

# WHAT IS THATCH?

**UMass  
Extension**

CENTER FOR AGRICULTURE

Thatch is a tightly intermingled layer of living and dead stems, leaves, and roots which accumulates between the layer of actively growing grass and the soil underneath. Thatch is a normal component of an actively growing turfgrass, and as long as it is not too thick, it can increase the resilience of the turf to heavy traffic. Thatch develops more readily on high-maintenance lawns than on low-maintenance lawns.

## HOW DOES THATCH AFFECT TURF QUALITY?

An excessive thatch layer (typically more than 1 inch) can restrict the movement of air, water, fertilizer and other materials to the roots, all of which are necessary for healthy, vigorous turf growth. This air- and water-impervious layer causes the grass to restrict rooting to the thatch layer to get air and water and, hence, reduces the drought resistance of the turf. Furthermore, if the thatch dries out, it cannot be rewetted easily. Even if the thatch stays moist, it can harbor fungi that cause turf diseases. When certain temperature and moisture conditions arise, a disease infestation can kill the already weakened turf.

The overall effect of a thick thatch layer is an unthrifty lawn which does not respond well to management practices and is easily injured by adverse weather conditions and pests.

## HOW DOES THATCH DEVELOP?

The major causes of thick thatch accumulation are management practices that reduce the population of organisms that decompose thatch and/or that cause plant material to build up more quickly than the microorganisms present can break it down. Research has shown that earthworm and microorganism activity play a vital role in preventing excess thatch accumulation. Good aeration, soil pH around 6.5 and adequate moisture favor the build-up and activity of beneficial microorganisms. Thatch problems are sometimes common in acidic and compacted soils since a healthy microorganism population does not flourish under these conditions.

Unbalanced fertilization and indiscriminate use of fungicides and insecticides play the most havoc on beneficial organisms in turf. Too much nitrogen can promote disease development. High nitrogen fertilization promotes lush, succulent growth that is more prone to insect pests and disease.

Grasses which produce a large amount of side shoots, such as Kentucky bluegrass (produces rhizomes) and creeping bentgrass (produces stolons), tend to produce thatch readily. Leaving grass clippings on the lawn, however, does not necessarily cause an increase in thatch buildup since soil microorganisms can break them down quickly and return a valuable source of balanced nutrients back to the turf. Proper management practices, therefore, promote healthier turf that will need fewer pesticides and can maintain a healthy population of beneficial organisms.

## **HOW CAN YOU IDENTIFY THE PRESENCE OF THATCH?**

To determine if your lawn has a thatch problem, cut out a small, triangular-shaped plug of turf several inches deep and examine it. Note the spongy layer of material above the mineral soil. If this layer is more than 3/4-inch to 1-inch thick when you compress it, you should consider having your lawn dethatched or beginning a management program which will encourage decomposition of the thatch layer.

## **HOW DO YOU DETHATCH A LAWN?**

Thatch that has accumulated to an excessive level is best reduced by mechanical means. Dethatching machines known as vertical mowers, verticutters, dethatchers, or power rakes have vertically spinning blades which pull some of the material to the surface as they slice the thatch layer. Some garden centers, home improvement stores and equipment rental outlets have dethatching machines available for rental. Mechanical dethatching should be done in either late summer or fall when cool weather prevails. DO NOT attempt to remove the entire thatch layer in one treatment; DO NOT dethatch when soil is wet; and only dethatch your lawn when it is needed rather than on a routine basis.

In addition to dethatching, the lawn should be limed if the soil pH warrants it, and aerated. Lime and aeration stimulate bacterial decomposition by improving air, water, and nutrient relationships.

A lawn can also be topdressed after dethatching with about one eighth inch of topsoil that is similar to the soil underlying the turf. Topdressing can help to even out bumpiness and fill in holes left from dethatching and/or aerating. Topdressing is not usually necessary except in special cases, however, and using the wrong topdressing material can be more detrimental than the benefit of smoothing a bumpy turf area. Do not topdress with a different type of soil, peat, or other organic material. A dissimilar soil will not mix well enough with the underlying soil. Peat and some other organic materials simulate thatch and can incite lawn problems similar to thatch.

Other maintenance practices which discourage thatch build-up are frequent mowings to maintain the grass at a 2- to 3-inch height and keeping short clippings on the lawn, reducing nitrogen fertilization, and amending the soil with phosphorus, potassium, and lime according to a soil nutrient analysis.

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