

THE BEST TURF TIPS OF 1986 — PART III

Rooting Depth and Soil Sampling

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Topdressing is an important practice, but the use of the wrong material can create layering problems.

SOIL LAYERS in greens greatly affect the turfgrass plant. Layers come about from a number of different management techniques other than simply changing topdressing materials. They can occur when the original construction materials are mixed on the site rather than off the site. It is impossible to achieve a homogeneous mix with a roto-tiller. Layers often occur when new sod is moved onto a green and grown on a different soil, and then buried by subsequent topdressings. On the other hand, a lack of topdressing and excessive fertility may also cause thatch layers.

On many courses, layer development stems from topdressing programs on old, poorly constructed greens, and where complete reconstruction is impossible for a variety of reasons. Superintendents are then faced with improving the rootzone through a long range topdressing program. Unless the topdressing program is very carefully carried out, soil layers could form.

Regardless of the reason, I see many courses with very sharply defined layers

in the greens' rootzone profile. Roger Null, superintendent of Old Warson Country Club, in St. Louis, realized that such radically different soil layers in a rootzone may have radically different nutrient levels and other effects on the turf as well. The root systems of turf vary in depth according to the time of year. For example, the roots of a cool season turf, such as bentgrass grown on a heavily layered green, will tend to connect to the lower soil layer during moderate weather but may be completely confined to the upper zone during times of stress. Warm season turf behaves the same way, but obviously at opposite times of the year. After seeing Roger's successful investigations, I asked a number of clubs with heavily layered greens to collect their soil cores for chemical sampling in two ways. One sample was composed of cores taken from the lower profile, while the other was taken from the upper layer.

The tests showed dramatic differences in the levels of phosphorous, iron, manganese, and potassium, as well as other nutrients. Cation exchange capa-



Distinctly different layers in a profile can inhibit root development and water movement.

city was significantly lower in the sandy, upper layer compared to the lower soil zone. The pH values varied greatly, sometimes swinging from mildly basic to strongly acidic over a range of just two or three inches in the profile!

The point is, if you have heavily layered greens, not only can you plan on problems, such as anaerobic conditions, poor infiltration, and limited root-systems, but you may also have to adjust your fertility program based on the depth of the roots. This sampling technique can help you identify this need.