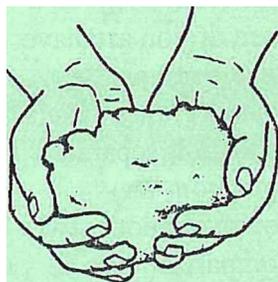




## TESTING THE SOIL IN THE FLOWER GARDEN



How do you know what fertilizer your flower garden needs? The primary nutrients required by plants are nitrogen, phosphorus and potassium. Testing the soil is the best way to find out what it needs. You can save time and money by

determining the nutrients needed in the soil before applying fertilizer. In addition, you can cause problems by over-fertilizing or over-liming.

What does a soil test tell you? The soil test conducted through the University of Kentucky Soil Testing Laboratory tells you the pH, phosphorus and potassium levels of the soil. A recommendation for the amount of the nutrients to apply to the soil is given.

### pH

The pH indicates the degree of acidity or alkalinity of the soil. The pH scale ranges from 0 to 14. A pH of 7 is neutral. Values below 7 make up the acid range of the scale and values above 7 make up the alkaline range. The pH scale is not a linear scale but a logarithmic scale. A soil with a pH of 8.5 is ten times more alkaline than a soil with a pH of 7.5, and soil with a pH of 4.5 is ten times more acid than a soil with a pH of 5.5. Many plants will grow under pH levels of 6.0 to 7.0. Acid loving plants such as azaleas and rhododendrons prefer a pH of 4.5.

pH is important because it affects the availability of nutrients in the soil to plants. In highly acidic soils with a pH below 5 (pH is low), calcium, phosphorus and magnesium are less available to the plant. At pH levels above 7 (pH is high), phosphorus, iron, copper, zinc, boron and manganese become less available.

The pH is used to determine if lime should be applied to increase the pH of the soil or if sulfur should be applied to decrease the pH.

### Phosphorus

Phosphorus (P) is essential for seed and fruit formation and root growth. The soil test as well as the fertilizer bag refers to phosphorus as  $P_2O_5$  instead of only P. On the University of Kentucky soil test results, phosphorus is referred to as phosphate.

### Potassium

Potassium (K), also mentioned as potash, is essential for root development and plant growth. The soil test result and fertilizer bag uses  $K_2O$  when referring to potassium instead of K.

### Nitrogen

The soil test does not determine the nitrogen (N) level. Plants need nitrogen to grow. When nitrogen is limiting, plants look yellow and grow slowly, often producing leaves that are smaller than normal. Nitrogen is



leached out of the soil and used up regularly by all plants, so a basic nitrogen recommendation is given based upon the known nitrogen requirements of the plants being grown.

For a flower garden, 0.1 to 0.2 pounds of actually nitrogen per 100 square feet is suggested to be applied annually. Don't over fertilize with nitrogen because some of the plants may become leggy and fall over. Also, too much nitrogen can stimulate lush leaf and stem growth at the expense of flower production.

## Preparing a Soil Sample



How do you obtain a soil sample for testing? To collect soil from a flower bed, push mulch out of the way and dig a hole 6-8 inches deep in the soil with a garden trowel. Set the soil from the hole aside. Then take a slice of soil about 1 inch thick to a depth of 6-8 inches and place it into a plastic bucket or container. Repeat these steps for 6 to 8 locations in your flower bed. The reason for taking soil from the different locations is to get the best representative sample of the soil in the bed. If you have a soil probe, you can use it instead of the garden trowel to collect cores of soil.

Then take out roots and other debris from the soil. Mix all of the soil in your bucket together and make sure to crumble big clods. Place the soil on newspaper out of the way where it will not be contaminated by foreign matter for 1 to 2 days to let it air dry.

Then take 2 cups of soil to the County Extension Service Office. In Daviess County the charge for a soil test is \$7.00 per sample.

In 7 to 10 days the test will be completed and recommendations will be made. The soil should be tested every 3 to 4 years.

Usually only one sample from each flower bed is needed. However, if you have an area in a bed where the flowers are not performing as you think they should, then take a soil sample from this area and keep it separate. At the same time, take a sample from the adjacent areas where plant growth is good. By taking these two samples, a comparison can be made to help determine the possible problem.

For more information about testing your soil to determine the amount of lime and fertilizer it needs, contact the Daviess County Cooperative Extension Service Office at 270-685-8480.

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