# GOLF COURSE IRRIGATION SYSTEMS...WHY?

I'm sure everyone would agree that an irrigation system is an important part of any successful golf course in Northern California. Turf grass needs water to survive. Water provides the turf with a means for extracting necessary minerals from the soil and transporting them throughout the plant. Turf grass also uses water as a temperature control mechanism by allowing evaporation during periods of hot weather. If water isn't available in the soil for the turf to use, the turf will go into stress and eventually die. On the other hand, if there is consistently too much water available in the soil for the turf to use, other problems can occur such as disease, lack of necessary oxygen, and the growth of antagonistic and competitive plants. Unfortunately, we can't depend on Mother Nature to supply our golf courses with the proper amount of water we need, where we need it, and when we want it. This is the function of a well designed golf course irrigation system.

In order for any turf irrigation system to operate effectively it must be designed with two things in mind; uniformity and control. System uniformity involves applying an equal (or uniform) amount of water to the turf areas of the course based on the current water requirement of these areas. Uniformity is mainly dependent on what type of sprinklers are used in the system. Sprinklers are designed to apply a relatively uniform pattern of water within a specific radius and are generally designed to operate within a specific range of water pressure. Sprinklers allow water to flow through a nozzle (or group of nozzles) which are sized to allow a specific amount of water to pass. This water flow is also dependent on the water pressure and is usually expressed in gallons per minute (GPM). The rate at which a sprinkler applies water to the turf over a specific area is called the "precipitation rate" of the sprinkler. Applied precipitation rates within groups of sprinklers is affected by sprinkler spacing, arc pattern, and water flow from sprinklers. Knowledge of precipitation rates are necessary to determine required running time for the sprinklers. Therefore, to achieve a high level of system uniformity the sprinklers need to be installed according to their operating characteristics regarding spacing or radius of throw, water pressure, and precipitation rate.

System control is important because, if properly designed, it allows the superintendent to apply water to the turf root zone based on the needs of a specific turf area. A great deal of situations exist on a golf course where separation of control is important. Different types of turf may require different water applications. Many different types of soil conditions may be present within the limits of any golf course. Mowing height can effect transpiration rate and, therefore, the water needs of turf areas. Golf is a game that is played on irregular surfaces, and course topography will affect the rate at which the soil will accept water. Wind will affect the pattern uniformity of the sprinklers and adjustment of control may be necessary to offset this. Sunny turf areas will use water more quickly than shady areas due to higher evapo-transpiration rates of the turf for temperature control. Many golf course systems being designed today utilize current technology to control each sprinkler head and to monitor the entire system for water and power usage, and maintenance concerns.

Our climate allows people to participate in this game year-round, but we only receive some natural irrigation assistance from rainfall for a few months out of the year (if we're lucky). Golfers in Northern California are pretty demanding; for some reason they're reluctant to play the game on dead grass. therefore, we install irrigation systems in our golf courses to keep everybody happy.

NEXT MONTH: SYSTEM UNIFORMITY VS. SYSTEM DEFORMITY