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JB COMMENTS - WATER MANAGEMENT

Some of the most difficult day-to-day agronomic decisions made by a turfgrass manager relate to the turfgrass irrigation practices. Evapotranspiration (ET) prediction models are now available for use in combination with a computer and microenvironmental sensor systems to provide baseline information on which to make sound day-to-day decisions. However, there are a number of critical principles that must be properly understood in order to maximize water conservation and achieve quality turfs with minimal disease problems. Two aspects that tend to be overlooked will be discussed herein.

Irrigation and the Root Zone Profile. It is a basic premise that the rate of water application through an irrigation system should be no greater than the soil water infiltration rate or the rate water is accepted into the soil. This approach is important in order to avoid puddling and an undesirable water saturation of the surface soil zone.

However, there are high-sand root zones that have a high soil water infiltration rate of 6 to 12 inches (150-300 mm) per hour. What is the principle in this case? The basic premise should be to apply only sufficient water to replace that lost by ET since the last irrigation. In the case of the perched hydration zone, such as the USGA Method, there is a reservoir of water held above the gravel drainbed that is readily available for uptake by the roots. Applications of water that exceed the amount lost by ET result in a waste of water that is flushed downward into the drainbed.

The perched hydration zone method of profile construction is a water conserving system, if proper irrigation practices are followed. Some turf mangers have claimed that the high-sand, perched hydration zone method results in high water use rates. This is most probably due to improper irrigation practices, such as watering daily in amounts that result in flushing of excess water down into the drainbed system. This also results in an increased fertilizer requirement because water-soluble essential elements, such as nitrate (NO_3) and potassium (K), also will be leached downward out of the root zone.

Another high-sand root zone situation is one built-up by frequent topdressings over an existing, impermeable, clayey soil. Again the key premise is to apply only sufficient water to replace that lost by ET since the last irrigation. Otherwise, there will be an accumulation of water to higher levels in the sand portion of the root zone due to a lack of underlying drainage. The result will be an anaerobic condition with subsequent formation of black layer symptoms and loss of rooting.