



Texas Agricultural Extension Service

ENERGY CONSERVATION IN HOME LAWN CARE

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The greatest energy consumers in home lawn maintenance are mowing, disposal of grass clippings and fertilization. All of these processes are a function of growth rate of the lawn. While fertilization is used to promote growth, mowing is used to control growth. The relationship between fertilization and mowing is fairly direct — the higher the rate of fertilizer, the higher the rate of growth. While lawns need a certain growth rate to maintain density and to repair damage from wear and injury from insects and disease, an excessively high growth rate only increases mowing requirements and the amount of grass clippings produced.

Ideally, the homeowner can maintain a balance between the production of grass clippings and the rate at which they decompose. If this is achieved, clippings do not need to be collected and removed, reducing the burden on city services to dispose of them. Some Texas cities estimate as much as 50% of their spring and early summer garbage pickups are grass clippings. Energy savings may be realized by simply following proper mowing and fertilization practices.

Mowing

Each turfgrass used in the home lawn has an ideal height-of-cut (Table 1). These suggested heights-of-cut were developed from research results and from professional experience with lawn maintenance. Lawns cut at these heights usually perform better than lawns cut higher or lower under average maintenance conditions.

Lawns may be mowed lower than the suggested mowing heights, but greater energy inputs in the form of higher fertilizer rates, higher water require-

ments, greater mowing frequency and increased insect and disease controls are necessary. Lawns cut at heights higher than suggested tend to develop thatch more readily.

Lawn areas that receive high use and lawns that are moderately shaded should be mowed at the greater height recommended.

Frequency of mowing lawns is very important. The lawn's density, or the number of leaves per unit of area, is a function of mowing frequency. The "rule of thumb" is that no more than $\frac{1}{3}$ of the leaf tissue should be removed at each mowing. Thus, a St. Augustine lawn maintained at 2 inches should be mowed when the grass reaches 3 inches in height. If this criteria is followed and the lawn hasn't been over-fertilized, clippings do not need to be removed from the lawn. Recycling grass clippings results in labor savings, reduces load on garbage disposal and reduces need for commercial fertilizers.

Mulching mowers cut grass clippings into smaller fragments which work into the turf. Thus, lawns appear neater after mowing and grass clippings decompose more rapidly. Criteria suggested for mowing frequency, to remove only $\frac{1}{3}$ of leaf tissue at each mowing, should still be followed even if a mulching mower is used. Mulching is no remedy for poor mowing practices.

Table 1. Ideal Heights-Of-Cut For Lawn Grasses

| Variety | Full Sun (inches) | Shaded Area (inches) |
|----------------------|-------------------|----------------------|
| Common Bermudagrass | 1 ½ | |
| "Tif" Bermudagrasses | 1 | |
| Kentucky Bluegrass | 2 | 2 ½ |
| Buffalograss | 2 | |
| Centipedegrass | 2 | 2 ½ |
| St. Augustinegrass | 2 | 3 |
| Tall Fescue | 2 ½ | 3 |
| Zoysiagrass | 2 | 2 ½ |

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Generally, reel type mowers use less gas than rotary mowers. Higher engine speeds are required to cut grass when a single horizontal blade is used rather than a reel. Higher engine speeds also tend to cause more engine wear than the slower speeds of the reel engines.

Fertilizer

Following the recommendation that only $\frac{1}{3}$ of the leaf tissue should be removed in a single mowing, the time period between mowings is determined by the growth rate of the lawn. There are several factors that influence growth rate of a lawn, but the one the homeowner has control over is the rate at which fertilizer is applied.

To reduce mowing and still maintain color and density, nitrogen should be supplied to the lawn at a slow, steady rate. This is possible if slow-release forms of nitrogen such as sulfur-coated urea (SCU), urea-formaldehyde (UF) or isobutylidene diurea (IBDU) are used rather than fast-release forms such as urea, ammonium nitrate or ammonium sulfate. The slow-release forms extend the period of nitrogen availability and eliminate the burst of growth that follows application of fast-release sources of nitrogen (Figure 1).

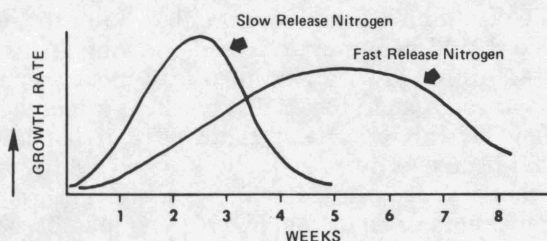


Figure 1. Rate Of Nitrogen Availability

It is difficult to suggest which rate of nitrogen is best for any given situation, but there are some guidelines to help in development of a fertilizer program. Apply a fertilizer at a rate of 1 lb. of nitrogen per 1000 sq.ft. (Table 2). The higher the percentage of fast-release nitrogen in the fertilizer, the faster the lawn will grow and the more often it will be necessary to mow. If the growth rate is too high, adjust it by reducing the rate of nitrogen per application or by using more slow-release nitrogen.

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Table 2. Recommended Rate of Application For Some Sources Of Nitrogen

| Analysis | Amount per 1000 sq.ft. (pounds) |
|---------------|---------------------------------|
| 12-4-8 | 8 |
| 15-5-10 | 7 |
| 33-0-0 | 3 |
| 21-0-0 | 5 |
| 45-0-0 | 2 |
| SCU (32-0-0) | 3 |
| IBDU (31-0-0) | 3 |
| UF (38-0-0) | 3 |

For most lawns a 3-1-2 ratio of fertilizer is recommended. The relationship between the first number (nitrogen) and the last number (potassium) is most important. Generally, as the level of nitrogen is increased in a fertilizer in relationship to potassium, rate of growth increases in proportion to root growth.

Leaving grass clippings on the lawn has another benefit. Grass clippings serve as an important source of plant nutrients. They contain significant levels of nitrogen, phosphorus and potassium (Table 3). Clippings are decomposed by microorganisms and in time these nutrients will again be available for use by the grass (Table 3).

Table 3. Plant Nutrients Contained In Grass Clippings

| Plant Nutrient | Percentage of Dry Weight |
|----------------|--------------------------|
| Nitrogen | 3 to 4 |
| Phosphorus | 0.3 to 0.5 |
| Potassium | 1 to 3 |
| Sulfur | 0.5 to 1.0 |
| Calcium | 0.1 to 0.6 |
| Magnesium | 0.1 to 0.5 |

Summary Of Energy Conservation Practices

1. Mow when the grass is no more than $\frac{1}{3}$ higher than the height setting of the mower.
2. Do not pick up grass clippings.
3. Do not apply fertilizer at a rate higher than 1 lb. of nitrogen per 1000 sq.ft. per application or 3 to 4 lbs of nitrogen per 1000 sq.ft. per year.
4. Use fertilizers that contain slow-release forms of nitrogen.
4. Use fertilizers with a 3-1-2 ratio of N-P-K.