

Mowing Your Lawn

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Why Do We Mow Grass?

Mowing is the most time-consuming lawn maintenance practice, but it is not without its merits. The primary purpose of mowing a lawn is to improve its appearance. Proper mowing technique, equipment, frequency and height will improve the quality of a lawn while also increasing the health of the turfgrass plants and decreasing weeds.

Plant Physiology

Mowing is a destructive practice because it reduces the amount of leaf tissue available for the production of energy. The general response to mowing is for the plant to produce more leaf tissue to replace what is lost. If too much leaf tissue is removed in any one mowing, plants will respond by redirecting energy away from valuable roots to producing new leaves. Additionally, turfgrass cannot efficiently capture nutrients and produce energy when mown too low. Therefore, proper mowing is a key ingredient to a successful, healthy lawn.

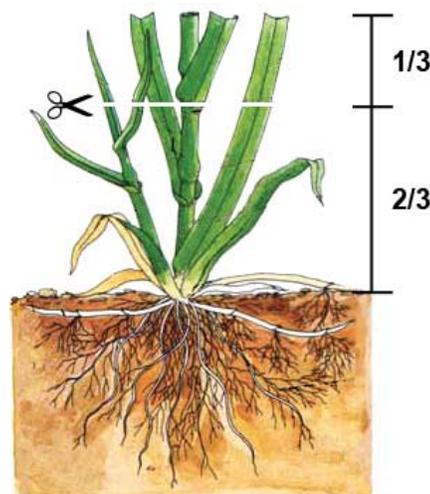


Figure 1. Never remove more than one-third of the leaf blade in a single mowing.

Take Home Points

- Mow often enough to avoid removing more than one-third of the grass blade height per cutting.
- Mow your lawn high.
- Keep the blades sharp enough to prevent a ragged appearance.
- Return clippings.
- Mow in a different pattern each time to reduce wear, compaction, scalping and grain.
- If you get behind in mowing, raise the mowing height so as not to remove more than one-third of the leaf, then gradually reduce the mowing height in subsequent weeks.

Mow Frequently

Mow as often as needed to never remove more than one-third of the leaf blade in a single mowing (Figure 1). In other words, if your mower is set at 3 inches, mow before your lawn reaches 4.5 inches high (Table 1).

Table 1. Mowing frequency as determined by the one-third rule.

Mowing Height (inches)	Height of Grass at Mowing (inches)	Amount of Grass Removed (inches)	Estimated Mowing Frequency (days) [†]
0.5	0.75	0.25	1.3
1.0	1.5	0.5	2.5
1.5	2.25	0.75	3.8
2.0	3.0	1.0	5.0
2.5	3.75	1.25	6.3
3.0	4.5	1.5	7.5
3.5	5.25	1.75	8.8
4.0	6.0	2.0	10.0

[†]Estimate based upon a daily growth rate of 0.2 inches.

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Removing more than one-third of the leaf blade in a single mowing is detrimental to plant health. Your mowing frequency will vary greatly based upon the turfgrass species, time of year and rainfall, but a typical frequency is one to two times per week during the growing season.

Mow High

In general, mowing turf at higher mowing heights helps increase overall plant health and reduce weed pressure. A range of mowing heights is provided in Table 2. Mowing below this range will cause a rapid decline in turf health and an increase in weeds. Tall fescue and St. Augustinegrass perform best at mowing heights of approximately 3.0 inches. Bermudagrass and zoysiagrass perform well at lower mowing heights. They can be mown at a height of 1.0 to 2.0 inches with a rotary mower or 0.5 to 1.0 inches with a reel mower. Within species, some cultivars tolerate lower mowing more than others. In general, finer-bladed cultivars and species tolerate lower mowing heights.

Table 2. Suggested mowing heights for lawns.

Species	Mowing Height (inches)
Common bermudagrass	1.5-2.5
Hybrid bermudagrass	0.5-1.5
Centipedegrass	1.5-2.0
Kentucky bluegrass	2.5-3.5
Tall fescue	2.5-4.0
St. Augustinegrass	2.5-4.0
Zoysiagrass	0.75-2.5

Sharpen Blades

Sharply cut leaf blades increase turf health by improving recovery, decreasing water loss and increasing photosynthesis (Figure 2). Lawns mown with a dull mower blade have poor aesthetics, heal more slowly and have greater water loss (Figure 3).

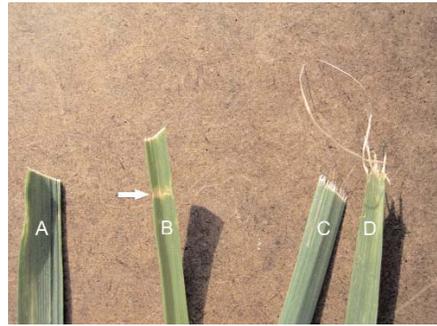


Figure 2. Leaf blade A demonstrates what a leaf blade should look like after mowing. Leaf blade B demonstrates a leaf blade injured by a dull mower blade. Leaf blade C was cut by the mower but its condition indicates that the mower blade was not sharp enough. The white tissue sticking out of the leaf blades (C and D) is the vascular tissue of the plant. Leaf blade D was mown for quite some time with a dull mower blade.

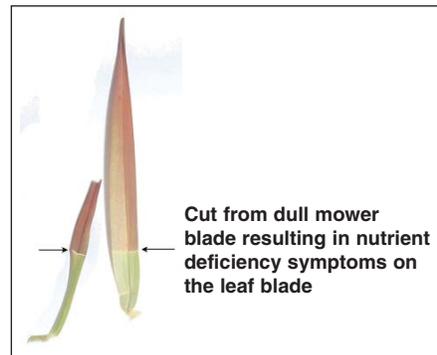


Figure 3. Dull mower blade injury on centipedegrass.

Sharpen mower blades at least twice a year.

Scalping

Scalping occurs when more than one-third of the leaf blade is removed and the stem is left remaining (Figures 4 and 5). Scalping not only decreases the aesthetic appearance of the lawn but also decreases the health of the plant. Mow frequently at higher mowing heights to avoid scalping. A reel mower will reduce the likelihood of scalping if lower mowing heights are preferred. Additionally, you can alternate the mowing pattern each time you mow to prevent grain and reduce the risk of scalping. Some species like bermudagrass are more prone to scalping than zoysiagrass or tall fescue.



Figure 4. Scalping caused by a rotary mower on hybrid bermudagrass.



Figure 5. Up-close damage caused by scalping.

Grass Clippings Won't Damage Lawns

When you mow regularly and at the proper height, your lawn is improved by recycling grass clippings. If you allow the grass to grow too long between mowings, excessive clippings left on the surface can smother and damage your lawn. Reduce this problem by gradually lowering your lawn to its proper height over a period of two or three mowings, rather than scalping it back to its normal height in one mowing.

Clippings Do Not Cause Thatch

In the 1960s, it was commonly believed grass clippings were a major component of thatch and removing clippings dramatically slowed thatch development. In 1967, researchers at the University of Rhode Island completed and published a detailed study of thatch showing it was primarily composed of lignin-containing tissues (crowns and stems) as well as living turfgrass roots. They concluded leaves and clippings do

not contribute to thatch buildup. Their findings were confirmed in numerous other studies. Thatching tendency in zoysiagrass is only increased by 3 percent from returning clippings, which is likely the result of the nutrients added from recycling clippings. Research with bermudagrass also confirmed clippings do not contribute to thatch buildup.

Recycling Clippings Saves Time and Work

A study conducted in Fort Worth, Texas, found that 147 homeowners who quit bagging their clippings mowed 5.4 times per month versus 4.1 times when they bagged clippings but saved an average of 35 minutes per mowing by not bagging clippings. After six months of returning clippings, these homeowners saved an average of seven hours of yard work, even though they mowed more often. There are special mulching mowers on the market, but they are not necessary for recycling clippings.

Clippings Improve Lawn Quality

When grass clippings are allowed to decay naturally on the lawn, they release valuable nutrients which improve the soil. If clippings are returned, fertilizer applications can be reduced by 30 percent. Returning the clippings to your lawn will supply approximately 1 pound of N/1,000 ft²/year.

Clippings contribute to the formation of organic matter, which makes the soil softer and plants more drought tolerant. Organic matter also encourages the presence of earthworms which are very effective in preventing thatch accumulation.

Water soluble nitrogen sources such as ammonium nitrate (34-0-0) and 13-13-13 result in rapid growth surges and increased clippings. To avoid this uneven growth pattern, try using slow-release nitrogen fertilizers such as sulfur-coated urea,

ureaformaldehyde, IBDU or organic nitrogen sources such as Milorganite. For more information about fertilizing, see *Fertilizing Your Lawn*, FSA2114.

Clippings Do Not Spread Lawn Diseases

Diseases of turfgrass occur when disease-causing spores contact susceptible grasses under ideal environmental conditions. Disease spores are present whether clippings are collected or returned. Watering, fertilization and sharpness of the mower blade have a much greater influence on the occurrence of disease than returning clippings.

Don't Mow Wet Turf

Lawns are best mown when the turf is dry. Clippings are more easily distributed on a dry lawn because they don't bunch up or clog mowers. Disease organisms are more easily spread in wet turf and fresh-cut leaf blades offer a point of entry for infection (Figure 6). Wet turf is more easily torn from the ground during mowing by equipment when the soil is wet. Lastly, it is safer to mow when the lawn is dry because there is less risk of slipping and being injured by the mower.



Figure 6. Disease can be spread by mowing equipment when grass is wet.

Don't Mow Drought-Stressed Turf

During hot and dry conditions in the summer, your lawn will not actively grow. During periods when your lawn is not actively growing, it is best not to mow your lawn.

Mowing a lawn when it is under drought stress should be avoided since this can damage a lawn.

Should I Ever Collect Clippings?

It is recommended to return/recycle grass clippings since returning clippings causes an annual increase of about 1.0 lb N/1,000 ft²/year. If clippings are removed, N fertilization should be increased to compensate for the amount of nutrient removed. It is appropriate to collect clippings from your lawn in two situations:

1. If the lawn must be mown when excessively wet, it is appropriate to collect clippings to prevent smothering from clumps of grass left on the lawn.
2. If your mower cannot be safely operated without the clipping attachment.

Grass clippings are used as mulch in gardens or as a source of nitrogen for composting. For more information on using grass clippings as part of a composting system, see *Composting*, FSA2087.

Springtime Mowing

Before bermudagrass and zoysiagrass begin to grow in the spring, mow the turf slightly shorter than normal to remove dead leaf blades and other debris. This practice will reduce shading of the emerging plants and also



Figure 7. The benefits of an early spring mowing to remove dead leaf tissue are illustrated in this picture. From left to right, the spring mowing heights were 0.5, 1.0 and 1.5 inches on this turf that was maintained the previous year at 1.5 inches.

serves to warm soil temperatures more quickly in the spring. The result is a lawn that greens-up more quickly in the spring (Figure 7). The risk in this practice is that you could scalp some of the emerging grass if this practice is delayed until after the lawn has begun to green-up. Carefully inspect the turf before removing dead leaf tissue and debris to ensure there are no green shoots emerging. Zoysiagrass lawns often do not go fully dormant like bermudagrass during winter. Therefore, this practice is likely to be more damaging on a zoysiagrass lawn than a bermudagrass lawn. Low mowing in early spring is damaging to centipedegrass and St. Augustinegrass lawns since they spread by above-ground stems (stolons) and are more prone to injury from this practice.

Last Mowing in Fall

No special mowing practices are necessary in the fall. Do not raise or lower the mowing height. Mow until the first frost on warm-season grasses, and on cool-season grasses (tall fescue) mow until turf growth ceases, sometime near Thanksgiving.

Mowing Equipment

There are two main types of lawn mowers used: reel and rotary (Figure 8). Reel mowers have many parts including a reel, bedknife and a roller (Figure 9). The grass blade is cut in a scissor-like fashion when the leaf blade is pinched between the reel and the bedknife (Figure 10). The metal-to-metal contact between the reel and the bedknife is lubricated by the water inside the grass blades as they are cut. Reel mowers provide a more precise cut and are used in high-quality areas such as golf courses. Scalping is typically

less with reel mowers than rotary. The disadvantages of reel mowers are 1) it is more difficult to adjust the height of the mower and 2) sharpening the mower (i.e., grinding the bedknife and backlapping the reel) is difficult and should be performed by someone with experience or training.

Rotary mowers are by far the most popular type for home-



Figure 8. Reel and rotary lawn mowers.



Figure 9. Reel and bedknife components of a reel mower.



Figure 10. Grass blades are cut with a reel mower in a scissor-like fashion.

owners, although self-powered reel mowers are gaining popularity. Rotary mowers work by cutting the grass blades in an impact, machete-type cut. This cut is less precise and often more damaging to the leaf blade. The potential to scalp a lawn is higher when using a rotary mower, but the height of cut is easy to change and blades are easy to sharpen.

Be Safe

Each year approximately 70,000 people are treated in emergency rooms for mowing-related injuries, and unfortunately, more than 9,000 of those injuries are to children under the age of 18. Use caution when mowing your lawn. Read more information about lawn mower safety in FSA1005.

Additional fact sheets are available at <http://publications.uaex.edu/>.

Additional information about turf management is available at <http://turf.uark.edu/>.

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