

# Sports field irrigation

BY JAMES R. WATSON, PH.D.

**W**hether duffer or pro, Little Leaguer or collegiate champion, every athlete wants to play on perfect green grass that is soft and resilient, yet firm enough for good footing. These same athletes also want a field that is tough, wear-resistant and weed-free. Water management is a key component of good field design and maintenance.

Even the heartiest turfgrass can't maintain its growth and resiliency without supplemental watering.

Some fields require more precise watering than others. Fields that sustain intensive play or that support football, soccer and baseball need sand-based soils to ensure good playing surfaces while avoiding soil compaction. But sand-based fields don't hold water or nutrients well and must be watered more frequently with smaller amounts of water. These fields also require smaller amounts of fertilizers applied more often. Fertilizers or nutrients may also be applied through an appropriately designed irrigation system.

Water may be applied to turfgrass in several ways to keep it green and resilient throughout the growing season. Hand watering is an effective way to treat stress areas, but is most useful when used in conjunction with an installed irrigation system.

Another external watering option is the use of sprinklers that pull themselves on a hose or wire-traveling sprinklers. They are largely limited to very small areas of established turf as this method washes away grass seedlings during the grow-in phase. In addition, they require labor to move the equipment to various field areas and must be watched to ensure that they move freely, avoid obstacles and are not subject to vandals.

In cases where soil is heavy or compacted, an automatic system is capable of running multiple cycles to ensure water infiltration into the soils and percolation through the seedbed. Quick-cycling capability also is effective for newly seeded or sodded fields and when turf needs to be syringed to affect evapora-



Photo by Paul Curtis

tive cooling during times of extreme heat and stress. Every field should be equipped with quick coupling valves around the field to allow hand watering or syringing of turf and to provide emergency water.

Water management also includes conservation strategies. Only an automatic irrigation system provides fingertip controls that alter irrigation cycling, which will conserve water and apply it efficiently and uniformly. The system also may include a rain switch to shut off automatic sprinkling during rainfall.

Another consideration when choosing an irrigation method is response time by support personnel. Missed watering cycles because of equipment failure can be a deathblow to athletic turf. When selecting irrigation equipment, it's important to choose a reputable supplier that offers local field support to customers. (See page 16.)

# Warm turf headed for ACC

**I**n January 2003, Advanced Aeration Systems (formerly Soil Air Technology) installed a Turf Warming system for Lane Stadium's Worsham Field, home to Virginia Tech football. The system heats and aerates the Bermudagrass field, which is a warm season grass in Blacksburg's cool season climate. Blowers force air (either heated or ambient) through the drainage system beneath the field, which was constructed in 2001 using GreenTech ITM modules, and then up through the turf. The system was designed to keep the Bermudagrass active through mid-November, to prevent winterkill during cold winter months, and to provide an early green-up in the spring.

The turf warming system can automatically control both the temperature and soil gas composition of the field using Advanced Aeration's patented Subsurface Soil Conditioning technology. Temperature and soil gas sensors embedded within the root zone of the field provide continuous feedback to the system controls. If the field temperature or soil gases are not within their programmed ranges, then the system turns on automatically. When the field reaches the desired temperature or soil gas levels, then the system turns off. Independent research has consistently shown that turfgrass quality decreases when soil gases are outside optimal ranges.

The heaters modulate automatically to maintain a constant heated air tem-



perature to the field, regardless of ambient air temperature. In addition, the system can modulate both the air temperature and flow rate to provide for a constant root zone temperature, even as air temperatures and field moisture levels change.

The system controller is linked via wireless technology to grounds manager Casey Underwood's computer. From his computer, Casey can operate the system and automatically collect system performance and field data, of which the software program can then generate graphs for a visual assessment of the data.

Casey says "This system gives us an excellent tool in the management of Tifsport in our climate. We are able to extend our growing season by a month in the spring and a month in the fall and it gives us protection from winter injury. It

also allows us to exchange root zone gases without aerification and assist Mother Nature in the drying of the field. I have been pleased with the system. It provides greater management flexibility and security."

Virginia Tech also owns a portable electric Advanced Aeration blower, which it purchased in 2001, for suctioning water and air through the field. The portable blower and turf warming system work in concert to regulate field temperature, moisture and soil gases.

Contact Advanced Aeration Systems at 561.625.3301 or via e-mail at [galdon@advancedaerationsystems.com](mailto:galdon@advancedaerationsystems.com).

## Budget Basics

**Football Fields:** Focus funds on the end zones and the area between the hash marks. An automatic irrigation system could be installed for the end zone and center areas where turf needs are greatest. An effective drainage system for the entire field remains important.

**Soccer Fields:** Again, the goal area and center of the field are most crucial to play and the hardest to maintain. An automatic irrigation system in these areas maintains a viable field. Soccer fields should be as flat as possible, thus a subsurface drainage system is of great value and worth the investment for a dedicated soccer field.

**Baseball Fields:** Although the turf is in the outfield, the focus on water management for baseball is on the infield. Proper drainage and an automatic irrigation system are essential to managing the skinned areas. The infield requires adequate water to avoid compaction that may lead to injuries. It is important to have clean, sharp edges at the soil/grass interface.

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