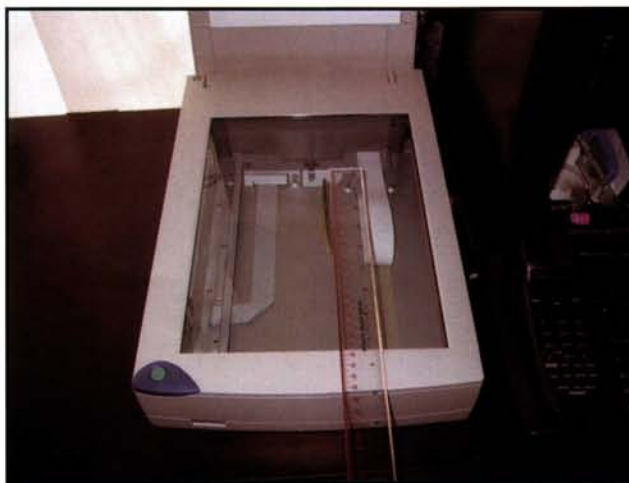


SCANNING NEW HORIZONS

A fun and effective way to enhance your communication efforts.

by JIM MOORE

A flatbed scanner provides golf course superintendents with a useful tool beyond its intended use. Scanners also do a great job on 3-D objects, and can be utilized as an efficient magnifying tool.



A GOOD dissecting microscope is one of the tools almost every golf course superintendent would love to have, but few feel comfortable asking for one due to their high cost. Even the least expensive models run \$150, and high-quality equipment can easily cost \$500 and more. Although a good scope helps the superintendent identify problems, it does not help much with another major challenge facing all of today's superintendents – communicating with golfers and employers.

Most golf course superintendents are fortunate enough to have one of the best tools to enhance communications – the personal computer. With easy-to-use software, superintendents can now produce informative, high-quality documents ranging from newsletters to websites. These communication tools help the superintendent better explain what is currently being done on the course and, just as important, what is planned for the near future.

So what do a dissecting microscope and communicating with golfers via the computer have in common? How about combining the two ideas into one really powerful technique for less than \$150! That's all a first-rate flatbed scanner costs these days.

Every superintendent who has a computer also should have a flatbed scanner, but not just for scanning papers. Most people are unaware that

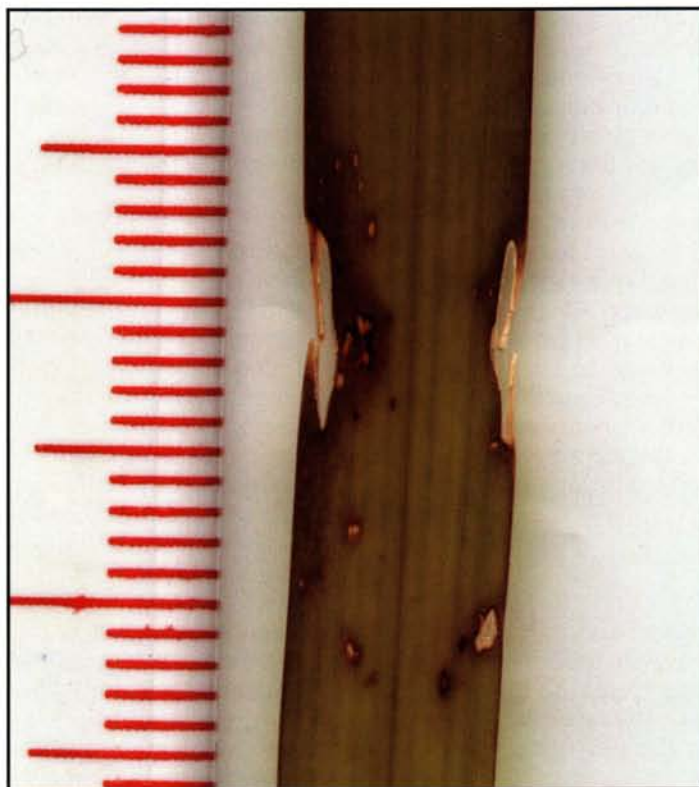
scanners also can do a great job on three-dimensional (3-D) objects. And, if you properly utilize the scanner's resolution capabilities, you can turn it into a great magnifying tool as well. Once the object is scanned, the image can be included in the next newsletter, green committee report, and so on. If the object happens to be a weed, insect,

or diseased leaf, the image can be e-mailed to an expert to help with identification.

Let's consider a few examples of how scanning 3-D objects can improve your communication skills.

One of the most common problems on golf courses is poor bunker drainage. Often, bunkers drain well at first but steadily slow down as they age until they more closely resemble swimming pools than hazards. A high-resolution scan of sand collected from the poorly draining bunker should be compared to a scan of sand from a bunker that still drains properly. The scans will clearly illustrate the presence of silt and clay blocking the large pores between the sand particles. The silt and clay also cause the sand to be "crusty" when it dries.

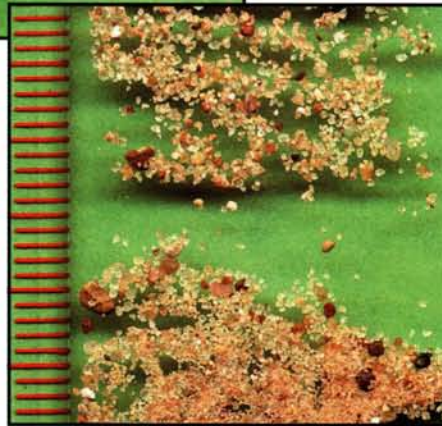
These images can be used to illustrate why high, flashed sand faces in bunkers result in reduced bunker life. As the sand is washed from the face, it mixes with the silt and clay from the bunker's soil floor. Each time the sand washes,



One challenge to the golf course superintendent is disease diagnosis. A scanner can be used to get an up-close and personal look at leaf lesions. The image also can be e-mailed to a university turf specialist who can assist in the diagnosis.



The amount of silt and soil in bunker sand impacts drainage capabilities. A high-resolution scan of a bunker sand that drains properly (right) compared to a slow draining bunker sand will probably show the presence of silt and soil (above).



the percentage of silt and clay increases, and drainage decreases. Even the non-agronomically inclined will better understand this problem once they can see the images for themselves.

Another good scanning subject is a soil profile removed from a green. Layering in the profile is extremely easy to identify when the profile is magnified. Scanning clearly reveals the enhanced rooting of the turfgrass in the aerifying holes as well as the tendency of excess organic matter to hold too much water. Golfers still will not like it when you aerify, but at least they will be able to see for themselves why it is so important to the good health and performance of the greens.

Turfgrass diseases are often difficult to identify. Today, fortunately, help is only an e-mail away. Take a picture of the damaged area from five to ten feet away to provide an overall view. Next, take a picture from as close as your camera will focus (most cameras can only get to within a couple of feet). Scan these photos into your computer. Now

for the next step – a 3-D scan. Remove a plug of the diseased area and lay it turf side down on the flatbed scanner. Scan it at different resolutions to enlarge the image. You will now be able to e-mail a variety of images to the individual helping you with the diagnosis.

When scanning 3-D objects, the key is to experiment. Start with the scanner software set at 150 dpi (dots per inch) and gradually increase the resolution to magnify the images. One note – be careful about going over 1200 dpi unless you have a really fast computer and a massive hard disk. Extremely high-resolution scans can result in files that are dozens of megabytes in size and may take many minutes for your machine to process and display the image. Also, experiment with laying different colored paper over the object to create a background. Laying a ruler on the scanner next to the object will help illustrate size.

There are many other examples of 3-D objects to scan. Insects, weeds, and diseased plant leaves are the most obvious. Sand, soil profiles, root systems, and flowers also provide dramatic and highly useful images. Have a little fun, and in the process greatly enhance the quality of your communication efforts.

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Take some time to experiment when scanning 3-D objects. Scan at a variety of resolutions and try using different colored backdrops to enhance the object of interest.

