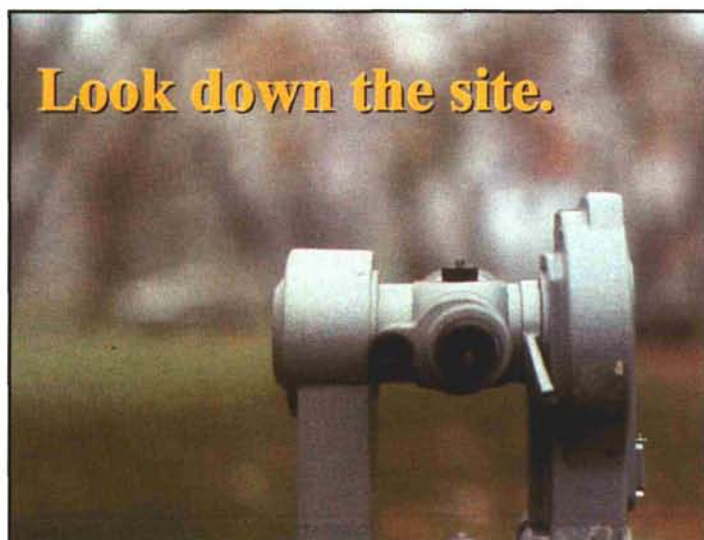


Using New Technology to Solve an Old Problem: Trees

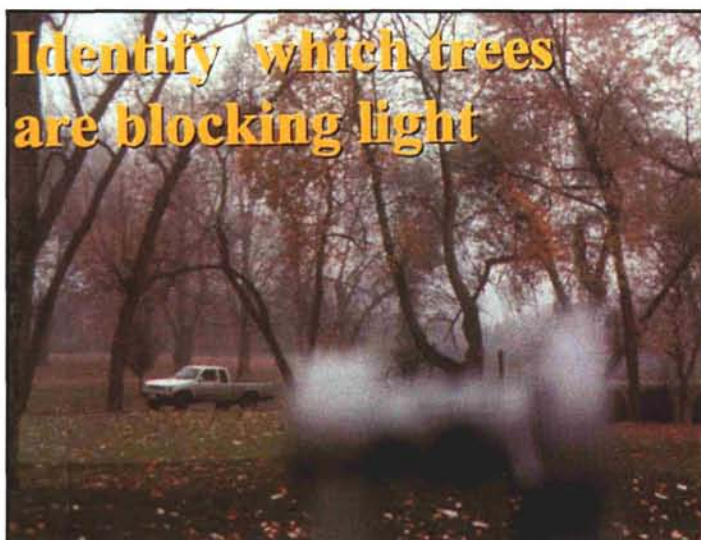
A computer program pinpoints the location of sunlight and helps with tree management.

by DAVID A. OATIS



Look down the site.

Simply look down the site on the sun location device and "identify precisely which trees, or branches of trees, are actually blocking the sunlight."



Identify which trees are blocking light

AFTER MAKING more than 1,200 Turf Advisory Service visits over the last nine years or so, I have come to the conclusion that there are just two types of golf courses in North America: courses that have already been over-planted with trees and courses that eventually will be! Trees are an important part of landscapes and a tremendous asset to many golf courses, but an overabundance of trees can cause many different kinds of problems. For starters, trees can cause playability problems; more significantly, they can make it physically impossible to grow healthy, vigorous turfgrass.

Unfortunately, man seems to have a pathological urge to plant trees, and golf courses are especially attractive sites due to their size. Even if a vaccine to combat this seemingly genetic disorder were developed tomorrow, it would be too late for the many courses that have already become over-planted. In these cases the only solution is tree removal.

Herein lies the crux of the problem: Few programs are less popular than tree removal. In fact, tree removal is so unpopular that it often is forbidden by golfers who love trees but do not understand how important sunlight is to turfgrass. Several Turf Tips aimed at increasing the awareness of tree-related concerns among golfers and course officials have been presented over the years. This Turf Tip is another in a long line of tree-related Turf Tips, but it utilizes *new technology to solve this old problem*.

The idea comes from ArborCom of Toronto and licensee Scott Robinson from Arborists Tree Service in Bracebridge, Canada. It has been used successfully at several courses, including Thornhill CC in Toronto, Canada, where Keith Bartlett is the golf course superintendent. Robinson uses a technique developed by ArborCom that combines specially designed software and sun location equipment. These tools allow him to identify the exact

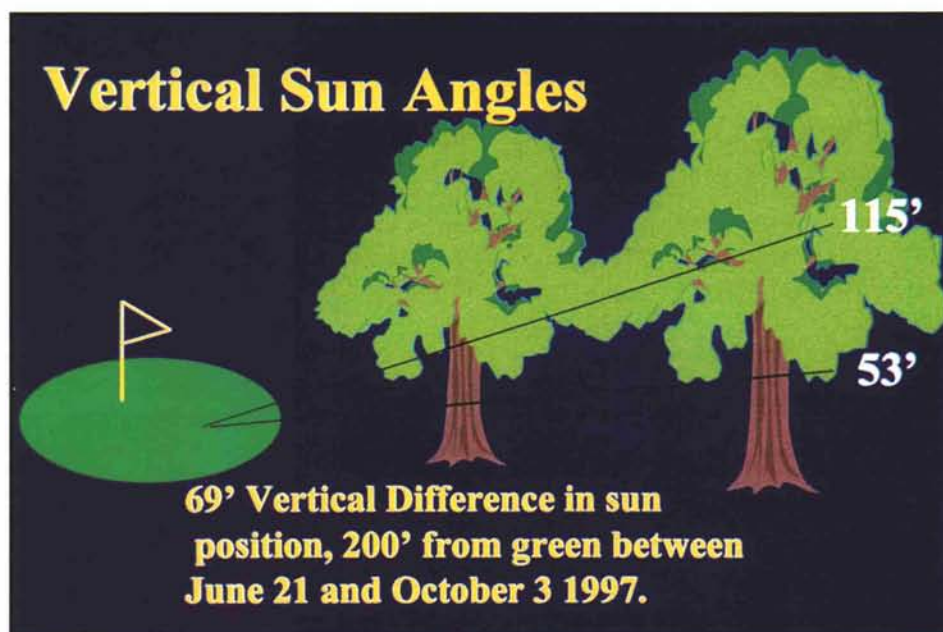
position of the sun, at any hour of any day, during the entire year. The information generated can then be used to help decide which trees, and even which branches of trees, need to be removed to increase sunlight penetration. The technique will help quantify the additional light to be gained and can help determine the potential value of the work *if it is performed*. This information is extremely useful in weighing the intrinsic value of a specific tree versus the increased light that would be generated by its removal. With foresight, the program can also be used to determine precisely where new trees should be planted to avoid future controversy. As Scott Robinson put it, "This process removes the guesswork by allowing me to pinpoint the exact location of the sun." The technique is so accurate and effective that unnecessary tree work is eliminated and, according to Superintendent Bartlett, "It saves as many trees as it gets rid of."

A compass by itself simply does not provide enough information. Computer software like ArborCom's, which uses astronomic algorithms to determine the sun's position throughout the year, is needed to make better-informed decisions. The sun does not rise precisely in the east, nor does it set precisely in the west, and the positions vary considerably during the year. You might be surprised to realize just how much the sun's positioning changes during the year. Here is how the technique works:

A computer generates the sun's coordinates in 15-minute increments for every day of the year, for a given geographic location (these coordinates must be recomputed for courses more than 30 miles apart). The sun location equipment is then set up in the shadiest portion of the turf area in question. Coordinates for a chosen time and day are entered into the equipment, which then indicates the position of the sun. By inputting multiple dates and times, sunlight and shade patterns can then be computed for various time periods throughout the year. This sunlight survey can be performed at any time during the year with equal accuracy.

This technique requires specialized equipment, data interpretation skills, and a thorough knowledge of trees. More than likely, your best bet is to hire an arborist with the technology and skill to plot sun locations to provide the service for you. Here is a little advice if you decide to give this technique a try:

- Have a tree crew present and equipped with radios. The offending



Sun angles in the horizontal plane vary throughout the year.

trees and/or branches can be removed as you survey each site without having to rely on anyone's memory. It is essential to have a tree crew present in cases where several layers of plant material exist around the site in question.

- Be sure to have course officials present for the assessment so they can authorize the work. Visual proof can influence the vote, and it is a good precaution to have witnesses.

- It is wise to shoot sun angles from multiple positions, so don't just have your consultant set the sun location up on the shadiest or weakest portion of the turf area. This is especially important for sensitive situations, such as

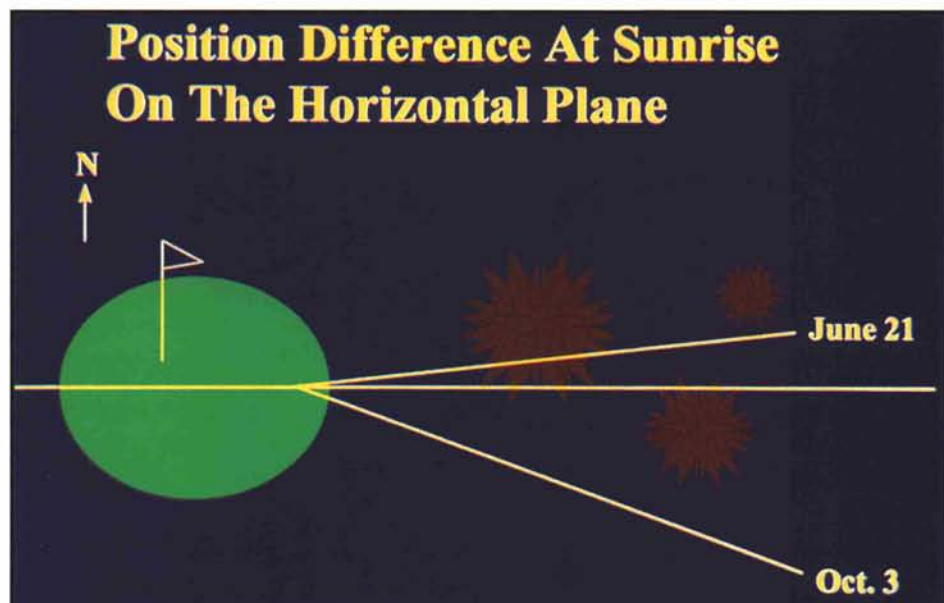
when the fate of a favorite tree is in question.

- Carefully consider the time of day and the time of year when increased sunlight penetration is most needed. Note that morning light is the most critical to turfgrass, but eight hours of direct light is the minimum considered necessary to produce quality turfgrass.

- A competent golf course architect and Green Section agronomist should also be included in the process to get different perspectives.

- For the more politically sensitive situations, have the sun location consultant develop and present a report, complete with pictures, diagrams, and a proposal for doing the necessary work.

This technique provides an easy and accurate means of documenting the amount of sunlight fine turf areas receive at various times during the year, and it helps identify which trees can be pruned or removed to increase sunlight penetration. Perhaps most valuable of all, this technique helps to assess the relative value of the work *before it is actually carried out*, and this will insure that you achieve the maximum effectiveness from your tree removal efforts. Politically, you will not find a more valuable tool. Try harnessing new science and technology to solve one of your oldest and biggest problems!



"The sun does not rise precisely in the east, nor does it set precisely in the west."

DAVID A. OATIS joined the USGA Green Section staff in 1988 as agronomist for the Mid-Atlantic Region. He currently serves as Director of the Northeastern Region.