, in an effort to use every existing tree, new golf course construction projects with native stands of trees are also likely to be overcrowded from the very start. As would be expected, the turfgrass grow-in is substantially slower due to the shade.

Conversely, many trees die as a result of golf course construction when grade changes occur from cut and fill. Unfortunately, many of these trees may have had strategic value and will have to be replaced. Better planning in the beginning stages may have saved them.

Aerial photographs depict a different perspective of the trees that line a course. As time passes, the trees grow larger to the point that they can affect play. Meanwhile, misinformed committee members continue to plant more trees as future replacements. The net result is overcrowding with too much vegetation. This heavy vegetation then creates challenges for successful turf management. Poor turf quality arises because the trees have a competitive advantage over the turf.

Tree Problems

Trees can present a competition problem in the turfgrass growing environment. Many species of trees have root systems that can extend outward two to three times the height of the tree. Since the majority of the tree feeder roots are in direct competition with the turf within the top foot of the soil, the trees rob vital nutrients and water from the turf. In addition, the tree canopies physically reduce or block air movement, which can lead to increased disease and algae pressure. Oxygen is a single limiting factor for root depth.

Due to their genetic code, trees grow larger than turf and develop a much larger root system that can extend great distances. Tree roots will invade greens, tees, fairways, and bunkers, given the opportunity, and can grow at a rate of more than six feet in distance per year. Large trees can easily have a root system covering more than an acre and often extending well into your managed turf.

Many times, tree species are planted that are not appropriate for use on golf courses. Some species have dense canopies of foliage with low branches. This makes it impossible to grow healthy turf because of insufficient available light, and it is difficult to mow under the trees. Other trees have shallow or surface rooting characteristics that can be a safety hazard to a player if he hits the root while making a shot. These shallow-rooted trees also damage mowers with their exposed roots.

Some trees are extremely messy with fruit or exfoliating bark. Oftentimes, trees will drop cones or pods that can wedge into the rollers of mowers, producing a poor quality of cut. Obviously, this requires increased labor that could be better appropriated to maintaining turf instead of tree cleanup.

Tree Maintenance

Physiologically, trees function the same as turf. However, they do differ because trees have woody tissue connecting the root system and the canopy. The trunk and limbs that form the canopy continue to grow into the shape...
and form dictated by its genetic code
and in consideration of available sun-
light and other site conditions. Just like
turf, trees will respond to good care.
Their requirements for water, nutrients,
and oxygen are the same as turf, and
they are opportunistic. The cultural
practices that are required to maintain
healthy turf are similar for trees: regu-
larly scheduled fertilizer applications,
watering practices based on the evapo-
transpiration (ET), and aeration com-
pleted several times per year.

Managing trees on the golf course
should be for agronomic benefit as well
as for aesthetics. Too often, golf course
tree management falls solely into the
aesthetic category because the overall
benefits are not well understood.
Understanding the competition that
exists between trees is essential. The
trees compete with each other for the
same needed elements; the strong sur-
vive and grow, and the weak trees die.

There is a strong argument that fewer
trees may be better not only for the golf
course turf, but also for the remaining
trees on the golf course. Fewer trees
obviously require less maintenance and
often can provide the same strategic
golf value with a proportionately less
negative impact on the turf. Fewer trees
also require less water if the overall tree
biomass is less.

Water Requirements

Like turf, tree water requirements are
dictated by leaf surface area. The more
area, the more water is required to
sustain the plant. Temperature, wind,
humidity, sunlight, exposure, and sea-
son also affect water usage by increas-
ing evapotranspiration. Obviously,
dormant turf or trees require less water. ET
is calculated similarly for trees as for turf,
except that the trees’ leaf surface
area is proportionately greater and is
more exposed due to height. Annual
growth results in more canopy each
year. More tree growth means that
more water is required. Localized dry
spots in the turf show up easily during
the hot summer months and are very
often tree related.

Small seedlings or small container
trees may require only a few gallons
of water per day for survival or growth.
Conversely, large trees may require
hundreds to more than a thousand
gallons per day depending on the ET
rate. Multiply the number of trees on
your course by the average gallons
needed per tree per day. You may be
surprised at the enormous amount of
water needed to support the needs of
the trees in addition to the needs of
the turf.

Developing a Tree Inventory

A sound approach for managing
trees on the golf course is to develop a
comprehensive tree management plan.
It should take into account the agrono-
mic issues of the turf as well as those
of the trees. A tree inventory is an
excellent starting point that will eval-
uate your important trees and create a
location map and a corresponding
database of tree management
information. With today’s use of Global
Positioning System (GPS) and Geo-
graphical Information Systems (GIS)
technology, the creation of accurate site
maps has become greatly simplified.

The tree management plan should be
targeted as a long-term goal. If water
conservation is an issue, then the tree
management plan should address this
goal. Emphasis would then be on
strategic removals and pruning to re-
duce the water requirements for the
trees. The plan should also include
suggested removals, pruning, and other
special arboricultural needs, as well as
help establish priorities and develop
budgets. Safety and liability issues
should also be noted and addressed.
Courses that have implemented sound
management programs have seen
value-added results with immediate
improvements in their turf and play-
ability. The aesthetic improvements
can be dramatic, too!

A Working Model

BraeBurn Country Club, in Houston,
Texas, initiated a comprehensive tree
management program in 1999 with
dramatic results. First, aerial pho-
tographs of the golf course were digitized
so that all of the course features could
be recognized. Second, information
was collected regarding each tree on
each golf hole. For example, tree
caliper, species, current health, and
recommendations for improvement
were coded into a hole-by-hole analysis
workbook. Third, a group comprised of
the Green Committee, superintendent,
general manager, and myself initiated
a pilot program to show the general
membership what all would be in-
volved. Trees were trimmed, moved,
and removed on three holes. This
process took approximately one month
from start to finish. Shortly after the
project was finished, 70 mph winds
ripped through Houston and damaged
trees and numerous golf courses in the
area. Oddly enough, the trees that had
been trimmed on the three holes at
BraeBurn Country Club suffered no
damage as compared to the trees on
the rest of the property. The general
membership was surprised to see that
the tree management program actually
helped save essential trees. Con-
sequently, the club funded the tree
management plan for the rest of the facility.

Conclusions

After developing a golf course tree
management program, a golf course
tree-planting plan can be designed with
an emphasis on “the right tree in the
right place.” Tree species selection
should be made based on what is
appropriate for golf playability, turf
quality, and turf and tree maintenance.

Tree planting plans are also great for
developing memorial tree programs, if
they are properly planned and man-
aged. The plan will help direct future
tree planting on the course and ensure
that your turf management programs
and playability are not compromised
with an incorrect tree species being
introduced or planted in the wrong
location.

Many turf problems and playability
issues can be alleviated if proper plan-
ning and/or planting takes place. A
better understanding of trees (including
growth potential and maintenance re-
quirements) and their relationships to
turf can greatly impact and improve
future turf quality, and can help reduce
turf maintenance costs for the future.

All too often, course officials throw
money at problems in an effort to cor-
rect the situation. Unfortunately, the
symptoms are treated rather than the
problem being solved. Implementing a
good tree management program can
help pinpoint the problems and pro-
vide cost-effective solutions for im-
proving the turf as well as the trees.

Trees are a very large and domi-
ating part of the golf course ecosystem.
Both trees and turf require sound manage-
ment practices in order to optimize
playing conditions. Incorporating
tree management as a vital constituent
of your course management program will
help ensure better playability and
healthier turf.

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