

Irrigation - How Much Is Too Much?

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“THE HARDEST JOB I have in trying to maintain good golfing turf is deciding when and how much to irrigate!”

This comment reflects the feeling of many golf course superintendents as they wrestle with one of the more perplexing problems in turfgrass management. With a large number of variables to consider, including terrain, soil types, grass types, rooting depth, weather factors, and the performance of the irrigation system itself, it is no wonder that irrigation has received so much attention over the years.

Despite the discussions of irrigation strategies in the classroom, at educational programs, in textbooks, and among casual groups of turf managers, a sure-fire description of how to irrigate remains as elusive as the sure-fire control for *Poa annua*. Overwatering remains a major problem on many golf courses. The superintendent who has mastered the irrigation of every corner of his course has probably done so through careful study and by trial and error. There is no teacher like experience when it comes to fine-tuning one's skills in irrigation management.

Sure, there are a few guidelines. We're all familiar with the one that says, in effect, "An average turf in an average soil during average summer weather should receive the equivalent of one inch of precipitation per week." Sounds good in principle, until you try applying it to a 150-acre golf course with swamps, flats, knolls and hills, and about as many different soil types as there are turf species and playing areas. Almost nothing is average on a golf course. If it is, it probably won't be for long!

So how does one decide when and how much to irrigate?

Starting with a knowledge of the principles of turfgrass science, taking into account the variables noted above, and considering the requirements of the game, look for visual symptoms of moisture stress (such as footprinting

and gray-blue-green coloration) and check the soil profile with a soil probe. Based upon rooting depth, the moisture content of the soil, and the experience that teaches how much one can get away with, a determination can be made whether to irrigate, syringe, or do nothing at all. There's lots of room for subjective judgement in this description, but that's what it comes down to.

How does one tell whether the irrigation practices being utilized are correct or appropriate under the circumstances? Looking at the ultimate results of the program is one good way. Underwatering is usually quite easy to recognize, resulting quickly in brown, semi-dormant, or dead turf. Thus, when mistakes are made, they are usually on the side of overwatering.

OVERWATERING MIGHT BE described as applying so much water that it becomes a detriment to the health, playability, and persistence of the desired turfgrass species. Determining the point at which irrigation becomes overwatering is difficult. For example, given the imperfect nature of any irrigation system in the context of the variables noted above, there are likely to be different areas that are under-watered, correctly watered, and over-watered on nearly every golf course. Trying to achieve the most appropriate balance, preferably on the drier side, should be the goal of every irrigation program.

However, there are telltale signs of persistent overwatering that usually appear months or years after overwatering has begun. The pictures that accompany this text show potential symptoms of overwatering. Some may appear occasionally after irrigation or after heavy rains, and all could be considered normal. But if many of these symptoms appear consistently throughout the season, then overwatering is likely occurring, and a change should be made in the irrigation program.





(Top) Symptom: Water puddles in the low areas of greens after irrigation, indicating the system is applying water faster than the green can accept it.

(Opposite page) Symptom: Water regularly appears around shoes when walking across greens.

(Left) Symptom: Diseases such as Pythium (shown) and Brown Patch are more prevalent on greens which are overwatered.

(Above) Symptom: Greens are regularly spotted with deeply pitted ballmarks.



(Top, left) Symptom: Irrigation system is turned on and used regularly during the early spring, even before the trees have begun to break bud.

(Center, left) Symptom: Area around cup quickly becomes thin and spike-marked.

(Bottom, left) Symptom: Overwatered turf develops weak, shallow root systems which do not sustain the turf during periods of stress.

(Top) Symptom: Wear problems, such as triplex ring, are more likely to occur on heavily irrigated turf.

(Above) Symptom: Poa annua is spreading and becoming widely established on bentgrass greens.