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Thatch in Lawns

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Homeowners and lawn managers strive for a healthy, vigorous, attractive lawn throughout the growing season. New lawns consist of one or two improved, adapted grasses having common growth characteristics and management requirements. Many older lawns are usually composed of several grass species and some broadleaf weed plants with variable management requirements. These older lawns produce an abundance of vegetation in a growing season. Unless properly managed, they can present lawn problems. One problem is thatch.

What Is Thatch

Thatch is an accumulation of dead and partly decomposed leaves, stems and roots above the soil surface and below the green vegetation. This vegetation may include the rhizomes and/or stolons of many grasses and weeds. Usually, the most vigorous growing grasses are capable of producing the most thatch. Fig. 1 shows a vertical slice of turf, thatch and soil.

Thatch Development

Thatch develops when the rate of accumulation of dead vegetation exceeds decomposition. Accumulation of this residue is caused by slow microbiological activity due to poor soil porosity, low oxygen levels, low soil temperature, high soil moisture and compacted, acid soil. Heavy thatch accumulation (2 to 4 inches or more) may cause elevated crowns, poor tiller growth, shallow rooting, poor water absorption and may lead to decreased plant vigor and increased disease and insect problems. As the lawn ages, it becomes spongy, rough and unattractive, losing its utility value.

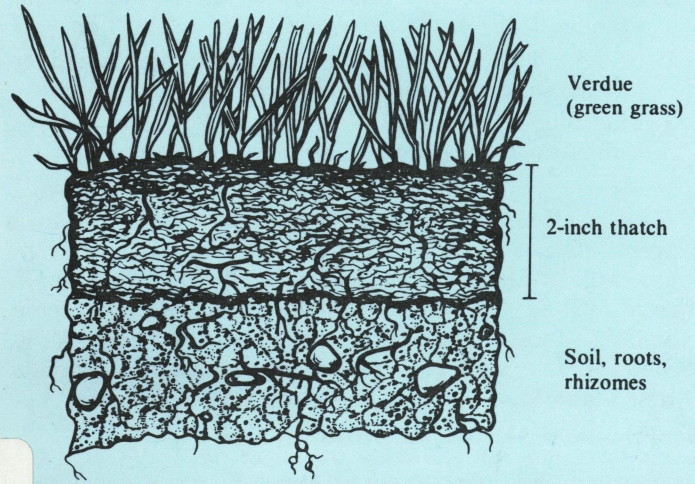

Fig. 1. Profile of turf with a 2-inch thatch layer above soil surface and below grass.

Lawns can be managed so that thatch buildup is limited. But, small thatch accumulation (0.5 to 1.0 inch) may be beneficial in arid, western conditions by producing organic matter to improve soil-water relationships, protect plants from extreme temperatures, promote proper tiller growth and give a cushioning affect to the turf. As lawns become older, excess thatch may accumulate.

Controlling Thatch Development

Improper mixtures of grasses should be avoided. Typical thatch problems exist in old lawns when Kentucky bluegrass and bentgrasses mix. They have different management practices. Bentgrasses produce stoloniferous tillers, and when not mowed closely, false elevated crowns develop that are ragged looking in the spring and early summer. Excessive growth accumulates, and thatch forms.

Dominant bentgrass lawns need to be mowed to the lowest levels, but in many cases, old lawns are rough, making close mowing difficult. The only recourse is to remove the old sod, recondition the soil and reseed to compatible grass cultivars.

Many Idaho lawns should plant one or two improved Kentucky bluegrass cultivars such as 'Baron,' 'Glade,' 'Adelphi,' 'Fylking' and many others. Perennial ryegrasses alone or as ryegrass-bluegrass mixes are acceptable. Avoid incompatible species where possible. See University of Idaho Agricultural Experiment Station Bulletin 656, *Establishing and Maintaining Idaho Lawns*, for recommended grass varieties.

Growth habits of grasses are also important considerations. Bunch-type grasses such as the new perennial ryegrasses and many fine leaf fescue cultivars do

not produce as much thatch as the stoloniferous bents or the rhizomatous Kentucky bluegrasses. Fast growing bents and Kentucky bluegrasses usually produce the most attractive lawns when planted individually and properly managed.

Infrequent mowing enhances thatch accumulation with most grasses. The frequency of mowing depends upon the rate of grass growth, the kind of grass and use of the turf. Mowing grasses to the proper height is important. Creeping bentgrasses require close and frequent mowing. Kentucky bluegrasses are not mowed as closely.

Most new Kentucky bluegrasses produce dense foliage and will withstand moderately close mowing in comparison to older bluegrass cultivars. Most older bluegrasses are not as leafy and are usually not as attractive turf types as the new, close growing cultivars. See Table 1 for mowing heights of cool season grasses.

Table 1. Mowing heights of cool season grasses.

Species	Mowing heights
	(inches)
Kentucky bluegrass	2 to 3[1]
Perennial ryegrasses	2½ to 3
Fine leaf fescues	3
Creeping bentgrasses	⅛ to ¾

[1]Heights equal distance of cutting blade from flat level surface.

As a general rule, schedule mowing to remove not more than one third of the grass at any one time. Thus, removing 1 inch of a Kentucky bluegrass lawn at each mowing would be adequate to maintain a 3-inch grass level. This may require mowing twice weekly in the springtime and weekly mowing at other times. Use a bag catcher, and remove the clippings from the lawns. This will help reduce thatch buildup.

Excess fertility, especially from nitrogen-type fertilizers, at the wrong time of the year may cause excess tiller growth and thatch development. Four (4) pounds of actual nitrogen per 1,000 square feet of lawn area per season is considered adequate for a Kentucky bluegrass - red fescue lawn.

Other fertilizer elements are also needed. You should apply fertilizer in small amounts of one-half to 1 pound per application rather than larger, infrequent applications. Three-fourths of the total amount should be applied in the fall (September to early November) and the balance during late spring after the flush growth.

Excessive irrigation may cause thatch buildup because of excess tillering and grass growth. Once a week irrigation, adding sufficient water to wet soil 6 inches deep, is usually adequate in a loam soil during peak water consumption periods. Sandy soils hold less water, and more frequent irrigation (2 to 3 times per week) may be necessary depending upon the temperature, wind conditions, exposure and other environmental factors.

Periodic Thatch Removal

Under conditions of vigorous, abundant grass growth, some periodic mechanical removal of thatch may be required. You can lessen problems with thatch by:

1. Mowing closely (1 to 1½ inches below normal) late in the fall or early winter when the grass leaves are dormant. Catch and dispose of all the clippings. Close mowing will harm the grass less in late fall when the turf is usually dry.

2. Use a power rake or verticutting mower-dethatcher during the fall-winter period or in early spring before tiller growth starts. This equipment will cut and lift thatch from dormant crowns. Avoid using heavy garden rake because grass tillers may be destroyed and result in poor regrowth. After dethatching, apply fertilizer as required.

3. Top dressing with clean, medium grade sand or a sand-peat-moss soil mix is a frequent practice on high maintenance turf areas such as golf courses. Top dressing will enhance soil biological activity and speed thatch decomposition. An application of one-half cubic yard of top dress material per 1,000 square feet one to two times per year will control thatch buildup. The treatment must be applied on a regular basis. Topdressing has other advantages including leveling the soil surface, minimizing wear and helping with water penetration.

Summary

Proper grass species, recommended mowing practices, moderate nutrition and irrigation levels, with occasional dethatching treatments, will minimize serious thatch buildup and enhance plant growth. Your lawn is a valuable part of your property.

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