

# Turfgrass Questions Answered

By FRED V. GRAU

Dr. Grau will welcome questions on course maintenance subjects from superintendents, green chairmen, club and public course officials. There is no charge or obligation attached to this service. Address Queries—Grau, Golfdom, 407 S. Dearborn St., Chicago 5, Ill.

**W**ATER . . . WATER . . . WATER . . . How much is enough—too much—too little? How often—what rate—what method?

The use and misuse of water on turf-grasses makes a fascinating study across the continent. A few studies have been made on the subject and a few articles have been written. For the most part, statements have been cautious and guarded. It would be unfair to appear to criticize anyone who has not yet been taught how to use water properly. There rests upon the shoulders of each of us the responsibility of teaching the lessons of proper water use.

Water and Diseases . . . Nearly 25 years ago I was working with Monteith and Dahl when the now classic experiments were conducted on when to water to reduce diseases on bentgrass putting greens. The answer came out clearly — **EARLY MORNING!**

If this were more generally known and appreciated there would be fewer sprinklers set on greens in the evening and allowed to run until the workmen came in the morning.

It hurts to see an excess of water used on turf in arid climates where water is precious and where control of moisture is a sure bet. Here, if anywhere, it should be possible to use just enough and no more. In climates where torrential downpours may be expected it makes sense to keep the turf slightly underwatered so that, when the anticipated deluge comes, the unavoidable overwatering will not be so severe.

Chlorosis, most frequently ascribed to a deficiency of iron or an excess of phosphorous or calcium, often can be traced to the fact that the moisture relationships have been out of balance in some way. Fortunately, the application of iron restores

grass to a normal healthy color. The true role of water in this disturbance to turf-grasses is worthy of further investigations.

Hand watering is a practice that deserves far more attention. A man with a hose and a rose nozzle can be taught to direct water to the high points on a green and to stop watering when runoff into the low places occurs. A set sprinkler has no brains to apply water only where it is needed. Drowned grass cannot well resist the invasion of *Poa annua* which thrives on ample moisture—which dies when water is denied it.

Water must be applied only as fast as the soil can absorb it without runoff. Mechanical conditioning of the soil will increase the rate of infiltration.

Deep infrequent soaking on established turf is superior to light frequent sprinkling. Every known device to increase root depth should be studied and brought into operation.

Excess surface water will serve to increase crusting and compaction. Rapid penetration of water into the subsurface materially will improve the playability of turfgrass areas. The more rapidly water can infiltrate, the drier the surface can be kept. Dry grass is less subject to disease.

We have sought to encourage the practice of thoroughly and frequently aerifying all banks, collars and approaches, and keeping these areas well-watered. By doing this it has been evident that much less water is needed on the putting surface.

Every golfer should read this next statement:

**"WHEN THE GREENS GET HARD THE CORRECT ANSWER IS NOT TO TELL THE SUPERINTENDENT THAT**

HE NEEDS TO USE MORE WATER TO 'SOFTEN' THEM."

More good grass has been ruined by too much water poured onto putting greens in a vain attempt to keep them soft enough to hold a poorly-played shot and to mollify a small segment of high-handicap golfers.

Many balls that hit on a hard approach or collar bound high in the air but the green gets the blame. This is another good reason to keep banks, collars and approaches well-watered.

Mechanical conditioning of putting green soils will do more good than water to hold a shot to the green.

It is hoped that a better understanding of the needs for, and the functions of, water can be brought about between the player and the superintendent.

Quite often the demands for a green turf can be met better and more economically by aerifying and fertilizing than by the addition of more water. Water is necessary for life but so is air. We can go for many hours without a drink of water but how long can we stay under water without air?

A balance of water and air, then, greatly is to be desired.

Q—Every time a green is analyzed in our area, the report comes back 'very high phosphorous'. I understand that the same report is more or less national. What effect does a high phosphorous condition have on the greens and what are the symptoms, if any? I also understand that much of the phosphorous is locked up and is not active. (Wis.)

A—Yes, this condition of high phosphorous in greens is more or less a national problem. This is the result of years and years of applying fertilizer high in phosphorous.

Phosphorous is not a soluble material and it remains in the soil with very little leaching. Nitrogen and potash both are soluble and not only do they leach but they are more quickly taken up by the plants and removed in clippings. This situation probably would not exist had we been able to make recommendations more nearly in accord with the needs of the plants.

A high phosphorous content in the soil in a putting green does not necessarily do any harm. If the nitrogen and potash levels are too low in relation to the phosphate level then there is a tendency for more seeds and more coarse stems to be

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produced which affects the putting condition.

Also, a high phosphorous content tends to react with lead arsenate rendering the lead arsenate ineffective against controlling *Poa annua*, chickweed and other weeds in putting greens.

A high phosphorous content may cause chlorosis because it would tend to tie up certain other basic elements which help to maintain green color in grasses. This would be particularly true if the pH of the soil were rather high. This, in effect answers your question about symptoms, if any. Actually, it is rather hard to detect symptoms of high phosphorous content in soils unless there is a striking example of comparison.

It is true that much of the phosphorous is locked up and is not active, because phosphorous tends to associate itself with calcium in the soil and where there is an adequate supply of lime, then the phosphorous is associated with the calcium in various forms.

A tissue test is a good way to keep check on the balance of N, P and K in the leaves of the plants. Many of the elements in the soil are not taken up by the plants in the same proportion in which they exist in the soil. Therefore, a test of the elements that are being absorbed by the leaves of the plant gives a more accurate picture of the situation. Tissue tests in conjunction with soil tests is the best method for evaluating the situation. Tissue test kits are available commercially. Also, the agricultural colleges can assist you with tissue tests.

From the practical standpoint, where the phosphorous content of the soil is extremely high, the best advice is to use nitrogen and potash fertilizers for at least a year without additional phosphorous and then continue your soil and tissue tests to see what changes have been brought about.

**Q**—Is it possible to use too much water even on bentgrass? I have noticed that on one of our greens where the grass is weak, the grass at the outer edges of the green, scarcely reached by the sprinkler, is much better than the grass that is getting most of the water. (N. Y.)

**A**—Yes, it is possible to overwater bent. If so much water is applied that the soil is saturated, then there is no room for oxygen, which is vital if the roots are to develop and take up food normally. You can check on the situation by taking a soil sample from the heavily watered

area. If roots are shallow and discolored, it is an indication that overwatering is a factor in causing the poor turf.

You will find it much easier to maintain the right moisture relations in the greens themselves, if you will give more careful attention to watering the collars and banks. These areas should be aerified thoroughly and frequently—about every three weeks. Keeping the area around the greens open and receptive to water will help to prevent excessive drying out of the green even though less water is applied directly to the green. Healthier growing conditions will result, and playing conditions will be better, too, if the putting surface is not so soggy.

**Q**—We have a fairway with coarse, gravelly soil. Every grass we have tried burns out in summer. What do you suggest? (Conn.)

**A**—Have you tried Kentucky 31 fescue? Very coarse soils do not retain moisture, but the fescues most often can survive drought conditions. Kentucky 31 must be seeded heavily or it may give a ragged, bunchy effect. It should be cut at about 1 in. to give a well-knit turf. Although Kentucky 31 can survive a low level of maintenance, you will find that it responds to feeding. It may not produce a turf comparable to bluegrass or bent but it offers a better chance to grow some grass.

**Q**—How can we apply two pounds of hydrated lime to 1,000 sq. ft.? (Mo.)

**A**—By mixing the small amount of hydrated lime with a bucketful of screened topdressing or with a granular organic fertilizer such as Milorganite or similar, or with most any other diluent which will give greater bulk and permit spreading of the dry material.

**Q**—We seeded Merion bluegrass into our tees. It has been well-watered and fertilized with an inorganic nitrogen. However, we can't find the Merion because *Poa annua* is so prevalent. I know that you and lots of others have recommended Merion for tees, but how do you make it grow? (Mich.)

**A**—I have always recommended solid sodding of Merion on tees as the best planting method. However, I don't think the Merion would be vigorous under the management you have described, regardless of how it was planted. The fact that *Poa annua* predominates suggests that the



area may be overwatered insofar as the requirements of Merion are concerned.

Merion will do better with a constant, uniform supply of nitrogen as is supplied by an organic carrier. Don't drown Merion; do give it a steady food supply.

When management favors Merion it is a very vigorous grower, and tends to build up a surface thatch just as the aggressive creeping bentgrasses do. The right management for Merion tees includes close, frequent mowing ( $\frac{1}{2}$  in. to  $\frac{3}{4}$  in.) to prevent puffiness, and aerifying and vertical mowing as needed to control the surface thatch that harbors disease and insects.

**Q—What are the symptoms of nematodes on bents? (Ky.)**

**A—**The so-called "yellow tuft disease" of bentgrass long has been known. Usually this occurs in the early spring or in the fall and has not usually been considered too damaging because usually the grass recovers. Recent work has indicated this yellow-tuft condition is always associated with nematodes. The grass frequently takes on a rather chlorotic yellowish unthrifty appearance but positive determination of the presence of nematodes can be made only by a trained man and a microscope.

**Q—Most of our greens have small amounts of the little white clover in them and a few have become quite infected. Is there any practical way to eliminate the clover without hurting the greens? (Ill.)**

**A—**In the early days of golf when clover was much more prevalent on putting greens than it is now, much was discouraged by simply bruising with the back of a rake, then sprinkling with dry sulfate of ammonia crystals in the clover patches and allowing them to "cook" for an hour or two in the hot sun.

Following this, syringe with a hose to wash the crystals off the blades. This practice did two things—first, it severely damaged the clover because it has a broad leaf and it holds more of the sulfate than the narrow leaves of bent do, so it burned the leaves of the clover and drastically checked it.

Second, the sulfate of ammonia stimulated the growth of the grass and caused it to grow more rapidly and thus choked the clover by sheer competition. I think this is still a good method worthy of trying wherever the problem exists.

I would like to point out that a clover problem often is secondary to some other

factor in the management. Clover comes in because grass is weakened in some way. Disease, insects, mechanical injury, faulty irrigation practices, inadequate nitrogen, soil compaction—any one or more of these things may contribute to the problem.

Check every phase of management and try to overcome the things that are weakening the grass and allowing the clover invasion. I have seen greens that have been very heavily infested with clover become nearly pure bent greens in a year or two, simply by adhering to a sound program of management. Also, don't pass up the chance to crowd clover out by introducing the more vigorous, aggressive disease-resistant strains of bentgrasses. The use of 2,4-D and 2,4,5-T on greens must be approached cautiously.

**Q—Our greens are almost, but not quite, solid Poa annua. The patches that aren't Poa are some badly matted foreign strain of bent. When we use the vertical mower, adjusted for the Poa annua, it tears up the matted bent. The members say that vertical mowing ruins the greens, though I don't quite agree because the patches of matted bent ruin the putting, anyway. What do you have to say about it? (Va.)**

**A—**I think you are right that the patches of poor bent are detrimental to the putting surface. Vertical mowing has helped you to discover the trouble spots. They are like cancerous growths which you must discover and isolate before you can begin treatment.

I would suggest that you adjust the vertical mower so it will not dig too deeply into the bent. Gradually you will get the green uniform enough so that one setting of the vertical mower will be right for the entire area.

If you are dissatisfied with the quality of the bent, you could begin removing it by plugging it out and introducing plugs of an improved strain.

### **Bill Bengeyfield in Green Section New Western Office in L.A.**

**W**ILLIAM H. Bengeyfield, who succeeded Charles G. Wilson as Western Director of the USGA Green Section July 1 now is in the Green Section's offices at Los Angeles.

Through the cooperation of the Southern California Golf Assn., the Green Section's Western offices were moved from Davis, Calif. to the new location in the quarters of the Southern California Assn.,