

UNITED STATES GOLF ASSOCIATION

GREEN SECTION

WESTERN OFFICE



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T O P A S S O R T O B E P A S S E D

Like it or not, we are going to hear more about soils and their chemical and physical properties in the next five years than ever before. Today, few of us worry about soil texture, structure and porosity. The term 'colloids,' 'interface' and organic content have little meaning. But we'll probably be tossing them around with ease in the not too distant future. We will or we'll be passed by in the turf management business!

This is turf progress brought about by recent soils research work. A clearer picture has been focused for us and a more definite view of putting green soil mixtures is now possible. The old time ratio of 1 part soil, 1 part sand and 1 part peat is no longer valid. The Green Section plans to publish definite recommendations for putting green soil mixtures in the near future. These recommendations will be based on research principles just as applicable in Seattle as they are in San Diego. They will represent over five years of research work on the subject.

As more experience is gained in using these mixtures, one point becomes increasingly clear. If they are to succeed, the architect or superintendent must follow the soil recommendations TO THE LETTER. There can be no "last minute" changes. Jim Holmes, Mid-Continent Green Section Agronomist says, "The new soil mixtures for putting greens will work, but all recommendations must be carried out. There is no sense in considering them if you intend modification. This can only lead to trouble."

A Touch of 'Soils':

The soil, as we ordinarily know it, is made up of a mass of solid particles with spaces between them. The solids may vary from rocks and stones to a size so small that only a microscope can detect them. The latter range size is often referred to as "colloidal" and is exemplified by muddy water, which is nothing more than small clay particles in suspension. By grouping the different particles size ranges of a soil, we define gravel, sand, silt and clay. These are termed "soil separates." Then, the combination and mixture of these size ranges in the soil is referred to as "soil texture." This is one of the "physical properties" of soils.

Another physical property is the arrangement of the particles into clusters or aggregates. This is "soil structure." Structure can be changed as a result of time and management, or both, and it plays a tremendous role in root development. Perhaps the breakdown of good soil structure in putting greens is one of the basic problems facing the modern golf course superintendent. Soil structure breaks down under compaction and irrigation; bent rooting depth becomes limited and Poa annua takes over. This is a familiar story to all.

Soil structure is considered good when the sand, silt and clay particles are associated into aggregates and clusters which are relatively water stable (i.e. will not easily disintegrate when wet). Good management practices and a soil mixture that will resist compaction (and drain readily) will greatly contribute to easing the "soil structure" problem for the superintendent. The "new" soil mixtures for putting greens will fulfill this requirement.

"Soil porosity" (pore space) is yet another physical property of soils. It is hard to believe (but true) that clays tend to have higher total porosities than sands. Although the clay pores are relatively small, they contribute to high water holding capacities, slow infiltration rates and, in many cases, poor aeration. Thus sands have larger pore spaces (but fewer pores per unit volume) and contribute to a more open structured soil with better aeration, more rapid infiltration and better internal drainage. The "new" soil mixtures for putting greens have this quality.

We have only "touched on soils." No one has all of the answers but research has taken us a step further toward better soils for putting greens. This same research is also forcing the professional golf course superintendent to acquire a broader knowledge of soil terminology and soil fundamentals. The saying "When you're through learning, you are really through" well applies. Will you "Pass" or be "By Passed" in the coming years when it comes to talking soils?

T H E L O S S O F T H E A M A T E U R

"Over the years science in the world has suffered a great loss, the loss of the amateur. Time was when the amateur led the field and won all of the prizes in science. Darwin gained his living as a member of the great family of English potters, the Wedgewoods. Mendel was an Austrian monk who discovered the principles of inheritance in plants and animals. Many of our modern varieties of plants and animals would not be on hand had not Mendel "played" with peas in the monastery garden. Leeuwenhoek, who first saw bacteria and other germs with his "do-it-yourself" microscope, was a Dutch lace merchant.

"In this day of cyclotrons, Benjamin Franklin's kite and key may seem premature tools of science but they proved his point. Franklin's fame rests not on the key and the kite. He is remembered as an amateur scientist because he possessed the basic requirements; the curiosity of a child and the persistence of an adult. His inquiring mind, his mastery of intelligent observation, his ability to think and to express his thoughts remain hallmarks of the scientist today. On these the professional has no patent.

"But alas! The amateurs are gone, replaced by professionals, and many fields of discovery lie fallow because the amateurs have deserted us. I bespeak their return.

"Most of the professionals are glad to help amateur scientists and other experimenters track down new knowledge. Both can gain. For the wise investigator has learned to weigh the folklore and the fancy as well as the facts before he undertakes a new line of inquiry."

Dr. James G. Horsfall, Director
Connecticut Agricultural Experiment Station

C A R I N G F O R S H A D E T R E E S

Even in the tall timber country of the Pacific Northwest, trees are all but sacred to most golfers. The removal of one or two branches is often hotly contested. But trees are important and it is the Superintendent who must care for them. The late winter or early spring is the ideal time for this work.

Now, during dormancy, all dead wood and 'corrective' pruning should be done. Care should be taken to see that branches are cut back to the branch or trunk from which they arise. When cuts of 2-inches or more in diameter are made, a wood preservative can be applied to advantage. For small wounds in vigorous plants, there is little advantage in using a wound dressing. ----- Tree root pruning should also be scheduled for the spring. If there are trees near any green or tee, you will have better turf next summer if you root prune trees now.

If trees on the course have shown a decline in recent years; i.e., yellow or brown leaves, thin foliage, short growth or very small buds, the following practices are suggested:

1. Using a crow bar, soil sampler or similar tool and starting about 4-feet from the trunk, poke holes every 3-feet until the outer spread of the branches has been reached. Make the holes 12 to 15-inches deep.

2. The total amount of fertilizer to be used is based on the diameter of the tree trunk. For small trees, up to 3-inches in diameter, supply 2-pounds of 5-10-5 (or 1 pound of 10-6-4) for each inch of diameter. For larger trees, add 5 pounds of 5-10-5 (or 3 pounds of 10-6-4) for each inch of diameter.

3. Pour a small amount of fertilizer into each hole (about a cupful) and fill the hole with water. After drainage has taken place, the hole may be refilled with soil.

4. Trees should be fertilized when buds begin to break in the spring. If, by mid-summer, the tree again shows symptoms of decline, apply more fertilizer as described above. However, do not fertilize later than mid-August since this will encourage new tender growth. Such growth may not harden before fall and cold damage may result.

Love Those Trees:

Taylor Boyd, Superintendent at Camargo Country Club (Cincinnati, Ohio) "loves those trees" but in their proper place. He points out that trees, when improperly planted, can make a course nightmarish to play and can prevent the proper growth of golfing turf.

"We have an area that took six to seven minutes to mow with a tractor and gang mowers. It has now been improperly planted in shrubs and takes a man two hours to cut the same area. This costs \$84.00 more per year to maintain. The shrubs were necessary but could have been planted in such a manner that care would have been less costly.

"The same thing is true of a maple we have planted between number one tee and the practice green. There is the problem of root pruning around the entire base of the tree, sodding tee and green areas that go out due to excessive shade, sweeping up seed and raking leaves from the tree several times a day in the proper season plus extra fertilizer and water to maintain the area affected by the tree. The total cost of this one improperly placed tree for one year is over \$100. I'll bet that every club in town has a similar situation."

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An optimist sees an opportunity in every difficulty:
A pessimist sees a difficulty in every opportunity.

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