

## LAWN FERTILIZATION IN TEXAS

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Lawn quality is generally measured in terms of color, density and uniformity. Cultural practices, particularly fertilization, largely determine lawn quality. A fertilization program should include timely fertilizer applications in amounts and formulations that meet the requirements of your lawn. Excessive nitrogen applications stimulate production of leaves and stems and increase the mowing requirements. Higher water requirements, increased thatch and increased susceptibility to insects and diseases also results from excessive application of nitrogen. Poor timing of fertilizer applications, such as mid-summer and early fall applications of soluble nitrogen, also increases the likelihood of chinch bug and brownpatch problems in St. Augustine lawns.

### Fertilizer Requirements

The amount and formulation of fertilizer to apply depends on soil test results, grass species, environmental conditions and mowing practices.

Soil tests provide information on the availability of major fertilizer nutrients. Some soils contain phosphorus and/or potassium in amounts adequate for the maintenance of turfgrasses. Additional applications of these nutrients through fertilization would not improve the quality of the lawn. On the other hand, grass growing on soils deficient in one or more of these nutrients will respond to fertilizers containing these nutrients. Soil tests also suggest the need for lime or other amendments to correct soil acidity, soil salinity or alkali soil conditions.

Grass species differ in fertilizer requirements in the following order:

Total nitrogen required (lb/1,000 sq ft/year)	Grass variety
5-7	Hybrid bermudagrass (Tifway, Tifgreen, Tifdwarf)
4-6	Common bermudagrass Ryegrass
3-5	Zoysiagrass
2-5	St. Augustinegrass Tall fescue
1-2	Centipedegrass
1	Buffalograss Carpetgrass

Environmental conditions such as shade, soil type and rainfall also influence fertilization requirements. Moderately or heavily shaded areas should not be fertilized as much as areas in full sunlight. Grass growing in shade is more succulent and has a weaker root system than grass growing in full sunlight. Fertilizer tends to make the grass more succulent and increases its susceptibility to disease, drought and other stresses. Nitrogen fertilizer also stimulate leaf growth at the expense of the root system. St. Augustine growing in moderate to heavy shade should be fertilized in the spring and fall only, at a rate of 1 1/2 pounds of nitrogen per 1,000 square feet.

Turfgrasses growing in sandy soils require more frequent applications of nitrogen than those growing on clay soils.

Lawns in areas subject to high rainfall require more total pounds of nitrogen per year (the higher numbers in the above table) than lawns grown under dry conditions (the lower numbers in the table). Thus, St. Augustine lawns in East Texas may require 4 to 5 pounds of nitrogen compared to 2 to 3 pounds in Southwest Texas.

Mowing practices, such as regular removal of grass clippings, also influence fertilizer requirements. Grass clippings contain 3 to 4 percent nitrogen on a dry weight basis, which is recycled through the soil if grass clippings are not removed. Regular removal of grass clippings will add at least one fertilizer application annually to lawn requirements.

## Fertilizer Applications

Timing and distribution of fertilizer applications, as well as rate of application, are important considerations in a lawn fertilization program. Timing applications to correspond to grass requirements rather than to the convenience of the homeowner can reduce maintenance problems (figure 1). Generally, spring and fall fertilizer applications are adequate for St. Augustine lawns. (Refer to map and calendar for approximate dates.) Figure 1. Approximate dates for fertilizer applications in various regions of Texas.

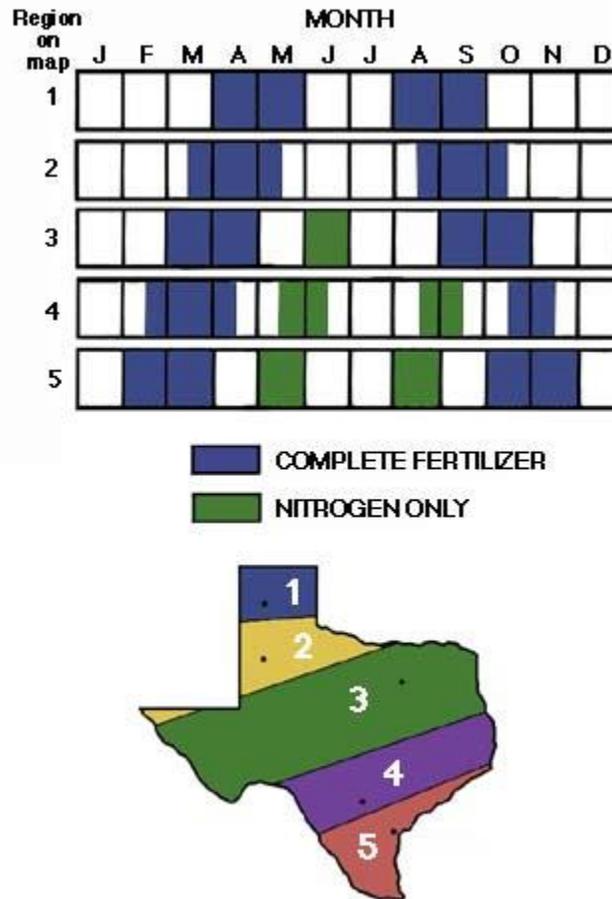


Figure 1. Approximate dates fertilizer applications in various regions of Texas.

In early spring there is usually enough residual nitrogen to maintain grass through several mowings. The first application of fertilizer should be made after the second or third mowing.

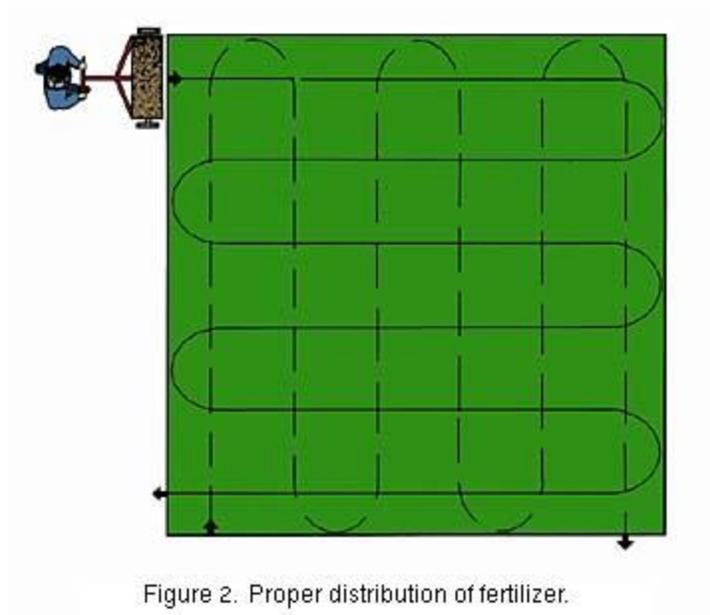
If the lawn appears vigorous and healthy at that time, delay the first application until May. In the absence of soil test information, apply a fertilizer with a 3-1-2 or 2-1-1 ratio at a rate equivalent to 1 pound of nitrogen per 1,000 square feet.

Bermudagrass lawns require supplemental applications of nitrogen at 45- to 60-day intervals between spring and fall fertilizations. These applications should not exceed 1 pound of nitrogen per 1,000 square feet per application. Occasionally, St. Augustine grass may need a supplemental application of nitrogen to enhance color during the summer. Use organic or slow-release nitrogen sources on lawns during the summer. Summer fertilization of St. Augustine grass growing in moderate shade should be avoided because of increased disease activity.

St. Augustine lawns may require periodic applications of iron sulfate or iron chelate to prevent iron chlorosis. A foliar application of iron sulfate at a rate of 6 to 8 ounces per 1,000 square feet effectively eliminates the symptoms of iron chlorosis. These applications may be needed several times during the growing season.

Iron chelates should be applied according to the manufacturer's directions. (Refer to publication L-435.)

Fertilizers can be distributed with a broadcast (cyclone) or drop-type spreader. Uniform distribution is essential to prevent light and dark streaks across the lawn. For better distribution, divide the fertilizer to be applied into two equal lots. Apply one lot lengthwise and the other crosswise over the lawn (figure 2).



### Fall Fertilization

Fall fertilization is the key to prolonging fall color and promoting early springs recovery of lawns. It also helps to produce a dense turf which resists winter weeds. Fertilizers used in the fall should be high in nitrogen and potassium and low in phosphorus. A 2-1-2, 3-1-2 or 4-1-2 analysis is preferred over a balanced fertilizer such as a 12-12-12 for fall application. Grass fertilized in the fall with nitrogen and potassium have shown greater survival during winter months and faster spring recovery than grasses fertilized with high phosphorus materials in the fall.

Avoid using straight soluble nitrogen fertilizers such as ammonium sulfate or urea during late fall because they increase the susceptibility to disease and winterkill.

Make fall applications in September for Regions 1, 2 and 3 (see map) and in October for Regions 4 and 5. Application rates should not exceed 2 pounds of nitrogen per 1,000 square feet.

### Type of Fertilizer

Choice of the type and grade of fertilizer material to use depends on soil test recommendations. Table 1 shows some analysis, ratios and equivalent applications rates of various fertilizers. In every fertilizer analysis (such as 12-4-8), the first number represents the percent nitrogen (N), the second number represents the percent phosphorus (P<sub>2</sub>O<sub>5</sub>) and the third number represents the percent potassium (K<sub>2</sub>O).

**Table 1. Nutrient content and equivalent rates of application of some commercial fertilizers.**

Fertilizer analysis	Ratio of plant food nutrients	Nutrient content (%) <sup>1</sup>			Amount to apply to get 1 lb. nitrogen per 1,000 sq. ft.
		Nitrogen	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	

8-8-8	1-1-1	8	8	8	12 lbs.
12-12-12	1-1-1	12	12	12	8 lbs
5-10-5	1-2-1	5	10	5	20 lbs.
10-20-10	1-2-1	10	20	10	10 lbs.
12-6-6	2-1-1	12	6	6	8 lbs.
10-5-5	2-1-1	10	5	5	10 lbs.
6-10-4	3-5-2	6	10	4	16 lbs.
16-20-0	4-5-0	16	20	0	6 lbs.
15-5-10	3-1-2	15	5	10	7 lbs.
12-4-8	3-1-2	12	4	8	8 lbs.

<sup>1</sup>Or pounds of nutrients per 100 pounds of fertilizer.

A complete fertilizer can be used in accordance with soil test results for the spring and fall applications. Additional nitrogen needed between the fall and spring applications for complete fertilizer can be supplied from one of several sources, as shown in table 2. Slowly available sources of nitrogen, such as ureaformaldehyde, IBDU, processed sewage sludge or cottonseed meal, are more desirable for summer applications of nitrogen than soluble sources such as ammonium nitrate, urea or ammonium sulfate. Slow-release and organic fertilizers usually cost more, but they are available to the grass over a longer period of time and help avoid the excessive growth produced by soluble nitrogen fertilizers. Soluble nitrogen sources should be applied in small amounts and more frequently than slowly soluble or slow-release types. Also, soluble nitrogen fertilizers are more likely to burn the grass than slow-release nitrogen fertilizers.

**Table 2. Percent nitrogen in various nitrogen sources, and recommended rates of application for lawns.**

Sources	Percent nitrogen <sup>1</sup>	Pounds to apply per 1,000 sq. ft.	Frequency of application
Cottonseed meal (organic)	6	16	60 days
Processed sewage sludge (organic)	6	16	60 days
Ammonium nitrate (soluble)	33	3	45-60 days
Ammonium sulfate (soluble)	21	5	45-60 days
Ammonium phosphate (soluble)	16	6	45-60 days
Urea (soluble)	45	2	45-60 days
Ureaformaldehyde (slow-release)	38	5	90-120 days

IBDU (slow-release)	31	7	90-120 days
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<sup>1</sup>Pounds of nitrogen in 100 pounds of fertilizer.

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