

WATER, WATER EVERYWHERE!

Overwatering of fine turf areas has concrete costs. Intangible impacts of overwatering may be more difficult to quantify, but ultimately they impact the bottom line.

BY DARIN S. BEVARD



Irrigation of amenity turf is viewed by some as a waste of water. However, well-maintained irrigation systems deliver water efficiently and help reduce water use and the cost of irrigation.

In many parts of the United States, water resources are regularly in short supply. Even in areas where supplies are more generous, droughts occur, and who gets to use available water resources is controversial. When water is in short supply, irrigation of golf course and other amenity turf is viewed by many as a waste. Do we indiscriminately irrigate golf courses with no thought of our water resources? No. Does overwatering occur for a variety of reasons? Yes. Additionally, the cost of water is increasing, making it more expensive to irrigate golf courses where water must be purchased for this purpose. Water costs, public scrutiny, and environmental consciousness are obvious reasons to pay close attention to water inputs on golf courses. However, there are indirect costs (some easily quantifiable, others more intangible) to overwatering that affect budgets, course conditioning, and the daily playing conditions of a golf course.

Electrical costs for pumping water vary. Some have pressurized water mains or gravity systems that require no electrical input for irrigation. Others pay hundreds of thousands of dollars just for the electricity to pump water out of wells and the additional cost to run the pump station. Some golf courses pay nothing for water; others have a water budget approaching \$1 million annually. In the Mid-Atlantic Region, water is generally plentiful and irrigation mostly is done to supplement natural rainfall rather than replace it; some courses spend \$150,000 annually on water and electric expenses. Obviously, reducing water use by only 10% would result in thousands of dollars in savings. This would be magnified in the Southwest Region of the country. What about the impact of overwatering on other budget items?

Diseases such as *pythium* and brown patch are encouraged when excess moisture is present. These diseases cause significant turf injury unless



Above left: The most damaging diseases of cool-season turf are favored by humidity and excess moisture. Overwatering may encourage these diseases, especially in areas such as rough that are not treated with fungicides. Above right: Repeated irrigation cycles that maintain wet conditions in the upper portion of the soil profile can lead to detrimental conditions such as black layer. However, subtle effects on rooting and overall turfgrass health are much more common impacts from overwatering.

fungicides are applied to prevent and control them. Overwatering can encourage these diseases, requiring more frequent or higher-rate fungicide applications. This is a subtle impact of overwatering that may go unnoticed.

Roughs and green surrounds that often are not treated with fungicides are especially susceptible to damage. Fairway fungicide applications may cost \$400 per acre, depending on the products selected for application. For 25 acres of fairways, this equates to a cost of \$10,000. Eliminating one fairway fungicide application for your pesticide program each year can provide significant savings, at the same time limiting disease damage to the grass.

Turfgrass health also is affected by overwatering. Saturated soils are lower in oxygen, which is detrimental to root development and turfgrass vigor. Wet wilt can occur when oxygen levels

become so low that the turf no longer cools itself through transpiration. Additionally, saturated soils have a greater temperature increase under high air temperatures than properly irrigated soils under the same temperatures. From a turf health and management perspective, there really is no advantage to having soil moisture levels higher than necessary at any time, and in some instances it is absolutely detrimental to the health of the turf. In the Mid-Atlantic Region, we see more turfgrass decline caused by too much rather than too little water.

Wet conditions can result in mechanical damage from direct rutting of the soil and more subtle impacts such as scalping caused by a mower sinking into a soft turf surface. Scalping leads to thinner, weaker turfgrass. Overwatering also may necessitate increased mowing frequency to keep up with increased clipping yield com-

pared to maintaining dryer conditions. It is often the case that drivers of golf carts find wet spots during their travels, creating further damage that must be repaired. Again, while subtle, there is a cost associated with making these repairs. There is nothing worse than trying to explain why certain areas of the golf course are excessively wet and subject to this type of mechanical damage during a period of dry weather.

Some of the biggest hidden impacts of overwatering are its effects on playability. Overwatering creates soft playing conditions that most golfers hate. It is frustrating to hit a towering drive down the middle of the fairway, only to have the ball hit the fairway with a “splat” and no roll. Worse yet, the ball can just plug. Most of us have discussed playing conditions at certain golf courses where you hear other golfers state the familiar refrain of, “It’s a nice



Scalping and other mechanical damage to the turf are more likely under wet conditions. Nothing is worse than having to explain self-inflicted damage in a wet area that was created by too much irrigation water.



Ultimately, the enjoyment of the golf course by the players is most important. Within reason, playability is best under drier conditions. An added benefit is reduced water cost and a potential reduction in other turfgrass problems.

course, but it's always wet." This is not a compliment. Considering that many golfers make their decision regarding where to play based on course conditioning, a chronically wet golf course may encourage players to look elsewhere for regular play. Unfortunately, many golfers do not appreciate a golf course with isolated areas of brown, dormant grass, even when it does not impact playability. This perception by golfers dictates that superintendents often err on the side of overwatering rather than underwatering.

When evaluating irrigation practices, it is imperative to evaluate the system that delivers the water. Not all systems are created equal, and even the best irrigation system needs to be supplemented with hand watering. If you are not hand watering at some point during the growing season, you are probably overwatering! The performance of irrigation heads should be monitored over time to be sure that water is applied as efficiently as possible.

What is the cost of applying too much water on your golf course? The concrete cost of overwatering depends on many different factors, including turfgrass species, region of the country, and overall budget. The intangible costs for public relations and playability are much harder to quantify. The perception of golf course water use by the non-golfing public is often negative. Anything that can be done to reduce water use can only help combat this problem. Use water resources as efficiently as possible; you will save money if you do. Within reason, a dryer golf course is just better. Better turfgrass health, better resistance to disease and traffic, and better playability are obvious reasons not to overwater!

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