

THATCH IN LAWNS



Thatch is defined as an accumulation of dead plant tissue between the soil and the living plant cover. This partially decayed, fibrous

material is largely composed of the remains of stems, roots and shoots. Leaf blades or clippings have not been found to contribute significantly to the formation of thatch. Clippings rapidly decompose, and if proper mowing practices are followed, evenly distributed clippings can be left on the turf area. Decomposition of the clippings will recycle some of the nutrients required by the turfgrasses. Ligin, a somewhat woody material, is a major component of thatch and is resistant to decay. Consequently, a thatch layer can increase in thickness over the years; however, thatch formation is affected by many factors.

Thatch Development

Basically, thatch develops when the accumulations of organic matter exceeds the decomposition rate. Cultural and environmental factors and

the growth characteristics of the grasses play a major role in determining the rate of organic matter accumulation (thatch). For example, vigorous turfgrass varieties produce more plant material and usually develop thatch more rapidly. High rates of fertilization and irrigation that stimulate vegetative growth will also encourage thatch formation. In compacted or fine textured soils, poor aeration will reduce the activity of thatch decomposing organisms. The usage of certain pesticides has also been implicated in the formation of thatch by reducing the activity of micro-organisms and earthworms.

Good or Bad?

A small amount of thatch, under 1/2 inch in thickness, is usually considered to be beneficial. For example, a shallow thatch layer will provide a cushioning effect and increase the wear tolerance of the turf area. It will also insulate the crowns and stems and protect the plant from extremes of temperatures and other environmental stresses. Often the thatch provides the only available root zone for sod laid on heavily compacted urban soils.

Thatch Management

When thatch accumulations exceed 1/2 inch, problems may begin to develop. For example, root development may take place largely in the thatch, which has less retention capacity for water and nutrients compared to soil. This condition can cause additional stress to the turf as well as less than expected results from irrigation and fertilization programs. Localized dry spots can develop, and overall the turf may have less tolerance to heat, cold and drought. Excessive thatch may also increase certain disease and insect problems. When thatch levels exceed 1/2 inch, the turfgrass area (lawn) should receive a thatch management or control program. For many years, the most widely used method for thatch reduction was power raking or dethatching. Dethatching machines are equipped with vertically rotating tines that pull the thatch from the turf. Special attachment blades for lawn mowers are also available for this purpose. Often bags of thatch can be removed from modest sized lawns, but the actual effectiveness of this procedure has only recently been evaluated by field research. This research revealed that dethatching is largely ineffective in controlling or reducing thatch. Furthermore, dethatching can injure the turfgrass, especially if weather conditions are not conducive to vigorous growth and recovery. For lawns established on compacted soils where the roots are confined to the thatch layer, dethatching

can actually reduce the vigor and quality of the lawn by removing part of the established root zone. Finally, dethatching has no effect on compaction, a major problem on many urban lawns.

Coring

Ongoing research at several universities indicates coring (aerification) provides the best solution to thatch management when the soil from the cores is dispersed on the turfgrass as a top dressing. Coring will also aid in the reduction of compaction. Coring (aerification) equipment removes plugs of soil from the turf (lawn) area, and roots will vigorously invade the well aerated soil around each coring hole. This improvement in root growth will tend to increase turfgrass growth and vigor. After the cores (plugs) have dried, the soil can be dispersed as a top dressing by dragging the area with a matt or by using a dethatching machine set just deep enough to shatter the cores. When this soil is added to the thatch, it aids in the decomposition much like adding topsoil to a compost pile. As soil is added to the thatch, the physical properties of the thatch are also modified to the benefit of turfgrass growth. For example, the water and nutrient holding capacities of the thatch layer are increased. Although additional research is needed to determine the exact timing and frequency of a coring program, the benefits of a coring program vs. dethatching are clear.

Coring relieves compaction and the soil from the cores modifies the thatch layer

into a better root zone environment. Dethatching has no effect on compaction or on the long term accumulation of thatch and can directly injure the turf.

Would you like additional information?

Additional information is available on-line. Please see [MSU Extension-Oakland County's publications](#) as well as [MSU Extension's Bulletin Office](#) on campus.

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