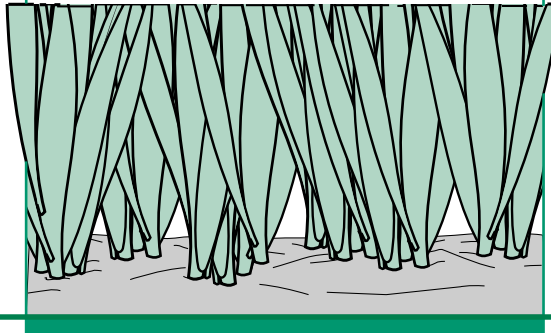
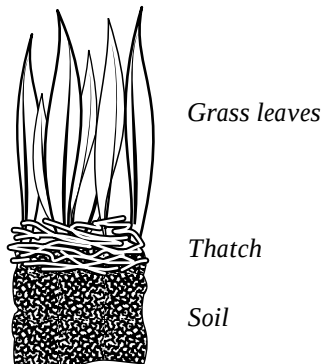


THATCH-A HIDDEN LAWN CONCERN

Turfgrass



Thatch is light brown, fibrous organic matter that looks like peat moss. It is located between the soil and grass blades and is made up of compressed surface roots, stems, and runners. Thatch is hidden, so most people do not realize it is there. Excessive thatch feels soft and springy underfoot. A common misconception is that returned grass clippings cause thatch. In fact, clippings decompose rapidly because they are 90 percent water.



- Aerate clay and compacted soils
- Plant low thatch-producing grass varieties

The Effects of Thatch

Thatch can be beneficial or detrimental, depending on the amount present. If there is less than a half inch, thatch helps to conserve water, cushion the turf, and insulate the soil surface.

Excessive thatch buildup can cause problems. Thatch repels water and prevents it from penetrating to grass roots. Fertilizers and other chemicals run off or are caught in the thatch layer. Surface roots that dry out quickly are established in the thatch. Excessive thatch causes the turf to be less cold, heat, and drought resistant, and winter kill becomes more prevalent. Thatchy lawns require frequent watering to prevent wilting. Excess thatch provides a favorable environment for disease and insects. It also makes mowing difficult and may cause scalping and lawn with an uneven appearance.

Which Grasses Produce Thatch?

Grass species and varieties differ in their tendency to produce thatch. Those that produce heavy thatch need to be checked yearly and managed more intensely.

Thatch is caused by:

- Frequent, shallow watering
- Excessive nitrogen fertilization
- Infrequent, high mowing
- Clay, sand, and compacted soils
- Thatch-producing grasses
- Excessive pesticide use
- Poor soil aeration

Thatch prevention:

- Water deeply and infrequently
- Use a slow-release nitrogen fertilizer
- Mow on a regular basis

Tendency to produce thatch

Zoysiagrass	Most
Bermudagrass	
Buffalograss	
Bluegrass	
Ryegrass	
Tall fescue	Least

Thatch does not occur in newly planted lawns and won't for several years. It accumulates gradually and can occur naturally or as a result of human lawn care practices. Grass growing on wet, cold, acidic, sandy, or heavy clay will accumulate more thatch. Soils with poor aeration contribute to thatch accumulation. Frequent, shallow watering, excessive nitrogen fertilization, and high mowing also encourage thatch production. Thatch is found most often in highly maintained turf areas that are watered and fertilized to keep the grass in a lush, thick, green condition.

Controlling Thatch Buildup

It is better to prevent thatch than deal with problems of excessive accumulation. Prevention involves performing basic cultural practices in the correct manner. Thatch prevention should be started early and continued. Water only when needed, and soak the lawn deeply. If adding nutrients, add a slow-release nitrogen fertilizer. Though tall mowing is preferred over short mowing, it contributes to thatch. Mow at the desired height, but on a regular basis. If clay and compacted soil are a problem, aerating should be a part of the thatch management program. Thatch control is not achieved with any one practice. A combination of measures is necessary for proper turf management.

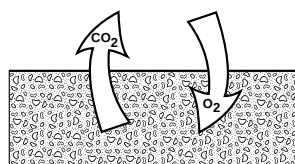
Dealing With an Existing Thatch Layer

To determine the amount of thatch in a lawn, cut a small wedge of turf down into the soil with a knife. If there is more than a half inch of thatch, a homeowner may aerate and/or verticut the lawn or, in extreme cases, replant the yard. Two types of power equipment are available for thatch control: core aerifiers and vertical slicers. This equipment can be rented or a professional service may be hired. A word of caution to do-it-yourselfers: The equipment is heavy, and it is a physically demanding job.

Thatch Depth and Dethatching Frequency

0–¼ inch	Dethatching not necessary
¼–½ inch	Dethatch every two years
½–1 inch	Dethatch once a year
1–1½ inches	Dethatch twice a year
Over 1½ inches	Remove and replant

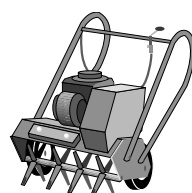
When the thatch layer is more than 1½ inches, it is time to remove thatch and replant the lawn. Till the thatch into the soil or remove it with a sod cutter or a tractor and a blade.



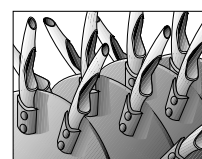
Oxygen (O_2) and carbon dioxide (CO_2) exchange in the soil.

Aerifying

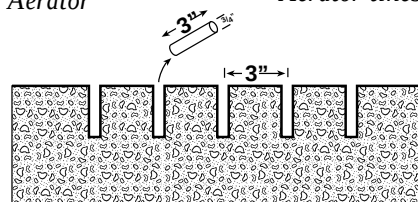
When aerifying, a core aerator pulls cores out of the soil, letting air, light, and water enter. These cores are about three-quarters of an inch in diameter, 2 to 3 inches deep, and 3 inches apart. Plugs are beneficial to the lawn and should be left to decompose. Microorganisms are brought to the surface and help break down thatch. Decomposition of the cores could take several weeks, depending upon the type of soil.



Aerator



Aerator tines



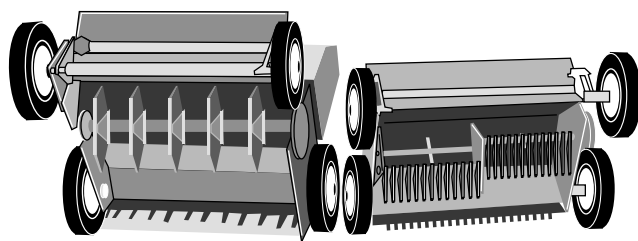
Proper aerator hole size and spacing

Dethatching

Another option is to rent a vertical slicer or verticutter. However, this method produces debris that will have to be removed. It is important to use proper blades and spacing when verticutting different lawn grasses. With bermudagrass and zoysiagrass, flat steel blades are necessary. Wire tines can be used for bluegrass. Use a blade spacing of 2 inches or more. Verticutting will not remove all the thatch and may have to be done several times. Another option is to verticut and aerify for better results.



Power dethatching machine



Fixed blade

Flail blades

Power dethatching units

When to Aerify and Dethatch

Core aerifying can be done any time the grass is actively growing. For cool-season grasses (bluegrass, fescue, ryegrass), the best times are March, April, and September. Aerifying should be done before fertilizing, seeding, or applying crabgrass preventers. Warm-season grasses (bermudagrass, buffalograss, zoysiagrass) can be aerified from late May through July. In addition to helping control thatch, aerifying also benefits compacted soil. Aerify once or twice each year, depending on the severity of the thatch and compaction.

Turfgrass must be in a stage of growth that will recover and fill in quickly after vertical slicing. Fescue, ryegrass, and buffalograss should not require vertical slicing under normal conditions. Verticut bluegrass in April or September. If done in April, it is necessary to apply a preemergence crabgrass preventer within a few days.

The best time to verticut bermudagrass and zoysiagrass is June when they are actively growing and producing stolons. These grasses should not be verticut in April. Opening the turf at this time exposes new growth to late spring frost and often results in severe injury.

Earthworms: Friends or Foes

Earthworms are beneficial to lawns because they aerate the soil and control thatch by digesting organic matter. Soil brought to the surface by earthworms is nutrient rich. Earthworms may present a problem by mounding soil all over the yard. This makes the turf uneven and unattractive to some people. A solution is to level the mounds with either a hand rake or power rake. Earthworms only make mounds during the spring, so this is the only time mounds need to be leveled.

Trying to keep earthworms in the yard requires careful consideration. Think before using insecticides because some kill earthworms and other beneficial thatch-reducing insects. Earthworms are found in soil that is nutrient rich, well aerated, and of proper water holding capacity. Establishing earthworms in poor soil

is not easy. If placed on poor soil, the earthworms will move to another location. If you want earthworms to stay in the yard, try putting them in a section where the soil has been properly prepared and is healthy, such as a flower bed. From there they will gradually move into the lawn area.

Scalping

Scalping is mowing the turf an inch or less in early spring before new growth begins. It removes the dead winter grass debris, but not thatch. This is a dirty, dusty process, and is hard on the lawn mower. It is also hard on the turf if the thatch layer has live grass tissue. Scalping a lawn too early may stimulate early growth which may be damaged by a late spring frost. Scalped lawns are likely to be invaded by crabgrass.

Burning

Burning lawns in residential areas is not recommended for safety reasons. Burning under proper conditions can remove a lot of plant debris and thatch in a hurry. But shrubs and homes may also burn if precautions are not taken. City or county ordinances usually prohibit or restrict burning to specified times. If burning is allowed, it must be done under proper conditions. The grass should be dry, the humidity low, and the wind light for proper burning. Burn late enough to escape spring freeze damage but before new spring growth starts. A messy black residue is left after burning, and it should be watered lightly to prevent blowing. Burning, like scalping, can also injure live plant parts in the thatch.

Chemical Dethatchers

A number of liquid and granular products are marketed with claims to eliminate thatch when applied to the lawn. To date, none of them have proven to have any significant effect on reducing thatch.

Summary

Remember, thatch cannot be seen, and grass clippings do not cause thatch. One way of telling whether the turf has excess thatch or not is to note frequent watering. Also, walk across the lawn. Is it nice and "cushiony" like plush carpet? If so, it is a good bet there is a thatch problem. Take steps to get your lawn back in shape. This requires some effort, money, and time but will eventually payoff with a lush, dense, green lawn. And if thatch isn't a problem, implement preventive measures to ensure the yard stays healthy.

Matthew J. Fagerness
Extension Specialist, Turfgrass

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2131

September 2001

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File code: Horticulture & Landscaping-7