THATCH CONTROL: MANAGEMENT PRACTICES, BIOSTIMULANTS, ETC.

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Thatch is a tightly intermingled layer of living and dead rhizomes, stolons, roots, and stems that develops between the soil and surface vegetation. Thatch accumulates whenever turfgrass tissue production exceeds decomposition.

Factors that influence tissue production include excessive nitrogen inputs and the height of cut. The tendency to produce thatch differs among turf species and among cultivars within a species. In general, species that produce abundant stolons or rhizomes, such as bermudagrass, zoysia grass or bentgrass, are more prone to produce thatch than the bunch-type grasses, such as ryegrass or tall fescue.

Thatch also accumulates when organic matter decomposition processes in soils are inhibited. Factors that limit the microbial decomposition of organic matter debris include low pH and low temperatures. Similarly, little microbial decay occurs under the anaerobic condition found in poorly drained soils.

There is evidence that a few of the older pesticides adversely affected microbial activity but these materials are not used today. Several pesticides commonly used today, though, indirectly affect thatch accumulation by reducing earthworm populations.

Thatch is a well-aerated growing medium for turf because it has a high percentage of macropores. Macropores, however, drain rapidly and turf growing in unirrigated, thatch sites can become quite droughty. Frequent irrigation on these sites is not the answer because the thatch acts like a sponge and holds moisture near the playing surface. In general, water management of thatchy sites is a challenge because thatch often becomes hydrophobic when dry and difficult to re-wet.

A thin layer of thatch on heavily trafficked turf is desirable because it provides a margin of protection from wear and compaction. A little thatch is also desirable on greens and fairways because it provides the resiliency needed for a consistent bounce/roll and helps the green hold a well-executed approach shot.

Once thatch accumulation exceeds about ½ inch the potential problems far outweigh the benefits. Thatch provides a haven for insect pests, such as chinch bugs, cutworms, and sod webworms. Several plant pathogens live in thatch until the environmental conditions for turfgrass infection become favorable. The high organic matter content of thatch reduces the efficacy of several pesticides.

Thatchy sites are prone to scalping. More importantly, though, a thick thatch encourages shallow rooting. In time the entire root system becomes confined to the thatch and then the serious problems begin. The roots have little, if any, ability to extract water from the underlying soil. As a result the turf is more prone to drought stress, especially when the thatch becomes hydrophobic.

Use a common sense approach to thatch control. Avoid high inputs of nitrogen, especially in low-traffic areas. Choose the appropriate cultivars. For example, "Touchdown" Kentucky bluegrass is very aggressive and can produce a dense thatch within a season or two of establishment. It is an excellent cultivar for use on a heavy-use football field but is not a good choice as a fairway turf on a low-to-moderate use golf course.

Contrary to the claims found in the advertisements of several products that have hit the market during the past few years, there is no short cut to thatch control. As in the past, the best way to minimize the detrimental effects of thatch is to aerify with a unit capable of bringing a large amount of soil to the surface. There are a number of new aerifiers on the market that can make quick work of the time consuming, labor intensive, task of aerifying large areas such as fairways. Several models can remove deep, closely spaced cores at a rate of up to an acre per hour.

The cores should be broken-up and the soil worked back into the surface with a brush or dragmat. The incorporation of soil into thatch improves the physical properties which provides a more favorable growing medium for turf. This operation also introduces microorganisms responsible for organic matter decay into the thatch. Whether or not the microbes accelerate the decomposition of thatch has not been proven. It makes sense, though, that the microbes best suited for this task would be those native to the site instead of introducing an exotic fungi or bacteria that has little chance of competing with the natural population.

Other methods of thatch removal, such as vertical mowing and power raking are of limited benefit on cool season turfgrass. These operations are more suited for thatch control on warm season turf, such as bermudagrass, because the aggressive growth habit of these species speeds the recovery of a severe verticutting. Moderate use of a vertical mower on cool season grasses is helpful if the desired effect is to groom the playing surface instead of removing thatch. Try the southern practice of a deep, double verticut (bermuda greens) on a bentgrass putting surface and you will provide a relatively thatch-free surface--for the new superintendent.

Try to keep an open mind regarding soil amendments and thatch control. But insist on unbiased university research instead of testimonials. Successful techniques or practices that work well at one site under a specific set of conditions do not necessarily work at other locations--most experienced turfgrass managers have learned this the hard way. Remember the old adage, "If it sound too good to be true. . .it probably is."