

Soil Nutrient Analysis Laboratory



Soil Nutrient Analysis Laboratory; 6 Sherman Place, Unit 5102, Storrs, CT 06269-5102

Phone: 860-486-4274 • www.soiltest.uconn.edu • Location: Union Cottage, Depot Campus, Mansfield

Suggested Fertilizer Practices for Flowers (Annuals, Perennials, Bulbs, Roses, Ornamental Grasses & Wild Flowers)

Flowers enhance the garden with their color and fragrance. Many flowering plants can produce blossoms throughout the growing season if their cultural requirements are met. Among those requirements are essential nutrients for plant growth and development. Nutrients are added to garden soils primarily through fertilization. Either natural or synthetic fertilizers, or a combination of the two types, can be used to meet the nutrient needs of flowering plants.

Each year the number of species of flowering plants available for the home garden increases. Some plants have very specific soil pH and fertility requirements. Others can tolerate a wide range of levels. Limestone and fertilizer recommendations may have to be modified accordingly. It is always a wise idea to research the cultural requirements of plants before adding them to the landscape.

I. Soil pH, Limestone and Sulfur applications.

The soil pH refers to the measurement of soil acidity. A soil pH of 7.0 is considered neutral. Values less than 7.0 reflect acidic soil conditions while those above indicate alkalinity. The majority of flowering plants will grow well within a soil pH range of 5.5 to 7.0 with a target pH of 6.5. It would be lower for native wildflowers and ferns reflecting their adaptation to more acidic conditions.

Recommendations for ground limestone will be made if the soil pH needs to be increased. Limestone raises the soil pH, reduces soil acidity, increases the calcium and, in the case of dolomitic limestone, also increases the magnesium level in the soil. Either ground or pelletized limestone is used to correct acid soil conditions. Cost is the major difference between the two forms; application rates and soil reaction times are similar.

Limestone may be applied any time the ground is not frozen. Whenever possible, incorporate the ground limestone into the top 6 to 8 inches of soil. If more than 10 lbs. of ground limestone per 100 sq. ft. is recommended, and it can only be applied to the soil surface, a split application is suggested.

Occasionally the soil pH level is too high for the particular plants being grown and the soil test report will recommend appropriate amounts of sulfur or aluminum sulfate to lower it. Generally, it takes 6 to 9 months for the soil pH to change following either limestone or sulfur applications.

Note: One cup of limestone weighs about $\frac{3}{4}$ lb.

II. Fertilizers

Fertilizer recommendations are based on soil test results and on the type of flowering plant being grown. Your soil test report will recommend varying amounts of several widely available fertilizer grades. The fertilizer grade is denoted by the three numbers on the front of a fertilizer container. These numbers refer to the percent by dry weight of total nitrogen (N), available phosphate (P_2O_5), and water soluble potassium (K_2O) contained in package of fertilizer. They are always listed in this same order. A fertilizer with an analysis of 5-10-5 would contain 5% N, 10% P_2O_5 and 5% K_2O .

Recommendations for flowering plants are for a complete fertilizers which is one that contains the three major plant nutrients nitrogen, phosphorus and potassium. Occasionally when the soil test indicates very low or very high values for a certain nutrient, a single nutrient source would be recommended. Examples would be superphosphate (0-20-0) or bloodmeal (12-0-0).

Fertilizers other than those recommended, including various natural organic materials, can be used provided they supply nutrients in about the same amounts and ratios as the recommended fertilizer. For example, a 3-4-4 could be used in place of a 10-10-10 at 3 times the rate as it is only one-third as concentrated.

In general, fertilizers formulated for flowering plants would contain amounts of nitrogen less than or equal to the amounts of phosphorus (i.e. 10-10-10 or 5-10-5). This is because phosphorus encourages flowering. Too much nitrogen will stimulate green leafy growth at the expense of flower production. Also, the recommendations are made for granular fertilizer formulations. These will generally supply nutrients to the plants for about 6 to 8 weeks. During periods of excessive rainfall or frequent irrigation, the nutrients may be leached out of the soil and fertilizer may need to be reapplied.

III. How and When to Fertilize

Use the grade of fertilizer (or equivalent) recommended on the enclosed soil test report at the times of year listed below for the type of flowering plants being grown. For new flower beds, work the fertilizer into the top 4 to 6 inches of soil before planting. For established plantings, spread the fertilizer evenly around the plants and lightly scratch it into the soil, then water thoroughly. Pull back the mulch around plants so the fertilizer is applied to the soil and not on top of the mulch.

Fertilizer recommendations are given in increments of 100 sq. ft. Therefore, you need to determine the size of your garden before spreading the fertilizer. The length multiplied by the width of the garden will give you the total area. For instance a garden 5 feet wide and 10 feet across would cover 50 sq. ft. Often flower gardens are irregularly shaped. Just do your best to approximate the square footage.

Note: One cup of a granular synthetic fertilizer weighs about ½ pound.

A. Flowers (annuals, perennials, ornamental grass, bulbs)

1. *Annuals* - Apply fertilizer at the recommended rate during flower bed preparation. Make a second application at the same rate 6 to 8 weeks later. Annual selections that will continue blooming into fall may benefit from a third application at the same rate made in late August. Keep in mind that other cultural requirements aside from adequate nutrients must be met for plants to continue optimum growth.
2. *Perennials and Ornamental Grasses (new plantings)* - Apply fertilizer at the recommended rate during flower bed preparation. Make a second application at the same rate 6 to 8 weeks later.
3. *Perennials and Ornamental Grasses (established)* - Apply fertilizer at the recommended rate when growth resumes in the spring. Perennials with long lasting foliage or extended bloom periods may benefit from a second application at the same rate 6 to 8 weeks later.
4. *Spring Flowering Bulbs* - Apply fertilizer at the recommended rate as soon as new growth emerges in the spring. Also apply fertilizer at the same rate when preparing beds in late August or early September.
5. *Summer Flowering Bulbs* - Apply fertilizer at the recommended rate at planting time or, in the case of hardy summer flowering bulbs, when growth resumes in the spring. Make a second application at the same rate after flowering for plants with short flowering periods, such as gladioli. For plants with long flowering periods like dahlias and cannas, make a second fertilizer application at the same rate in mid-July.

B. Roses - Follow the instructions on the soil test report. Make separate applications of fertilizer at the recommended rate in May, June and July. Do not fertilize after mid-July as new growth may be encouraged. It most likely will not have time to harden off properly in the fall and will be very susceptible to winter kill.

C. Wildflowers - Wildflowers that are native to New England's woodlands or meadows generally have low nutrient requirements. Apply the recommended amount of fertilizer once in the spring as new growth begins, or during bed preparation. Some wildflower species have very specific cultural requirements that may not be met with our more generalized recommendations. Gardeners may have to research the needs of individual species.

Note:

10 lbs. or 10-10-10 will supply plants with 1 lb. of Nitrogen (N), 1 lb. of Phosphate (P_2O_5) and 1 lb. of Potash (K_2O) per 1000 sq. ft. (Phosphate is a form of phosphorus; Potash is a form of potassium.)

10 lbs. of 5-10-10 will supply plants with ½ lb. of Nitrogen (N), 1 lb. of Phosphate (P_2O_5) and 1 lb. of Potash (K_2O) per 1000 sq. ft.

10 lbs. of 5-10-5 will supply plants with ½ lb. of Nitrogen (N), 1 lb. of Phosphate (P_2O_5) and ½ lb. of Potash (K_2O) per 1000 sq. ft.

To Supply Nutrients Using Natural/Organic Sources Use the Following Equivalents:

1 lb. of Nitrogen can be supplied by 8.3 lbs. of bloodmeal (12-0-0) or 11 lbs. of corn gluten (9-0-0)

1 lb. of Phosphate can be supplied by 6.75 lbs. of bonemeal (3-15-0) or 33.5 lbs. of rock phosphate (0-3-0)

1 lb. of Potash can be supplied by 25 lbs. of kelp meal (1-0-4) or 4.5 lbs. of sul-po-mag (0-0-22)* or 2 lbs. of potassium sulfate (0-0-50)* **

Keep in mind that the NPK analysis of natural organic products may vary by producer and adjust your application rates accordingly.

*Note: May need to be special or mail ordered.

**Note: Not all sources are certified for organic production.

By D. Pettinelli, 2001, Revised 2015
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