

# Water Management

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**G**OOD WATER MANAGEMENT is the most important factor in golf turfgrass management. Irrigation and fertilization are the two most important management tools that the golf course superintendent utilizes to grow grass.

Water is not only necessary, but it also exerts influence on every aspect of grass growth. It is most important, therefore, that the golf course superintendent have a basic understanding of water and how it moves through the soil. This is necessary to the understanding of plant, water and soil relationships.

To the casual observer, and sometimes to the person actually doing the watering, the task appears to be a simple routine matter. Knowledgeable turfgrass managers recognize this and continually emphasize that proper irrigation is like a balancing high-wire act — there's no room for error! There is delicate balance between water and air space in soils that must be understood and preserved. Pore space includes large pores which provide space for root growth, air space and allows for rapid movement of water through the soil. The smaller soil pores affect water retention. Both are very important to healthful plant growth.

The physical character of the soil has a decided effect on the availability of soil moisture to plants. Physical aspects of the soil concern the size and arrangement of particles that make up the top mix. Involved is water percolation through the mixture, water retention, texture and bulk density. All have an effect on soil resiliency, which is so important to golf.

The superintendent's task in pursuit of an efficient irrigation program revolves around the preceding as well as factors of weather and location. Temperature, humidity, wind, sunlight and precipitation are factors that strongly enter into daily decisions necessary for judicious watering during the growing season. Once these factors are understood, the practical aspects of carrying out the watering program can be resolved by these questions: how much, how often and how best to apply the water? These are difficult questions to resolve because of the many variables involved.

The amount of water to apply at any time depends first upon how much moisture is present in the soil. Generally, one should apply only

*In shade, grasses normally grow weak and spindly and lighter in color as compared to their growth in adequate sunlight.*





*A sprinkler at work. Most members erroneously feel that the more water applied, the healthier the turf.*

enough water to replenish what was lost through evapotranspiration and how much the plant used since the last watering. My philosophy is to apply only enough water to insure wetting the entire root zone. Plant roots will not grow without some moisture. Through careful study and observation, one can adjust the program to daily requirements of the plant. There are wide differences in drought tolerance among grasses. The application of too much water at any one time is serious only if the soil is poorly drained and the excess cannot be removed within a reasonable period of time.

Most summer turf problems on a golf course are related to the use or misuse of water. It appears to be the one factor that is most difficult to control. Water has an effect on soil compaction, turfgrass wear, rooting depth, turfgrass growth and the encroachment of weeds.

Excessive watering and heavy foot traffic on wet soil will aggravate compaction, seal the soil pores, deplete the oxygen in the soil and restrict the root growth.

Many greens are overwatered because the irrigation program is controlled by people who are more interested in their ball holding the green than in moisture requirements necessary to good golf.

Water is critical to plant life. Supplemental irrigation is always necessary if turfgrass is expected to remain green throughout the growing season.

The frequency of irrigation is governed by the water-holding capacity of the soil and the rate that the available water is depleted. Frequent heavy watering on poorly drained soils will keep the upper layers of the root zone near the saturation point most of the time. This encourages shallow rooting and promotes other weakness in grasses,

which makes them more susceptible to weed, disease and insect problems.

The rule I follow in water management is to apply water only when needed, where needed and in the correct amount.

A knowledge of soils, terrain, turfgrass requirements, prevailing winds, natural precipitation, length of watering season, permissible hours of operation each day and sources and quantity of water supply are basic in the selection and design of a good irrigation system.

The big question no longer is whether or not to have irrigation, but rather should the system be manual, semi-automatic or fully automatic.

In my view, the automatic irrigation system has emerged as a sound and efficient new management tool for better golf turf. The automatic system eliminates such problems as the need for a night watering man, inexperienced and unreliable help, labor turnover and continuous instruction and communication with all. The efficient use of water will become more important as prices rise and as restrictions are placed on supply.

An automatic irrigation system eliminates total dependence on night watermen. This is always a difficult position to fill, yet it has always been one of the most critical jobs in golf course management.

There are other advantages of automatic irrigation, but the savings in labor and water alone are enough to insure its continued growth. One glaring disadvantage is that members tend to believe that it is a cure for all turf problems.

Water management is an art and science, skillfully performed by the turfgrass manager who has acquired his knowledge through study, observation and experience.