

Turfgrass Maintenance Thatch

**Tom Samples, Professor, and John Sorochan, Associate Professor
Plant Sciences**

What Is It? As turfgrasses grow, they produce new roots, leaves and stems. When older roots and shoots die and are sloughed off, they serve as an important energy source for many beneficial soil microorganisms. The rate at which this organic matter decomposes varies depending on the turfgrass species and the temperature, moisture level, pH and biological activity of the soil. When turfgrasses grow at an excessive rate or unfavorable soil and weather conditions slow the decay process, turfgrass plant parts accumulate on the soil surface as thatch.



When Is It a Problem? Healthy turf has some thatch. A managed thatch layer, unlike hard soil, is resilient. Appropriate amounts of thatch increase the impact absorption and wear tolerance of turfgrasses. However, excessive thatch limits turfgrass rooting, shelters potentially destructive insects and fungal pathogens, and restricts the movement of water into soil. Mechanical dethatching is often recommended when turfgrasses develop 1/2 inch or more of thatch. To determine the depth of thatch in a turf, remove several pie-shaped wedges of



soil and grass, and measure the amount of organic matter present on the soil surface.

What Is the Best Way to Remove It? Although routine hand raking may help prevent thatch from forming in small turf areas, it is seldom effective when large amounts of organic matter must be lifted and removed. Walk-behind vertical mowers and vertical mower reels for riding greens mowers are engineered to remove thatch. These machines have vertical blades or tines attached to a revolving shaft horizontal to and above the turf surface. Tine or blade width, length and



spacing vary among machines. The blades or tines dislodge and lift thatch as the vertical mower or 'dethatcher' moves across the turf. Vertical mowers are adjusted such that the blades or tines penetrate the thatch layer and lightly contact the soil below. After dethatching, a vacuum or blower may be used to

remove dry, loosened organic matter from the turf surface. Flexible-tine or spring-type machines designed to remove a limited amount of thatch

with little disruption of the turf may not be very effective for thatch removal in dense, well-established *Zoysia*. The tines may flex or spring back when they contact the turf rather than penetrating the thatch layer.

When Is the Best Time to Dethatch? Fescues, Kentucky bluegrass and creeping bentgrass, the species maintained on many golf greens throughout Tennessee, grow best during cool, moist conditions in spring and fall. These cool-season turfgrasses usually recover quickly following spring or early fall dethatching. Bermudagrass, centipedegrass, St. Augustinegrass and *Zoysia* can be dethatched in late winter, when they are dormant, or after green-up, when the rising soil temperature promotes root and shoot growth. Removing thatch before broadcasting turfgrass seeds will improve seed contact with soil and may speed germination.



Can It Be Prevented? Healthy, actively growing turfgrasses produce organic matter that accumulates on the soil surface. In addition to mechanical dethatching, a thatch management strategy often includes:

1. Soil testing to determine if an application of lime is necessary to maintain populations of soil microorganisms that decompose thatch;
2. The judicious use of nitrogen fertilizer in an effort to meet the nutrient requirement of the turfgrass while avoiding excessive aerial shoot growth;
3. Improved surface or subsurface drainage and adjustments in irrigation scheduling to avoid saturated soils;
4. Selecting and applying pesticides at rates that have a minimal effect on earthworms and other beneficial organisms which breakdown organic matter in soil;
5. Cultivation to relieve soil compaction, improve water infiltration, oxygenate the soil and mix the soil, and the beneficial organisms it contains, with thatch; and
6. Topdressing to mix soil with thatch.

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