

## Step-by-Step Fertilizer Guide for Lawns

Follow this step-by-step guide to convert your recommendations into a fertility program for your lawn.

**Step 1: How big is your lawn?** Determine how many square feet of lawn you will be fertilizing. Lime and fertilizer recommendations are given in pounds per 1,000 square feet for lawns.

**Step 2: Read your soil test report.** The first page contains test results. The second and subsequent pages give recommendations and references based on those results.

Note: There are two categories of lawn recommendations. Use the recommendations for **New Lawn Construction** if you are seeding bare ground or reseeding an existing plot. These recommendations include higher levels of phosphorus needed to promote seed germination. Use the **Established Lawn** recommendations to maintain existing lawn areas.

**Step 3: Read and understand the fertilizer label.** The label on a fertilizer bag contains important information that will help you determine whether it is an appropriate blend for your use. Additionally, this information is used to calculate how much to apply.

Fertilizer companies are required to list the **Guaranteed Analysis** of the fertilizer. This will be listed on the package in the format X-X-X. These are percentages by weight of nitrogen (N), phosphorus (as P<sub>2</sub>O<sub>5</sub>), and potassium (as K<sub>2</sub>O) within the bag, always in that order. That means a bag of 10-10-10 contains 10% N, 10% P<sub>2</sub>O<sub>5</sub> and 10% K<sub>2</sub>O. A fertilizer labelled 30-0-4 has 30% N, 0% P<sub>2</sub>O<sub>5</sub> and 4% K<sub>2</sub>O.

**Step 4: Select a fertilizer that meets your needs.** Recommendations given represent nutrients needed for *one growing season*. Here's an example:

*Recommendations for Established Lawn*

Limestone (Target pH of 6.5)	Nitrogen, N	Phosphorus, P <sub>2</sub> O <sub>5</sub>	Potassium, K <sub>2</sub> O
0	2-4	3	1

----- lbs / 1000 sq ft -----

Nitrogen recommendations are given as a range (for example, 2-4 lbs. per 1,000 sq. ft.). For the purpose of this exercise, we'll use 3 pounds N per 1,000 square feet. The fertilizer used should have an *approximate* ratio of 3:3:1. A common starter fertilizer is rated at 24-25-4, which has an *approximate* ratio of 6:6:1 or 3:3:0.5. *It isn't necessary to match your recommendations exactly!*

**Step 5: Calculate how much fertilizer is needed.** Use the following calculation:

$$\text{Lbs. N recommended} \div \%N \text{ in the fertilizer blend} \times 100 = \text{lbs. fertilizer needed per 1000 sq. ft.}$$

**Example:** For a fertilizer blend of 24-25-4, you would need **12.5 pounds of fertilizer per 1000 square feet** for an established lawn:

$$3 \text{ lbs. N} \div 24 \times 100 = 12.5 \text{ lbs. per 1000 square feet}$$

However, you would not be meeting your potassium needs with this fertilizer since the ratio is approximately 3:3:0.5, not 3:3:1. Supply an additional 0.5 lbs. per 1,000 square feet by using a product called **Potash (0-0-60)**. You would need 0.8 lbs. Potash per 1000 square feet:

$$0.5 \text{ K}_2\text{O} \div 60 \times 100 = 0.833 \text{ lbs. per 1000 square feet}$$

Finally, adjust your fertilizer application by the actual square footage of your lawn.

### Things to Remember:

- Lawn recommendations are given per 1,000 square feet (listed in the center of each recommendation), and represent nutrient needs for *one growing season*. Fertilizer applications should be split into smaller increments of two or more applications, spread out over the growing season. For example, apply one third of the fertilizer in the spring after the soil warms up, the second third of the application in mid-June, and the final third of the application in late September.
- The calculation is multiplied by 100 to convert from percentages, and has nothing to do with the area being amended.
- You do not need to match the recommendations exactly. If you find a fertilizer blend that is close to the ratios recommended, it will be fine. If you cannot find a match at all, you can combine materials to meet your needs. Use the same calculation to figure out how much of each material to apply.
- If you have questions, you may contact the lab at [soiltest@umass.edu](mailto:soiltest@umass.edu). We will be happy to assist you.

Some example calculations may be found on the next page.

**Some example calculations:**

*Recommendations for New Lawn Construction*

<b>Limestone (Target pH of 6.5)</b>	<b>Nitrogen, N</b>	<b>Phosphorus, P<sub>2</sub>O<sub>5</sub></b>	<b>Potassium, K<sub>2</sub>O</b>
----- lbs / 1000 sq ft -----			
<b>200</b>	<b>2-4</b>	<b>0.5</b>	<b>2</b>

**Limestone:** If this is a new lawn construction, and you plan on tilling your amendments into the soil before seeding, the entire amount of limestone (200 lbs. per 1000 square feet) may be incorporated into the soil at once.

If you are reseeding an existing lawn and will not be tilling your amendments in, you must break your limestone into four applications of 50 lbs. per 1000 square feet each. Make applications in spring and fall over two growing seasons, until the entire amount has been applied. *Do not apply limestone when soils are frozen or very wet.*

**Fertilizer:** Since you need very little phosphorus, look for a fertilizer that does not contain P<sub>2</sub>O<sub>5</sub>, that is, the middle number is 0. For example, you could use **30-0-4**. Base your application rate on the nitrogen recommendation. Here's the calculation:

$$3 \text{ lbs. N} \div 30 \times 100 = 10 \text{ lbs. per 1000 sq. ft.}$$

To supply phosphorus, use 1.1 lbs. **Triple Phosphate (0-45-0)** per 1,000 square feet.

$$0.5 \text{ lbs. P}_2\text{O}_5 \div 45 \times 100 = 1.1 \text{ per 1000 sq. ft.}$$

Since your fertilizer blend only contains **4% K<sub>2</sub>O**, additional is needed. To figure out how much more you need, use the following calculation:

$$2 \text{ lbs. K}_2\text{O recommended} - (4 \div 100 \times 10 \text{ lbs. fertilizer applied}) = 1.6 \text{ lbs. K}_2\text{O}$$

To supply potassium, use 2.7 lbs. **Potash (0-0-60)** per 1,000 square feet.

$$1.6 \div 60 \times 100 = 2.7 \text{ lbs. Potash per 1000 sq. ft.}$$

Remember, these are the total nutrients needed for *one growing season*. Divide the totals needed into two or more applications, spread out over the season.

*Recommendations for Established Lawns*

<b>Limestone (Target pH of 6.5)</b>	<b>Nitrogen, N</b>	<b>Phosphorus, P<sub>2</sub>O<sub>5</sub></b>	<b>Potassium, K<sub>2</sub>O</b>
----- lbs / 100 sq ft -----			
<b>150</b>	<b>2-4</b>	<b>0</b>	<b>1</b>

**Limestone:** Do not apply more than 50 lbs. limestone per 1000 square feet at one time. To raise soil pH, make three applications of 50 lbs. per 1000 square feet each. Make applications in spring and fall over two growing seasons, until the entire amount has been applied. *Do not add limestone when soils are frozen or very wet.*

**Fertilizer:** Since you don't need any phosphorus, look for a fertilizer that does not contain P<sub>2</sub>O<sub>5</sub>, that is, the middle number is 0. For example, you could use **22-0-4**. Base your application rate on the nitrogen application. Here's the calculation:

$$3 \div 22 \times 100 = 13.6 \text{ lbs. per 1000 sq. ft.}$$

Since your fertilizer blend only contains **4% K<sub>2</sub>O**, additional is needed. To figure out how much more you need, do the following calculation:

$$1 \text{ lbs. K}_2\text{O recommended} - (4 \div 100 \times 13.6 \text{ lbs. fertilizer applied}) = 0.5 \text{ lbs. K}_2\text{O}$$

To supply potassium, use 0.8 lbs. **Potash (0-0-60)** per 1,000 square feet.

$$0.5 \div 60 \times 100 = 0.8 \text{ lbs. Potash per 1000 sq. ft.}$$

Remember, these are the total nutrients needed for *one growing season*. Divide the totals needed into two or more applications, spread out over the season.