UConn Soil Nutrient Analysis Laboratory
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# Suggested Fertilizer Practices for Lawns

The enclosed soil test report provides limestone and fertilizer recommendations for your lawn. Also provided are the pH and available nutrients of the soil sample you sent to our laboratory. The limestone and fertilizer recommendations are based on the pH and available nutrients of your soil.

Soil tests cannot identify lawn problems due to insects, diseases, poor cultural practices, environmental stress or misuse of pesticides. Contact the UConn Home and Garden Education Center at (877) 486-6271 or through their website: homegarden.cahnr.uconn.edu for assistance with these problems.

It is essential to determine the area to be covered before purchasing or applying limestone and fertilizers. The area of square or rectangular shaped lawns can be easily calculated by multiplying the length times the width of the area in feet. To calculate the square footage of irregularly shaped lawns, divide your yard into smaller areas that are almost square or rectangular, measure them separately and add together for total square feet.

Lawn maintenance fertilizers usually have grades like 32-0-4, 29-0-4 or 10-0-6. Higher amounts of nitrogen in lawn maintenance fertilizers reflect a turfgrass plant's greater need for this nutrient. Note that lawn maintenance fertilizers sold in Connecticut contain 0% phosphorus. This is due to 2013 legislation that prohibits the addition of phosphorus fertilizers to established lawns except when recommended by a soil test performed within 2 years. Phosphorus may be added when seeding or sodding a new lawn or when overseeding an existing lawn. For more information, see the fact sheet Your Lawn and the Phosphorus Law on the Soil Nutrient Analysis Lab's website: www.soiltest.uconn.edu. Except for deficiency situations, the amount of potassium found in maintenance fertilizers is sufficient for good turf growth. If additional phosphorus or potassium is needed, recommended grades and rates will be listed on your soil test results.

Proper nitrogen fertilization is especially important for optimal turf establishment and growth. The amount of nitrogen in your soil sample is not measured by our standard nutrient analysis. This is because nitrogen levels are not reliable predictors of the nitrogen fertilizer needs of turfgrass. Nitrogen fertilizer recommendations for lawns are based on the amount of nitrogen removal by the grass plants during the growing season.

Two forms of nitrogen may be found in lawn fertilizers: readily available water soluble nitrogen or slow release water insoluble nitrogen (WIN). An ideal lawn fertilizers will contain both water soluble and water insoluble forms of nitrogen. Water soluble forms of nitrogen are rapidly available to turf grasses, but also readily subjected to leaching. Fertilizers containing at least 40% WIN will provide your lawn with a steady, continuous supply of nitrogen while reducing the potential for contamination of ground water supplies. A number of natural organic lawn fertilizers are available at local garden centers and retail stores. Much of the nitrogen in organic fertilizers is also in a slow release form. Lawns fertilized with slow release or natural organic sources of nitrogen tend to grow more evenly. Quick release, water soluble nitrogen often results in heavy flushes of new growth that are more susceptible to disease problems and also require more frequent mowings.

**Amount And Timing Of Lawn Fertilizers**

Cool season turf grass species, including Kentucky bluegrass, fescues and perennial ryegrass, require about 2 pounds of nitrogen per 1000 sq. ft. each year for satisfactory growth if clippings are left in place. Grass clippings add nutrients and organic matter to the soil. Contrary to popular belief, they do not contribute to thatch buildup. If clippings are removed, 3 pounds of N per 1000 sq. ft. may be needed.

Never apply more than 1 pound of water soluble N per 1000 sq. ft. at one time. Slow release fertilizers, including natural organic fertilizers and synthetic controlled release products, may be applied at higher rates (follow manufacturer's instructions) because much of their nitrogen is water insoluble. Ideal times to fertilize lawns are in May and early September. A third application may be needed in June if clippings are removed.

Shaded lawn areas planted with fescues require less nitrogen because reduced light limits growth. A single fertilizer application of 1 pound of N per 1000 sq. ft. either in May or early September is sufficient for these areas.

Do not apply fertilizer after mid-October or before April 15th. Application of nitrogen fertilizer, especially water soluble nitrogen, too early or late in the season leaches from the soil before it can be used by turfgrass and can contaminate ground and surface water supplies.

**How Much Fertilizer To Buy?**

Follow these steps to determine the amount of fertilizer to purchase for an application of 1 pound of nitrogen per 1000 sq. ft.:

1. Calculate the square feet of lawn surface to be covered.

2. Select the fertilizer you want to use and determine the percent nitrogen in your fertilizer by looking at the first of the 3 numbers on the package. For example, a 21-0-4 contains 21% nitrogen. How much fertilizer you need to apply depends upon the nitrogen content of that particular fertilizer.

3. Use Table 1 to find the recommended pounds of fertilizer with that % nitrogen to cover 1000 sq. ft. For example, if you wanted to use a 21-0-4, you would find 21 in column 1, then go directly across to column 2 and see that 5 pounds of a fertilizer containing

21% nitrogen will cover 1000 sq. ft.

4. If your lawn area is 7000 sq. ft. then you would purchase and apply 35 pounds of 21-0-4 fertilizer. This is calculated by multiplying the 5 pounds of 21-0-4 fertilizer per 1000 sq. ft. times 7 units of 1000 sq. ft. (your 7000 sq. ft. of lawn area).

5. So 35 pounds of a 21-0-4 fertilizer would be applied to 7000 sq. ft. of lawn area to provide 1 pound of nitrogen per 1000 sq. ft.

*Table 1. Recommended Rates of Maintenance Fertilizers*

| % Nitrogen in Organic or Synthetic Fertilizer | Recommended Rate of Fertilizer (lbs./1000 sq. ft.) |
|---|---|
| 1 | 100 |
| 2 | 50 |
| 3 | 35 |
| 4 | 25 |
| 5 | 20 |
| 6 | 17 |
| 7 | 14 |
| 8 | 13 |
| 9 | 11 |
| 10 | 10 |
| 11 | 9 |
| 12 to 13 | 8 |
| 14 to 15 | 7 |
| 16 to 18 | 6 |
| 19 to 22 | 5 |
| 23 to 27 | 4 |
| 28 to 38 | 3 |

**Soil pH And Liming Lawns**

Soil pH is a measurement of the soil's acidity or alkalinity. A pH of 7.0 is neutral, values below 7.0 are considered acidic while those greater than 7.0 are alkaline. The pH of the soil influences both the quality and vigor of turfgrasses. The ideal pH range for turfgrasses is between 6.0 and 7.0. If soil pH is below or above this range, nutrient availability may be reduced, and turfgrass growth and quality might not be optimal.

**Ground limestone** is generally used to correct acidic soil conditions, although some homeowners may prefer the less dusty **pelletized limestone**. Cost is the major difference between the two forms; application rates and reaction times are similar.

**Dolomitic limestone**, which contains both calcium and magnesium carbonates, is the most common liming material in our area. Occasionally, magnesium levels are above optimum but the soil pH needs to be increased. In this instance, a **calcitic limestone** that contains only calcium carbonate could be used.

Apply the recommended amount of limestone to increase the pH of your soil. Limestone can be applied any time the ground is not frozen except during periods of severe drought. While limestone supplies calcium and/or magnesium, it does not reduce the need for lawn fertilization. Also, the presence of moss does not necessarily indicate acidic soil conditions. Read the fact sheet Moss Control on the UConn Home & Garden Education Center's website (www.ladybug.uconn.edu) if moss is a problem.

A maintenance application of 50 pounds of limestone per 1000 square feet can be applied every 2 to 3 years to maintain the pH of your soil. Single applications of limestone to established lawn surfaces should be limited to 50 to 75 pounds per 1000 sq. ft. Reapply at 1- to 6-month intervals until the total recommended amount is administered. For new lawns, the entire amount recommended can be tilled into the top 6 inches of soil before planting.

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