Home Lawn Maintenance

► A properly maintained lawn not only provides aesthetic value and curb appeal to your home, but it also provides many benefits to the environment.

A well-maintained lawn will prevent soil erosion, act as a living filter for water and air pollutants, act as an air conditioner during the hot summer, and provide oxygen to the atmosphere.

The quality of a home lawn can vary depending on the level of maintenance that is provided. A good qualith home lawn requires only basic maintenance, such as mowing and fertilizing, and may have several different types of turfgrasses present, as well as some weeds. This level of lawn quality can be obtained with a minimum amount of maintenance, money, time, and effort.

Superior quality lawns have a dense stand of turfgrass with a minimum number of weeds and other pest problems. However, in order to have a lawn of such quality, additional turfgrass maintenance practices, such as watering, thatch control, and pest control, are required. Homeowners can obtain a high-quality lawn with a do-it-yourself approach, or they can hire a lawn care service company to maintain their lawn for them.

Whatever level of quality you desire, the objective should be to have a healthy, dense stand of turfgrass. Correctly implementing proper turfgrass maintenance practices can reduce the need for supplementary practices such as pest control. Following these home lawn maintenance tips should help you achieve the quality you desire.

Basic Maintenance Practices

Mowing and fertilizing are considered basic maintenance practices, and each has a significant impact on the quality of a lawn. These routine maintenance practices are normally done when it is convenient for the homeowner; however, they should be done on a schedule and at the proper time in order for them to be most effective.

Mowing

Mowing is probably the most important maintenance practice for a good-quality lawn but is probably the most overlooked maintenance practice as well. Fertilizer, pesticides, turfgrass seed, and other treatments will accomplish very little if lawns are not mowed at a height that is healthy for the turfgrass plant. This maintenance chore is often taken for granted unless you realize that mowing directly affects the health and quality of a lawn and that it has a measurable effect on the way a turfgrass plant grows.

The ability of a grass plant to sustain itself after frequent close mowing is one factor that distinguishes a specific grass species as a turfgrass versus just a grass. Grass plants such as corn or wheat cannot tolerate frequent close mowing. Mowing is the process that creates a lawn rather than a pasture or a meadow. Proper mowing is important in creating a good-quality lawn because it encourages a dense stand of turfgrass plants, which keep out weeds through competition for nutrients and sunlight. In addition, frequent mowing provides control of many weeds, especially broadleaf weeds. Some important factors to consider are mowing height, mowing frequency, and the type of mower used.

Mowing Height

For the best appearance and quality, turfgrasses should be mowed at the optimum mowing height for the proper growth and health of the specific turfgrass species present in the lawn. Each turfgrass species has a range of mowing heights that are preferred for optimum performance. Turfgrass species that spread or grow horizontally, such as bermudagrass, can usually be mowed at a lower mowing height than an upright-growing bunch-type turfgrass, such as tall fescue. Turfgrasses with smaller leaves (fine textured), such as zoysiagrass, can usually be mowed lower than turfgrasses with larger leaves (coarse textured), such as St. Augustinegrass. Turfgrasses that are under environmental stress, such as drought, heat, or shade, should be mowed at a higher mowing height. Table 1 outlines the suggested mowing heights for the turfgrass species used for home lawns in Alabama.

Table 1. Recommended Mowing Heights for Lawn Turfgrasses

Turfgrass	Optimum Mowing Height (inches)	Mowing Frequency (days)	Mower Type
Bahiagrass	3 to 4	7 to 17	Rotary
Bermudagrass	1 to 2	5 to 7	Rotary or reel*
Centipedegrass	1½ to 2	10 to 14	Rotary
St. Augustinegrass	2½ to 4	7 to 14	Rotary
Tall fescue	2 to 3½	7 to 14	Rotary
Zoysiagrass	1 to 2	10 to 14	Rotary or reel*

* Reel mowers provide a superior quality cut.

Mowing Frequency

How often should a lawn be mowed? Mowing frequency should depend on the growth rate of the turfgrass plants, but it is often based on a service contract or when a convenient opportunity presents itself. The rate of turfgrass growth depends on the type of turfgrass (turfgrass species) present in the lawn, soil fertility (especially nitrogen), and weather or environmental conditions.

Another factor in mowing frequency is mowing height (table 1). A good rule of thumb is to mow your lawn regularly and to never remove or mow off more than one-third of the turfgrass height at any one mowing. For example, if you are maintaining your lawn at a mowing height of 2 inches, you should mow the lawn when or before the turfgrass reaches 3 inches in height. Also, by following this one-third rule of thumb, you will have fewer and smaller turfgrass clippings to deal with. If the turfgrass becomes too tall between mowings, raise the mowing height and then gradually reduce it until the recommended height is reached.

Type of Mower

Another important factor in mowing is the type of mower used. Most homeowners mow their lawns with a rotary-type mower. Rotary mowers are the most popular because of their low cost, easy maneuverability, and simple maintenance. Most rotary mowers cannot give a quality cut at a mowing height less than 1 inch; however, they are versatile and can be used on taller turfgrasses and weeds, for mulching turfgrass clippings, and for general trimming.

Reel mowers are for highly maintained turfgrass where appearance and quality are most important. Reel mowers cut with a scissorlike action to produce a very clean, even cut. They are used on turfgrasses where mowing heights of 1 inch or lower are desired. Reel mowers require a smooth surface to obtain a quality cut. Using reel mowers on uneven surfaces will result in scalped areas.

Maintaining a sharp cutting blade is as important with rotary mowers as it is with reel mowers. A dull mower blade will damage the leaf blades of the turfgrass, causing them to turn brown at the point of impact and giving the lawn a general brown cast or appearance. Sharp mower blades cut the turfgrass leaves cleanly, ensuring rapid healing and regrowth.

For many years, there has been a lot of discussion about what to do with turfgrass clippings. The classic response was that turfgrass clippings must be removed from the lawn because they can cause thatch buildup. Recent research has shown that this is wrong. In fact, turfgrass clippings contain approximately 58 percent of the nitrogen that we apply to our lawns, so removing the clippings is equivalent to sweeping up almost one-half

of the nitrogen fertilizer you have applied. In addition to containing about 4 percent nitrogen, turfgrass clippings contain ½ to 1 percent phosphorus, 2 to 3 percent potassium, and smaller amounts of other essential plant nutrients. Therefore, turfgrass clippings should be returned or recycled to the lawn because these nutrients will eventually return to the soil.

Turfgrass clippings should be removed, however, if they form clumps on the lawn surface after mowing. These clumps of clippings can block necessary sunlight from the turfgrass plants. Clumping occurs with infrequent or inconsistent mowing and when turfgrass plants are mowed when wet.

Fertilizing

Understanding the nutritional requirements of your lawn and the baseline soil nutrient levels are important steps toward producing a quality lawn. Fertilization of lawns is essential for the production of a quality turfgrass stand; however, applying more than the recommended amount of fertilizer or applying it at the wrong time can create problems, such as groundwater contamination. A well-planned and environmentally sound fertilization program takes into account several factors, including the native soil fertility levels, fertility requirements of the specific turfgrass species, desired turfgrass quality, source of nutrients in the fertilizer, fertilizer application rate, fertilizer application frequency, and time of fertilizer application.

All plants require certain nutrients or elements for proper growth and appearance. There are 16 known essential elements that are required by turfgrasses for their growth. All of these essential elements, with the exception of carbon, hydrogen, and oxygen, are obtained from the soil and absorbed by turfgrass plant roots. Insufficient nutrients in the soil may limit turfgrass growth and the quality of the lawn; however, these essential elements can be added to the soil through fertilizer applications. Elements that turfgrasses require in the greatest quantities are nitrogen, phosphorus, and potassium.

Nitrogen is probably the most important element you can apply to a lawn. Nitrogen affects turfgrasses in several ways, including color, density, leaf growth, root growth, tolerance to environmental stresses, susceptibility to pests, and recuperative potential of the turfgrass after it has been damaged. The proper nitrogen fertility program should allow for a slow, steady growth rate of the turfgrass. Applying excessive amounts of nitrogen fertilizer will encourage leaf growth at the expense of root growth and may even cause a reduction in root mass. Fertilizing with high levels of nitrogen will also increase the incidence of diseases and thatch accumulation and reduce cold tolerance, making the lawn more prone to winter damage.

Several factors influence the nitrogen requirement of your lawn, including the turfgrass species that is present in the lawn, the soil type, and the environmental conditions of the area. The timing of lawn fertilization is also important. Fertilizing warm-season turfgrasses too early in the spring can cause a reduction in root mass as the turfgrass plants emerge out of winter dormancy, and fertilizing them too late in the fall may increase the chance of winter injury. Cool-season turfgrasses should be fertilized during the early spring and fall because fertilizing them with nitrogen during the summer increases the chances of disease and heat-stress problems.

Phosphorus is also needed for turfgrass growth. It is required in smaller amounts than nitrogen or potassium and plays a critical role in the establishment of turfgrasses. On soils that are low in phosphorus, an application of this element will increase the growth rate during establishment of turfgrasses. Once turfgrasses are mature, they require very small amounts of phosphorus. Only use phosphorus fertilizer on established lawns if a soil test recommends it.

Potassium is almost as important an element as nitrogen to turfgrass growth. Potassium affects how well a turfgrass plant is able to withstand environmental and mechanical stresses. Most turfgrasses will better tolerate cold, drought, and heat stresses when potassium levels are adequate. Soil sampling and testing should be performed to determine the amounts of phosphorous and potassium in the soil and to determine how much of each needs to be applied to reach the recommended level.

Soil Testing

The best philosophy for a successful turfgrass fertilization program is to have an annual plan. The basis of that plan should be soil sampling and testing to determine the base nutrient levels and then testing again every 2 to 3 years to ensure that you are maintaining the proper levels.

Proper soil sampling is important to ensure representative soil test results and proper fertilizer and lime recommendations. Soil test results supply a wealth of information concerning the nutritional status of your soil and may aid in the detection of potential problems that could limit turfgrass growth and lawn quality. A typical soil test report will supply information about soil pH, lime requirements, and soil nutrient levels for phosphorus, potassium, calcium, magnesium, manganese, and zinc. Contact your county Extension office for instructions on taking soil samples and having them analyzed.

The nitrogen requirements for a lawn cannot be reliably evaluated by a soil test; therefore, the soil test report will not contain a nitrogen recommendation. The type of turfgrass that is present in the lawn, as well as the desired level of quality, will determine the amount of nitrogen that should be applied to a lawn (table 2). If you have any questions regarding the soil test report or recommendations, contact your county Extension office.

Fertilizer Analysis

Fertilizers are often recommended or described by their analysis or three nutrient percentages or numbers, such as 10-10-10 or 16-4-8. These three numbers represent the percentage by weight of nitrogen (N), phosphorus (P_2O_5), and potassium (K_2O). For example, in a bag of 16-4-8 fertilizer, nitrogen makes up 16 percent of the total weight, phosphorus makes up 4 percent, and potassium accounts for 8 percent. The remaining weight of the fertilizer (total must be 100 percent) is comprised of secondary nutrients, such as calcium, iron, magnesium, manganese, copper, sulfur, molybdenum, and zinc, and/or filler materials such as clay or corn cob. A fertilizer that contains all three nutrients (N-P-K) is considered a complete fertilizer.

Fertilizer analysis is often referred to in terms of the fertilizer ratio. If the fertilizer analysis is 16-4-8, then the fertilizer ratio is 4:1:2; similarly, a 10-10-10 fertilizer has a 1:1:1 ratio. Mature lawns generally require equivalent levels of nitrogen and potassium, especially if the soil type is of sandy texture, and little to no additional phosphorus. Therefore, fertilizers with ratios of 1:0:1 or 4:0:3 are commonly recommended for mature lawns.

Nitrogen Sources

The source of nitrogen in a fertilizer influences its availability to the turfgrass and also the growth response of the turfgrass. There are two basic categories of nitrogen sources: (1) fast or quick release and (2) slow or controlled release. Fast-release nitrogen sources are water soluble and can be readily used by the turfgrass plants; however, these can cause foliar burn if not applied properly.

These fast-release nitrogen sources are also susceptible to leaching and have a short feeding, or nitrogen-release, period. Fast-release nitrogen sources include ammonium nitrate, ammonium sulfate, and urea. Slow- or controlled-release nitrogen sources feed or release nitrogen over an extended period of time and, therefore, are applied at higher application rates on a less frequent basis than fast-release nitrogen sources.

When properly applied, these slow-release nitrogen sources reduce the chance of foliar burn to the turfgrass plants. Foliar burning of turfgrass plants occurs due to the fact that the fertilizer acts like a salt and extracts the moisture from the turfgrass plants. To minimize the risk of foliar burn, apply all fertilizers to dry turfgrass plants, and water or irrigate the lawn immediately after fertilizing. Slow-release nitrogen sources are also less susceptible to leaching and are preferred for use on sandy soils. Slow-release nitrogen sources include sulfur-coated urea (SCU), polymer-coated urea (PCU), isobutylidine diurea (IBDU), urea formaldehyde, methylene urea, and natural organics such as manure.

Fertilization Scheduling

The application timing for nitrogen fertilizers is also very important. Because they have different growth cycles, cool- and warm-season turfgrasses need to be fertilized at different times. Nitrogen fertilizers are used to simulate growth; therefore, they should be applied only during periods of optimum growth of the turfgrass. For example, fertilize warm-season turfgrasses during the summer when they are growing most rapidly. In contrast, fertilize cool-season turfgrasses during the early spring or fall. Table 2 shows the recommended fertilization schedule for lawn turfgrasses used in Alabama.

To calculate the amount of a particular fertilizer needed to supply 1 pound of actual nitrogen per 1,000 square feet, you must read and understand the fertilizer analysis. Since nitrogen is the first of the three numbers in a fertilizer analysis, it will be used to make the necessary calculations. To make this calculation, divide the percentage of nitrogen in the fertilizer into 100. This will give the number of pounds of that particular fertilizer that is needed to supply 1 pound of actual nitrogen per 1,000 square feet. For example, if the fertilizer analysis is 16-4-8 (16 percent nitrogen), then 6¼ pounds of 16-4-8 is needed per 1,000 square feet to supply 1 pound of nitrogen (100 divided by 16 = 6.25). For all practical purposes, these numbers can be rounded off for ease of application.

Apply only half of the total desired fertilizer rate in one direction and then apply the remaining half perpendicular to the direction of the first application. This will provide a more even and uniform application of the fertilizer and reduce the chances of skipping a section.

Warm-season turfgrass lawns that are overseeded with a cool-season turfgrass like perennial ryegrass for winter color can benefit from the application of low amounts of nitrogen fertilizer during the winter months. A maximum of 3 pounds of nitrogen per 1,000 square feet can be applied between the months of October and March for the overseeded cool-season turfgrass. Apply between ¼ and ½ pound of nitrogen per 1,000 square feet per month.

Additional Maintenance Practices

Besides mowing and fertilizing, additional maintenance practices can take a basic, good-quality lawn up to a much higher level. These additional maintenance practices include irrigating, reducing soil compaction, thatch control, topdressing, and pest control.

Irrigating or Watering

Turfgrasses, like all plants, require water for growth and survival. Due to the variable rainfall patterns and rainfall distribution in Alabama, it is not uncommon to experience seasonal droughts during the year. During these drought periods, a homeowner has a couple of options: (1) water the lawn to keep the turfgrass green or (2) do not water the lawn and allow the turfgrass to turn brown and go into a state of dormancy. If the lawn happens to be a warm-season turfgrass, such as bahiagrass, bermudagrass, centipedegrass, St. Augustinegrass, or zoysiagrass, choosing not to water the lawn would not result in the death or loss of the lawn. These turfgrasses will go dormant under such stress, and when more favorable growing conditions occur, they will recover and prevail. However, if the lawn is comprised of a cool-season turfgrass, such as tall fescue, and the decision is not to water, then the end result may be injury or death of the lawn. If the tall fescue is well established and has a deep root system, it may be able to go dormant during the stress period

Table 2. Recommended Fertilization Schedule for Lawn Turfgrasses in Alabama

Turfgrass	Desired Quality	Total pounds of nitrogen per 1,000 sq. ft. per year	Pounds of nitrogen per 1,000 sq. ft. per month											
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Bahiagrass	Good	2					1			1				
	High	3					1	1		1				
Common Bermudagrass	Good	2					1		1					
	High	4					1	1	1	1				
Hybrid Bermudagrass	Good	3					1		1	1				
	High	5					1	1	1	1	1			
Centipedegrass	Good	0					1							
	High	1												
St. Augustinegrass	Good	2					1		1					
	High	4				1			1	1				
Tall Fescue	Good	3		1		1	1					1		1
	High	5		1	1	½						½	1	1
Zoysiagrass	Good	2					1		1					
	High	3					1		1	1				

without serious injury; however, if the turfgrass has a limited root system, the lawn may be severely injured from the stress.

The most efficient way to irrigate or water a lawn is to apply water only when the lawn starts to show signs of drought stress from the lack of moisture. There are several ways to help determine when this time has come.

One of the first signs of drought stress is that the color of the turfgrass turns from green to a bluish-gray to even a white cast. Another indication of drought stress is the appearance of footprints on the turfgrass. If you walk across your lawn late in the afternoon and look where you have just walked and see that your steps have left footprints, the lawn may need watering. When your feet compress the leaf blades of the turfgrass, the low water levels in the plant tissues prevent the leaf blades from recovering, or springing back up, after being pushed down. If the footprints remain for an extended period of time, water the lawn to prevent the turfgrass from turning brown and becoming dormant. The visual condition of the turfgrass leaves can also be used to evaluate drought stress. Turfgrass leaves respond to drought stress by folding, rolling, and/or wilting.

Another means of evaluating drought stress on a lawn is the screwdriver test. To do this test, push a screwdriver down through the lawn and into the soil. If the soil is very dry, it will be difficult to push the screwdriver down into the ground. Use this screwdriver test to confirm the results of the other visual indicators above to help determine when a lawn should be watered.

If your lawn exhibits the visual symptoms of drought stress, apply about ½ to 1 inch of water, which will moisten the soil to a depth of 4 to 6 inches, depending on the soil type and degree of soil compaction. Then, after watering, use the screwdriver test to determine the depth of water penetration. This will prove valuable in the future in determining how much water should be applied.

When watering, avoid applying water to the point of runoff. Allow the water to soak into the lawn and soil. If needed, apply less water and allow it to soak in before continuing with the watering process. Once you have watered the lawn, do not water again until you observe similar drought stress symptoms. Never water a lawn every day except during the establishment phase or renovation. Frequent watering only encourages shallow rooting of the turfgrass plants, making the lawn less drought tolerant. The best time of the day to irrigate or water is early in the morning because it minimizes the potential for water loss through evaporation. In addition, watering in the morning will not create conditions that promote the occurrence of diseases.

Reducing Soil Compaction

Very few homeowners understand soil compaction or the hazards it presents. Diseases, insects, improper watering, and/or lack of fertilizer are often blamed for a lawn's decline when the real problem is soil compaction. The problem starts when the soil particles in the top few inches are compressed from traffic and overuse, reducing the air space between them and thus impeding the flow of air, nutrients, and water to the turfgrass roots. This causes stress to the turfgrass, making the lawn less able to compete with weeds and recover from damage and stress. In time, a compacted lawn will require some form of renovation. Soil compaction can also contribute to other lawn problems such as thatch accumulation and weed invasion.

If you conclude that you have a soil compaction problem with your lawn, the solution is straightforward—you need to initiate soil aeration as part of your lawn maintenance program. The most effective type of soil aeration is called *core aerification*, in which cores of soil are removed mechanically, leaving holes in the lawn. This aerification procedure loosens compacted soil and increases the flow of water into the soil. Other benefits include enhancing the oxygen levels in the soil and stimulating new turfgrass growth. Soil aeration is generally used to correct a soil compaction problem rather than as a routine maintenance practice. However, if the desired quality for the lawn is quite high, you should consider implementing soil aeration as a routine maintenance practice every year.

The best time to aerify a lawn is when the turfgrass plants are actively growing to allow for their rapid recovery. The best time to aerify a warm-season turfgrass lawn is during the summer. The best time to aerify cool-season turfgrass lawns is in the early spring or fall.

Thatch Control

Thatch is defined as a layer of living and dead turfgrass plant parts that is located between the soil surface and the green vegetation of the turfgrass. Thatch consists of a loosely interwoven collection of this living and dead plant matter that can impart a sponginess to the lawn. Thatch originates from old turfgrass plant stems, stolons (aboveground stems), rhizomes (underground stems), and roots that are shed by the plant during its growth and development of new plant parts. This sloughed off plant matter collects at the soil surface and gradually decomposes. When this plant matter accumulates faster than it decomposes, a thatch layer develops.

Thatch is not always present with all turfgrasses or lawns. Certain turfgrass species have a greater propensity to produce thatch than other turfgrasses do. Turfgrass species that are vigorous in terms of their growth rate, such as bermudagrasses, have a greater tendency to produce thatch than slower-growing turfgrasses do. However, slower growing turfgrass species such as zoysiagrass may also produce thatch because their plant tissues do not decompose quickly.

Lawn maintenance practices can also contribute to the development and accumulation of thatch. If lawns are overfertilized, overwatered, mowed too infrequently, or mowed too high, thatch accumulation may become a problem. Excessive thatch (more than 1 inch) can create many problems for a home lawn. For example, the turfgrass plants may begin to grow within the thatch layer instead of the soil, disease and insect problems may increase, and air and water movement may be restricted. The sponginess that can be associated with a thatch layer may sometimes cause the mower to sink down into the lawn and cause the turfgrass to be scalped when mowed. Excessive thatch may also increase winter injury. The rate of thatch accumulation can be decreased and somewhat controlled by reducing the nitrogen fertility levels, watering properly, following the correct mowing schedule, and applying annual topdressings of sand and/or soil to the lawn.

Thatch can be physically removed using a hand rake or various types of mechanical equipment. The two most common types of mechanical equipment used are core aerifiers and vertical mowers. These mechanical operations are sometimes referred to as *dethatching*. All of these mechanical dethatching treatments work by physically removing as much of the thatch layer as possible. After the thatch debris has been removed, it should be collected and removed from the lawn. Then, apply a light topdressing of either sand and/or soil to the lawn. This will further aid in the decomposition of the thatch layer

As with soil aerification, the best time of the year to dethatch a lawn is when the turfgrass is actively growing. This will allow the turfgrass to recover as quickly as possible from this physical stress.

Topdressing

Topdressing is a turfgrass maintenance practice that is used to help decompose thatch, to reduce surface compaction, to improve the soil, and to smooth the lawn surface. Topdressing involves spreading a thin layer of topsoil or other soil mix (sand) on the soil surface. The topdressing material should be of similar composition and texture as the underlying or native soil. Topdressing rates may range from ½ to 2 cubic yards per 1,000 square feet of lawn. These amounts will produce a layer from 1/8 to 5/8 inch in depth. After applying the topdressing, work it into the lawn by brushing, dragging, or raking it.

Pest Control

Diseases, insects, and weeds are the main pests of home lawns. Chemical controls of most of these pests are available but in many instances may not be necessary. If you follow the proper mowing, fertilization, watering, soil compaction, and thatch control procedures outlined here, you will have a healthy, vigorous turfgrass capable of withstanding most pest problems. Of course, there are always exceptions, and your county Extension office can help you identify and control any pests that do occur.

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For more information, contact your county Extension office. Visit www.aces.edu/directory.

Revised June 2020, ANR-0239

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