

Tree inventory software eases the pain of tree removal

By ANDREW OVERBECK

"There are only two kinds of courses in this country," said Dave Oatis of the U.S. Golf Association, "ones that are overplanted and ones that will be overplanted."

Despite constant prodding by organizations like the USGA, most courses are just now starting to pay attention to their tree-management practices and implementing selective tree-removal programs.

According to Oatis, more courses are starting to feel the effects of tree-planting schemes that were popular 20 to 30 years ago.

"The top three problems are improper selection of species, improper location and planting too many trees," said Oatis director of the Northeast Region of the USGA Green Section.

These problems can lead to increased tree disease, weaker, poorly developed trees and increased competition with surrounding turf areas for sunlight, water and nutrients, said Dr. Jay Sipes of Virginia Tech University in Blacksburg, Va.

"The first step to combating these difficulties is to prepare a tree inventory," said Sipes. "First, identify the trees; second, scout for disease and pest presence and damage; third, identify pests; fourth, implement a management plan to take care of these problems."

GPS AND GIS

The second step, according to forester Jack Swaze of Swaze Burris Terra Turf and Trees in Houston, is to map the golf course with Global Positioning System (GPS) and Geographic Information System (GIS) software that provides superintendents and greens committees with a visual idea of how trees and turf are interacting on the golf course.

"Most courses are on a collision course with nature and they are going to have to manage trees just as they manage the turf in order to have optimum conditions," said Swaze. "We catalog and identify trees on an aerial map that assesses what they have and then the software can predict what a tree is going to do down the line."

The PC-based software program is pre-



An aerial image prepared by Terra Turf and Trees identifying tree placement on the 10th hole at BraeBurn Country Club in Houston.

pared for each golf course and is a "working tool" that can be used as a constantly evolving management device to change and update course conditions over time. Swaze recommends that an arborist review the data every four to five years to ensure that a proper management program is followed.

Jason Bass, certified arborist and presi-

dent of Point Forestry in Eagan, Minn., prepares similar turnkey software programs for golf courses.

"We do GPS and GIS tree inventories and we catalog tree species, condition, damage and disease," said Bass. "Then we show the superintendent where trees are too thick, where the trouble trees are,

Continued on page 24

Who can take an oak tree? The Stump Man can



"Have stump grinder will travel..." is the raison d'être of the Crews Service Co.

By ANDREW OVERBECK

WALNUT GROVE, Mo. — Sick and tired of dealing with the hassles of owning a medium-sized tree-service company, Ted Crews sold his share of the business to his brother four years ago and struck out on his own. Crews, a certified arborist, is now waging a one-man battle to rid a seven-state region of a persistent evil...tree stumps.

"I wanted to do something that I could do by myself," said Crews. "A stump grinder was the only machine that one man could operate and make a living with."

And what a living Crews makes. In order to make his business feasible, he owns the most powerful stump

Continued on page 24



Dead trees have their uses.

Trees versus turf: A constant battle over water

By JACK SWAYZE

That's a fine little sapling you planted there. It may not consume much water today, but have you considered the future?

A plant's leaf surface area basically determines its water usage. The larger the leaf surface, the greater the water loss. Evapotranspiration (ET), the loss of moisture into the atmosphere through the leaves, is effected by temperature, humidity, time of year, wind exposure and sun.

In the winter, for instance, dormant trees and turf require less water due to lack of foliage, cooler temperatures, and shorter daylight hours. Conversely, in the summer the usage can be significantly greater due to higher temperatures, sunlight, wind, and so on.

Cultural practices such as mowing keep the golf turf leaf surface area at a prescribed height. The moisture loss by the relatively small leaf surface area of turfgrasses is minimal

Jack Swayze is a forester and president of Terra Trees Turf, LLC, headquartered in Houston.

compared to tree leaves. The ET is still affected to a great degree by the temperature, wind, humidity, etc.

Overall, the water requirement of the turf is constant from year to year as it covers only the same given area with no change in height or biomass. The golf course will probably always average the same annual water consumption for the turf year after year.

However, trees differ from turf in that they have woody conductive and support tissue that connects foliage with the tender root hairs in the soil. The canopy of the tree is in equilibrium with its roots in the fact that one physiologically supports the other. Leaves are responsible for photosynthesis (carbohydrate production), while roots absorb moisture and nutrients. One can not exist without the other.

Trees have root systems that can extend for hundreds of feet and are often two or three times as long as the tree is tall. Tree roots' influence on turf can be considerable as they can extend into and grow across fairways. Trees can outcompete turf for moisture, nutrients and oxygen.

Continued on page 22

What use is a dead tree?

By RON DODSON

What is a snag?

A snag is a dead or dying tree that is left standing. To many people, a snag is just firewood waiting to be cut, and until recently, foresters systematically removed dead trees because it was thought that they harbored disease and insect pests. In fact, most dead trees do not harbor active diseases or damaging insects.

It is now widely recognized that many bird species feed heavily on insects and thereby help to prevent serious insect outbreaks.

But how does a tree become a snag?

Continued on page 22

Ron Dodson is president of Audubon International, headquartered in Selkirk, N.Y.

Dead trees

Continued from page 21

Dead trees can also be used to mount additional nesting boxes, increasing the available nesting sites for cavity nesting birds. Snags also serve as valuable sites for perching and shelter.

Snags overhanging water provide perches for spotting fish for prey by kingfishers and herons, or at the edge of fairways for catching insects by flycatchers.

They may also serve as den sites for small mammals. Den trees have trunks or large limbs hollowed out by rotting with an opening to the outside. This includes some snags, but den trees typically are still alive enough to continue to produce mast (nuts and

acorns) or fruit. Den trees are used by honey bees, birds, and mammals varying in size from a mouse to a black



bear. Hollow trees broken off at the top and open to rain and snow provide less protection, but are sometimes used by birds like great horned owls for nesting protection.

Once a snag falls to the ground it continues to be beneficial to wildlife as a source of food and shelter, as well as to return nutrients to the soil. A fallen snag and other downed limbs, twigs and debris may also be used as part of a brush pile providing additional wildlife shelter and protection. Brush piles placed in sheltered areas along the edges of fields, fairways and woods provide escape, cover, nesting sites and den sites for rabbits, weasels, woodchucks, skunks, Northern prairie skinks, red foxes, garter snakes and many other species. Brush piles can also provide important reptile, amphibian, and fish habitat if placed on the edge of a small pond so part of the brush is submerged.

What can you do?

- Do wildlife a favor and start a snag conservation program if you don't already have one.
- Develop a management strategy to retain snags in various stages and in a variety of habitats.
- Monitor snags for safety and development of undesirable pest problems.
- Provide additional nesting sites for birds by leaving snags as a source shelter and food.
- Reduce the amount of trees and limbs you have to dispose of by leaving them standing to help all of the cavity nesting forms of wildlife that are looking for homes.
- Use decaying snags and limbs in brush piles.
- Educate club members about the economic and environmental benefits of leaving dead trees to enhance habitat and provide nature's resources for the living.
- Write a short article for your club newsletter, post a sign on a snag explaining its natural resources, take slides and post photos to demonstrate the integration of nature's way as part of the golf course — a contribution to the environment as well as to the aesthetic uniqueness of the course.

Tree software

Continued from page 21

and we offer solutions ranging from pruning to cleaning, or removal.

"We also have a three-dimensional feature that lets you view the tree over time so that you don't put a \$400 tree in the wrong place 15 years down the line."

However, Bass has found that superintendents are still too reactive when it comes to tree management.

"Many are calling us too late. We have seen trees that have been planted too deep, that were suffering from compaction, neglect, poor pruning and structure," said Bass. "People need to remember that it costs three times more money to remove a tree than it does to maintain one."

Terry Gill, superintendent of BraeBurn Country Club in Houston, is learning this lesson the hard way.

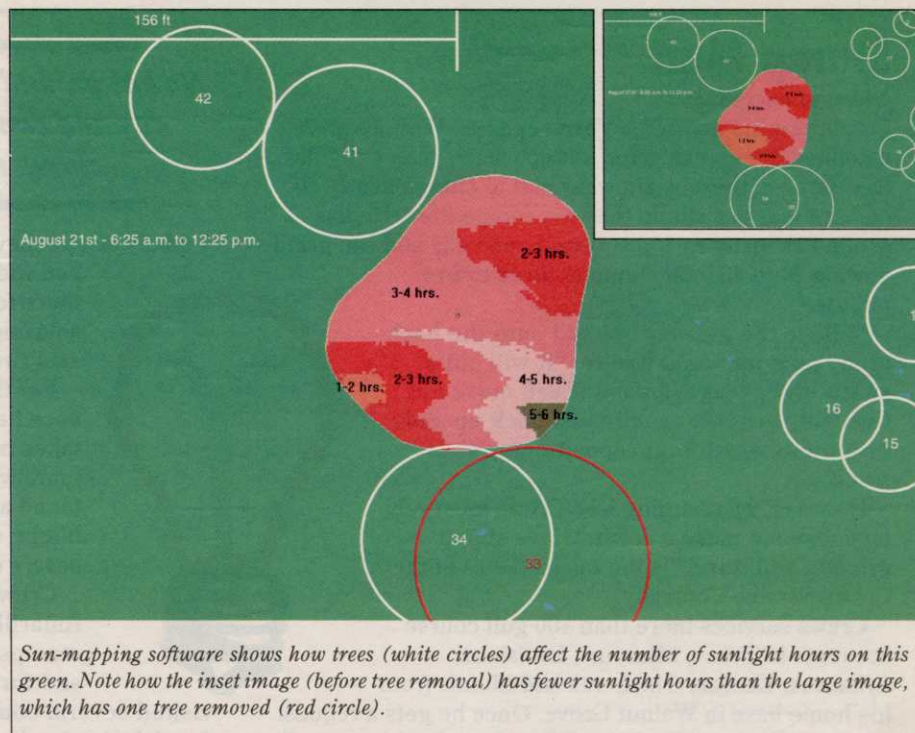
Swaze's Terra Turf and Trees completed a three-hole tree inventory pilot program at BraeBurn in August and the results of that work are already proving to be worthwhile. "We identified 50 'problem trees' and did pruning and removal and they were able to come in and sod areas where they couldn't before," said Swaze.

The impact of the tree work became more evident in early September when a storm packing 60 mph winds caused extensive tree damage, except on the three fairways in the pilot program.

"The trees that had been trimmed we had no damage on, but on the rest of the golf course, we had substantial damage," said Gill. "It took the better part of four days with 18 guys working to clear it out, not to mention laying new sod."

The cost of Swaze's tree inventory was around \$14,000 and the subsequent tree work will cost the BraeBurn close to \$100,000 this year and \$30,000 for the next three years to get the course onto a proper tree-management program.

The average cost of a tree inventory that includes maps, software and recom-



mendations for a management program runs around \$15,000 per 18-hole course, according to Point Forestry's Bass.

SUN-MAPPING

While GPS and GIS help in identifying, cataloging and mapping the course and its trees, sun-mapping technology developed by Toronto-based Arbor Com Inc. is revolutionizing tree-removal practices.

Arbor Com generates sun-mapping software around green and tee areas that are suffering from inadequate sunlight and poor turf growth.

The software is extremely complex and as a result is not a turnkey solution. But it does offer the most accurate calculations and recommendations for tree removal. For example, it can identify which branch on a tree that needs to be removed in order to improve sunlight penetration.

"We take longitude and latitude measurements on site and that tells us how the sun moves through the property," said Scott Robinson, vice president of

Arbor Com. "Then, using surveying technology, we measure 45 points around the green and that tells the software where the green is so it can generate a three-dimensional map."

From there, Robinson measures and identifies the trees surrounding the green, including vertical and horizontal heights so the software knows where the trees are in relation to the green.

"Then we have a model where we can get the computer to show us how shadows move on the green and how many sunlight hours the green is getting," said Robinson.

Robinson then compares the needed light penetration for the particular turfgrass with amount of sunlight hours that the green is actually getting. "If it is deficient and not meeting the goal, we can identify the problem trees and run the model to see what part of the tree is blocking out light," said Robinson.

This simulation process usually begins

Continued on page 24

THE EMERGING LEADER

In Leaf & Debris Removal Technology





Fairway Aerator

Air Force Blowers

TUFF VAC Vacuums

AgriMetal

AgriMetal Turf Equipment

1006, rue Principale, Wickham, Quebec, Canada, J0C 1S0 • Tel : (819) 398-6883 • Fax : (819) 398-5311

READY TO SERVE THE GLOBAL MARKET

Stump Man

Continued from page 21

grinder on the market, a Vermeer 1102. With a speedy machine, Crews can grind stumps faster than a regular tree service, thereby allowing him to charge nearly 60 percent less per stump than his competitors. He has ground as many as 150 stumps in one day and can grind down a 20-to-30-inch stump in three to five minutes.

"I have the grinder hooked onto the back of my pick-up," said Crews. "It will cut a swath eight feet wide and it will move out five feet, so I can usually just back up and grind it away without repositioning the truck."

However, by charging less Crews must rely on volume to make a profit. "Have stump grinder, will travel" is the raison d'être of the Crews Service Company.

Crews services more than 100 golf course accounts in Texas, Missouri, Louisiana, Arkansas, Kansas, Oklahoma and Illinois from his home base in Walnut Grove. Once he gets a request from a golf course in an area, Crews works to set up other work in the region to make the trip worthwhile.

Crews services more than 100 golf course accounts in Texas, Missouri, Louisiana, Arkansas, Kansas, Oklahoma and Illinois from his home base in Walnut Grove.



He has ground as many as 150 stumps in one day and can grind down a 20-to-30-inch stump in three to five minutes.

Many can't believe that Crews is willing to travel far and wide just to grind stumps, but the work is there for the taking according to Crews. "It is amazing how many stumps are out there," said Crews.

For the most part, Crews has found that once he has cleared a course of stumps it takes two to three years before they generate more work for him. However, Crews has found a home in Texas where pine beetle blight, drought and ice storms have done severe damage.

Crews recently cleared the city of Amarillo's five public golf courses of tree stumps left over from last year's ice storm and for three consecutive years he has visited several courses in east Texas that have suffered from pine beetle blight.

"Each time I go down to east Texas I average about 70 stumps a golf course," said Crews. "Each year I go down you'd think that there wouldn't be any trees left, but they still have a lot."

However, Crews still has an ax to grind and is on the prowl for more stumps. Next month, he will be extending his reach into the Memphis, Tenn. area. "It is going to take more courses to fill my schedule," said Crews. "I am working at about 25 percent of my capacity."

Tree software

Continued from page 23

in June, when the sunlight is the brightest. "Then we go to July and August and down the line to re-tune it to the goal since sunlight hours change from month to month with the angle of the sun." Robinson bases his recommendations on these cumulative measurements and sunlight information.

"This way a green committee can see all the factors and decide if the cost of removing the tree from aesthetic, strategic and historic factors is worth the extra light that they are getting," said Robinson. "This makes it a hell of a lot easier to make a decision than just me and the superintendent telling them what we think will make a difference."

Arbor Com has been using sun-mapping technology on golf courses across the country for three years and has worked for Augusta, Ga. National Golf Club, Oak Hill Country Club in Rochester, N.Y., and Point O' Woods Golf Club in Benton Harbor, Mich. The company charges around \$2,500 per site to run the sunlight mapping tests. The number of courses that Arbor Com services is growing each year and Robinson expects it to continue.

"While expectations for green quality have gone up, superintendents are also becoming aware of how important trees are to golf courses and they don't want to take trees out unnecessarily," said Robinson.

Durable, Flexible, Affordable



Durable Fore-Par direction and rules signs are weather proof and golfer proof. Wind. Sun. A whack with a golf club. A swift kick. They'll stand up to almost anything. They retain their flexibility and appearance indefinitely, even under extreme weather conditions. Messages are screen printed on one or two sides with a tough, pliable coating that bonds to the sign's surface.

Flexible Just one of the words used to describe Fore-Par service. Do you need a single sided sign printed on both sides? Just ask. Want a custom message? No problem. Have a special color requirement?

Slam-Dunk. Need them fast? Our specialty! When it comes to flexibility of service, nobody comes close to Fore-Par.

Affordable New production techniques and improved raw materials have provided us with significant savings which we are pleased to pass along to our customers. If you thought the legendary Elasto-Signs™ were too expensive, it's time to take a second look. Our new affordable pricing plus years of durable service make Fore-Par Elasto-Signs™ the best buy on the market.

For more information on the Fore-Par accessories line, Call 800 843-0809, and get more for your money from Fore-Par.

FORE-PAR

DISTINCTIVE GOLF COURSE ACCESSORIES

16761 Burke Lane, Huntington Beach, CA 92647 • Tel: 714 842-8494 / 800 843-0809 • Fax: 714 842-7384