

## AERIFICATION

The principal function of aerification is to help alleviate the problems of soil compaction, layering, surface crusting and thatch accumulation.

One result of aerification is the increased rate at which oxygen will move into the soil and carbon dioxide can move out of the soil. As soils become compacted and the gas exchange rate becomes restricted root growth slows, or under severe compaction roots become shorter and the ability of the plant to take up water and nutrients decreases. This will cause weak, thin and off color turf which is then more susceptible to attack by disease organisms.

Another advantage of aerification is improved water infiltration rate. The aerifier holes make channels for water to move through the soil and through thatch layers. This improved water movement will also carry dissolved fertilizers to the rootzone. It would be advantageous to place slowly soluble fertilizer applications after aerification so to place the food in the rootzone where it can be more easily absorbed by the plants. By placing the fertilizers in these holes fertilizer loss from washing will be reduced.

Thatch decomposition is increased by the mixing action of the soil and the thatch layers caused by bringing up soil during aerification.

Early fall is the best time to aerify in our area because the growing conditions are good and the grass has a better opportunity to become well established before weeds and hot weather become a problem.

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## IRRIGATION ON GOLF COURSES

Too much water! Seems impossible in 1976. But that's what I see on a large number of golf fairways and greens. Overwatering is still a serious problem on the majority of courses.

Plants normally grow best if watered thoroughly but less frequently. Automatic systems are usually set to add a small amount of water, but frequently. But the intelligent superintendent can resist the water-by-the-clock syndrome with a little thought and scheduling.

Healthy plants require healthy roots. Healthy roots aren't developed in wet soils. They develop during the drying out cycle. Keeping them wet with too frequent and too much water encourages poorly developed, shallow roots and sickly turf. The result is that the grass is susceptible to plant diseases. And worse, there is a slow conversion to less desirable turf species that occurs over a few year's time. The best way to encourage poa annua on fairways or greens is to overirrigate!

In most cases just reducing the running time on your system will correct a lot of the problems of overwatering. If you now run 18 minutes, try 15 minutes. If that proves to be too much, cut the time again. It will not only be better for the turf, but it will reduce your power bill.

Some overwatering problems are due to poor system design. What looks good on a shop drawing may result in placing nozzles in low spots or so that they overlap at the low ground area. The result is a superabundance of water just where it is least needed. Runoff from rain or snowmelt, shallow water table at that point and then compounded by excessive irrigation, results in a mushy spot where the mower wheels make ruts and the turf is cut to pieces as if in a swamp.

To make matters worse, unless the heads have a checkomatic feature, water flows into the area from higher-lying pipes every time the water is turned off. The head continues to dribble into the surrounding soil.

Solutions that may be considered in or near low-lying areas where overirrigation is most severe include replacing the old head with one that has a checkomatic feature. Another solution is to excavate near the head, put in a by-pass pipe fitted with valves and irrigate with that particular head only when it is needed. Maybe that spot needs water only once every two or three weeks. With normal rainfall, that usually brings runoff to the low area, maybe the sprinkler need run only a couple of times in a whole season! If you have a modern irrigation system with valve-in-head controls and heads with a checkomatic feature, you are fortunate. All you need do is adjust the individual heads to fit the conditions where they exist. It is quite possible that a high spot will need 3 to 4 times as much irrigation as a low spot. This is partly because of lower demand in the lower spot, partly because of the added water it gets from runoff. Furthermore, the soil in a low spot can usually store more water because it has more clay and more organic matter than the high spot.

If you could redesign the irrigation system for your course, most of you could make design improvements. With the system you now have you must work with it, make adjustments or even minor changes. These will pay off in avoiding the aggravation of overly wet spots, to say nothing of improved golfer satisfaction.

Start first by cutting down on sprinkling time. See how little irrigation you can get away with. Adjust down until you begin to border the lean side. That's where your turf will respond with greatest health and vigor. And that's where you'll be favoring the good species over the less desirable ones.

The old question of a little's good, more is better! That's nonsense! A superintendent works against himself if his watering practices conform to that philosophy. Add the water you need and no more. You'll be happy with the results as they show up over the next couple of years.

**Reprint from Minnesota Hole Notes  
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**Dr. Al Turgeon**

Dr. Al Turgeon has the floor at the III. Turfgrass Golf Day at Indian Lakes C.C. A most worthy event.

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