

PROSCAPE

By Michael Hurdzan, Ph.D., golf course designer and consultant

Q: We have planted our new sand greens to bentgrass but the grass is not growing. What should we do? F.B., Knoxville, TN

A: The slow establishment of bentgrass on high sand greens is not uncommon and can be caused by several factors which results in an improper balance of air, water, and nutrient in the soil.

First, if the sand is of too coarse of particle size, then there are too many large pores and insufficient soil water is retained against gravity. Conversely, if your sand is too fine then too much water may be held not allowing enough oxygen to be retained in the root zone. The ideal soil mix should be 50% solid, 20% water and 30% air after gravitational draining. This ideal is usually approached by using sand commonly called Mason sand and with this general specification:

- 1) Not more than 10% (by weight) of particles over 2 mm size
- 2) At least 50% (by weight) of particles between 1 mm and .25 mm
- 3) Not more than 10% (by weight) of silt and clay particles
- 4) pH of between 6.2 and 7.0

When Mason sand is mixed with 20-25% organic matter (preferably peat humus), the mix is in the ball park for having proper physical characteristics. Even then newly seeded and mulched greens may have to be watered eight times a day for five to eight minutes on each cycle to have the proper moisture content to establish a green.

Another problem may be that your sand has chemical properties that limit plant growth such as an excessively high or low pH. In Ohio, almost all of our sands are of limestone parent material and hence have buffer pH's near 8.0. The opposite of this problem is those who have tried Fly ash, a by-product of coal burning steel industry and generating plants, which may have a buffer pH near 5.0. Since these are buffer pH's and are nearly impossible to alter, the turf manager must adapt a management regime that keeps the soil water or soil solution in the proper pH range to support growth.

The first thing you should do is send a gallon of your sand to Agri-Systems of Texas, Inc., P.O. Box 3757, Bryan, TX 77801, for testing and explain your problem. Perhaps if the problem is a physical one they suggest a means of correcting or improving the situation. Meanwhile, adjust your water schedule so as to NEVER allow the SURFACE of the green to dry out.

Secondly, if your sand drains well, apply $\frac{3}{4}$ - 1 pound of N/1000 ft² per week (this spring) for 5-weeks to replace the nutrient you leach out by the

above watering practice.

Thirdly, apply a micro-nutrient solution on a weekly basis for the first three weeks and then every other week until you are satisfied with the turf color and growth.

Fourthly, apply only those pesticides which are absolutely required by evidence of a specific problem. Routine pesticide application can contribute to a decline in seedling growth.

Lastly, do not open the greens for play until the turf has knitted tightly and the plants have a strong tillering activity.

Q: Our greens are primarily 1-1-1 (sand, peat, soil) mixture and poorly drained. What procedures would you suggest in hot weather particularly to develop deep rooting? Do you recommend light, frequent or less frequent, heavier watering? What about spring and fall care? K.D., Harlan, IA

A: The management philosophy of most successful turf managers is to grow deep roots in the spring and fall and simply try to survive during the hot weather. This is especially true on poorly drained greens. However even this winter and spring you may take active steps to grow deep roots.

A good personal friend of mine who is regional agronomist for a large lawn care company has convinced me that fall and winter fertilization have great value. His contention, which is supported by some university research and personal observation, is that chemical (not organics or synthetic organics) fertilizer applied to turf on even frozen ground is not lost but is rather utilized by the plant anytime soil and air temperature will permit growth. Root growth seems to continue at lower temperatures than does top growth. Therefore, in a warm winter or cool spring root development may be taking place while top growth is barely noticeable. I would not be afraid to apply 1-1½ of "N"/1000 ft.² of a farm grade material (10-10-10) in late November or early December if there is no snow on the ground. Then apply not more than 1 lb of "N"/1000 ft.² of a slow release product in May. Apply only supplemental "N" in the summer in the form of organics just to survive. Next fall apply about 1 lb. of N/ 1000 ft.² in early September and then back to the frozen ground application.

Secondly, I would suggest an aggressive top-dressing program with a pure, washed, fine sand as outlined in the May 1978 issue of WTT. This will help improve your poor drainage and encourage deeper rooting. Lastly, spring and fall you should water infrequent and deep and in the summer try to stay on the dry side with light waterings.