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TEXAS A&M AGRILIFE EXTENSION

LAWN fertilization: environmental impact

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As more land is developed for new housing and businesses, water pollution is becoming a bigger environmental problem. Rain that falls on parking lots, buildings, driveways and roads runs off into storm drains, streams, rivers and lakes, which are often used for fishing and swimming and to supply drinking water. Rain and stormwater carry pollutants washed from the pavement, such as oils, heavy metals and other chemicals that leak from vehicles.

Improper residential lawn management can also have significant negative effects on the environment. This is especially true if you live close to a waterway, creek, stream, river or lake. Heavy rains and overwatering your lawn can cause excess fertilizers, chemicals, pet waste and grass clippings to run off into bodies of water, harming water quality.

Although nitrogen (N) and phosphorus (P) occur naturally in streams and lakes, excess nutrients in the water can lead to excessive growth of aquatic vegetation and algae. The algae die, sink to the bottom, and use oxygen as they decay. In a pond or lake, this can lead to oxygen depletion, which can quickly harm or destroy aquatic life, including fish.

Important considerations when fertilizing your lawn

Proper lawn fertilization and irrigation can greatly reduce the potential for environmental harm. The major factors to consider when applying fertilizers to your lawn include (1) the fertilizer application rate and (2) weather conditions.

Fertilizing and irrigating your lawn properly can greatly reduce the potential for environmental harm.

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Application rate

Fertilizer application should be based on plant requirements, available nutrients in the soil, and lawn size. Many publications list the nutrients needed by common plants. Available soil nutrients can be determined through soil testing. The Texas AgriLife Extension Service, through the Soil, Water, and Forage Testing Laboratory, will, for a minimal fee, analyze your soil and organic samples and determine your required fertilizer application rates.

For more information about these services, please visit http://soiltesting.tamu.edu. Lawn size will ultimately determine the total amount of fertilizer you need, based on the application rate.

Weather conditions

By monitoring weather conditions you can greatly improve the effectiveness of your fertilizer application and reduce the risk for environmental harm. Although it is important to thoroughly water your lawn after applying a fertilizer, do not fertilize just before a rainfall. If enough rain falls to cause runoff, the fertilizer that you just applied will likely be lost before it can be incorporated into the soil.

If you fertilize your lawn during a period with little or no rainfall and do not water the fertilizer into the soil, you also risk losing fertilizer and polluting the surrounding water. It will remain unavailable to your plants and may wash away during the next rainfall.

When watering the fertilizer application into the soil, apply approximately 0.5 inch of water. Do not apply water to the point of runoff. If runoff occurs, turn off the irrigation system, allow water to soak into the lawn, and then apply the rest of the required moisture in a few hours. (Note: It doesn't take 1 inch of water to water in a fertilizer application. If you apply 1 inch of water on a sandy soil, you will increase the chances of leaching nitrates into the groundwater in some areas of the state.)

Recommended lawn care practices

Watering your lawn

To water most effectively, water your lawn early in the morning, when wind and temperatures are usually lowest and water pressure is generally good. This allows even application of water, with little loss from evaporation. Watering late in the evening or at night in fall and spring months causes leaf blades to remain wet for an extended period, which can increase the chances for disease activity, such as large patch. Large patch causes circular brown areas in the lawn; these spots can be anywhere from 6 inches to 2 to 3 feet in diameter. Leaf blades in affected areas can easily be pulled from the stolos (runners). Midafternoon watering increases evaporation and may cause uneven distribution of the water by high winds.

Adjust your watering schedule to the weather if you want to maintain a proper lawn-watering routine.

Many people water on a weekly schedule that does not account for weather conditions. To properly water your lawn, adjust the watering schedule according to the weather. Ideally, your lawn should be wet to a depth of 4 to 6 inches after each watering. This will help prevent weak, shallow-rooted grass that is more susceptible to drought stress.

Depending on soil type and time of year, a deeply watered lawn should withstand 3 to 8 days between waterings. On a sandy soil in heat of summer, you will be lucky to go 3 days between waterings, but on a clay soil in spring and fall you can easily go 7 to 10 days between irrigations. Although conditions will vary, established lawns with deep, extensive root systems can sometimes be watered less often, whereas lawns with soils less than 5 inches deep may need to be watered more often.

After a thorough watering, wait to water again until after the grass begins to show the first signs of drought stress. Symptoms of drought stress include grass that is turning a dull, bluish color; leaf blades rolling or folding; and footprints remaining in the grass after someone walks across the lawn. Water the entire lawn at the first signs of stress.

Lawn care calendar*

February 20–March 15

If summer weeds have been a problem, apply a preemergent herbicide to control annual summer weeds in the lawn. Thoroughly water in the herbicide as soon as possible.

March 15–April 15

Mowing

In late March to early April, scalp bermudagrass, St. Augustine and zoysia lawns (cut the grass to within ¾ inch to 1 inch of the soil surface). Make sure that you are past the last freeze date before scalping. Once the lawn has been scalped, start mowing at the recommended height as soon as the grass starts actively growing.

Mow your lawn often enough so that you never remove more than 30–40 percent of the leaf blade.

When scalping, remove all the clippings. Do not send them to the landfill. It is best to either add the clippings to your own compost pile or send them to another site that has a composting facility.

Table 1. Recommended mowing heights for common lawn grasses

TYPE OF GRASS	MOWING HEIGHT (INCHES)
Common bermudagrass	1–2
Hybrid bermudagrass	0.5–1.5
Buffalo	2–3
St. Augustinegrass	2–2.5
Tall fescue	2–3
Zoysiagrass	1–1.5
Centipede	1–2
Bluegrass	2–3

*Calendar is based on the North Central Texas climatic region. In other areas of the state, please check with your local Extension agent for a calendar for your region.

Table 2. Fertilizer application rates to achieve 1 lb. of available nitrogen per 1,000 square feet

FERTILIZER RATIO (N-P-K)	APPLICATION RATE (LBS.)
12-4-8	8
15-5-10	7
21-7-14	5
16-4–8	6
20-5-10	5

Table 1 shows recommended mowing heights for common lawn grasses. It is important to mow the lawn often enough so that you never remove more than 30 to 40 percent of the leaf blade.

Fertilizing

A good rule of thumb is to fertilize after you have mowed your grass twice. Fertilize St. Augustine and bermudagrass lawns in mid- to late April, based on soil analysis or with a 3-1-2 ratio (nitrogen-phosphorus-potassium, or N-P-K) fertilizer at a rate of 1 pound of available nitrogen per 1,000 square feet (using a slow-release source of nitrogen). This is equivalent to 5 pounds of a 21-7-14 fertilizer or 7 pounds of a 15-5-10 fertilizer per 1,000 square feet. Table 2 shows application rates of common fertilizer ratios to achieve the desired 1 pound of available nitrogen per 1,000 square feet.

Fertilizing your lawn after you have mowed your grass twice is a good rule of thumb. The rate should be based on soil analysis.

Water the lawn thoroughly after applying the fertilizer. If iron chlorosis (a disease that causes yellowing or blanching) is a problem, apply iron sulfate, iron chelate or liquid iron. (Caution: Iron will stain surfaces such as wood, concrete and metal.) Always follow label directions, no matter which source of iron is used.

April 1–15

Treat lawns with a bait to control fire ants. If mounds are present in the lawn, treat them with an insecticide 7 to 10 days after applying the bait.

May 1–15

Fertilize bermudagrass at 1 pound of available nitrogen per 1,000 square feet (refer to your soil analysis for guidance). For St. Augustinegrass grown in full sun, apply 1 pound of available nitrogen per 1,000 square feet in late May or early June. For all grasses, repeat the March iron application monthly.

Monitor grasses, especially St. Augustine and centipedegrass, for any disease activity, such as take-all root rot or large patch. Large patch, formerly called brown patch, will cause circular brown areas to appear in the lawn, while take-all root rot will cause irregular brown areas to appear in the lawn. Leaf blades in affected areas of large patch can easily be pulled from the stolons, whereas in affected areas of take-all root rot, the leaf blade is still firmly attached. Treat with appropriate fungicide if a disease becomes active in the lawn.

June 1–15

Check lawns for any insect activity. If needed, use an appropriately labeled insecticide.

July 15–30

Lawns should be checked for grubs. Use a sharpshooter to remove a 1-square-foot section of sod and examine the sod to a 4-inch depth. If more than four or five grubs per square foot are present, treat the lawn with an insecticide to control the grubs, following label recommendations. The insecticide must be watered in thoroughly for effective grub control.

Check your lawn for grubs. If you find more than 4 or 5 grubs per square foot, treat the lawn with an insecticide to control them.

August 1–15

Fertilize bermudagrass lawns with 1 pound of available nitrogen per 1,000 square feet (refer to your soil analysis for guidance).

September 1–15

If winter weeds such as annual bluegrass, henbit, or common chickweed have been a problem, then apply a preemergent herbicide for control of winter annual weeds. Water the preemergent herbicide application in as soon as possible. Check with your local Extension agent for proper preemergent application timing in your area of the state.

September 15–30

Monitor St. Augustine and zoysiagrasses for large patch activity. If large patch or take-all root rot become active, treat with an appropriate fungicide. Remember, it is difficult to distinguish between large patch and take-all root rot.

October 1–15

Fertilize lawns with a 3-1-2 ratio fertilizer at 1 pound of available nitrogen per 1,000 square feet (refer to your soil analysis for guidance). Repeat the iron application if iron chlorosis is a problem.

November–January

During the dormant stage, water the lawn every 4 to 5 weeks if adequate rainfall does not occur. Conduct soil analysis for fertilizer needs if you have not done so, or if major soil changes have occurred. Measure the lawn so fertilizers and pesticides may be applied at the recommended rates per 1,000 square feet. Always calibrate granular applicators and sprayers before applying fertilizers to ensure that you are applying them at the correct rate.

For additional information:

Lawn Fertilization for Texas Warm-Season Grasses, E-437. Texas AgriLife Extension Service.

Lawn Water Management, B-6125. Texas AgriLife Extension Service.

Your lawn: measurements and notes

Front yard

Length (ft.) _____X Width (ft.) _____= _____sq. ft.

Backyard

Length (ft.) _____X Width (ft.) _____= _____sq. ft.

Additional yard

Length (ft.) _____X Width (ft.) _____= _____sq. ft.

Additional yard

Length (ft.) _____X Width (ft.) _____= _____sq. ft.

Total yard = _____sq. ft.

Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

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The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.

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