

## Flowerbeds

### Management Highlights

- Target pH: **6.0**
- Fertilize most perennials in two applications: one in early spring before growth resumes and one in June. Chrysanthemums require additional applications in July and August.
- Fertilize annuals in two applications: one in spring when the bed is being worked before planting and one approximately six weeks later when the first flowering cycle is complete.
- Enrich soils with organic materials such as composts, manures, humus or peat moss. These materials will improve soil properties such as soil tilth and water-holding capacity and will provide nutrients to the plants over time as they decompose.

### Introduction

Flowerbeds are a common type of planting found in many landscapes. With the proper fertilization and management, these plantings will continue to perform well throughout the growing season. As a general practice, enriching the soil of flowerbeds with organic materials such as composts, manure, humus or peat moss will be very beneficial. Not only do these materials improve soil properties such as soil tilth and water-holding capacity; they will also provide nutrients to the plants as the materials decompose over time.

### Soil pH and Liming

The target pH for flowerbeds on Delaware soils is **6.0**. When establishing perennial beds, soil pH problems should be corrected prior to planting since lime application will be more difficult once the plants are established. The lime recommendation for a particular site is calculated from the soil pH and buffer pH measurements using the steps outlined in *Calculating the Lime Requirement -- Chapter 4, Section 4.4*. Avoid overliming in order to encourage good plant growth and prevent deficiency of micronutrients such as iron.

In most cases, the lime requirement can be met by either calcitic or dolomitic limestone. *Dolomitic limestone* is recommended if:

- soil test Mg is less than 50 FIVs, or
- soil test Mg is between 50 and 100 FIVs *and less than soil test Ca*.

*Calcitic limestone* is recommended if:

- soil test Mg is greater than 100 FIVs, or
- soil test Mg is between 50 and 100 FIVs *and greater than soil test Ca*.

Lime should be applied in the fall prior to planting since it may take several months for pH changes to occur. On established plantings, do not spread more than 50 lbs lime/1000 square feet at a time. If more than 50 lbs/1000 square feet has been recommended, make two or more treatments of 40-50 lbs each several months apart until the full rate has been applied.

**Nutrient Recommendations**

Nutrient recommendations for flowerbeds can be grouped into two broad classes: *corrective applications*, designed to correct any problems in the soil and establish an optimum level of fertility, and *maintenance programs*, which are suitable for use once any problems have been addressed. *Corrective applications* are based on the nutrient requirements of the plant and the soil test values for P and K.

To determine the nutrient recommendation for a specific site, select the **P-K Index Value** from Table 1 using the soil test P and soil test K values shown on the Soil Test Report Form. Next, using that index value, select the appropriate nutrient recommendation from Table 2, below.

**Table 1. P-K Index value as a function of soil test P and soil test K.**

Soil Test K ( FIVs)	Soil Test P (FIV)s			
	1 - 25	26 - 50	51 - 100	101 - 150
1 - 25	1	2	3	4
26 - 50	5	6	7	8
51 - 100	9	10	11	12
101 - 150	13	14	15	16

**Table 2. Corrective nutrient recommendations for flowerbeds as a function of the P-K index value.**

PK Index Value	Nutrient Recommendation
1,2	Apply 50 lbs 5-10-10 or equivalent water-soluble fertilizer per 1000 square feet. Apply 2/3 of the recommended fertilizer and work in by spading, plowing or rototilling. Apply the other 1/3 to the surface and rake in just before planting.
3,4	Apply and work in by spading, plowing or rototilling 6 lbs muriate of potash (0-0-60) per 1000 square feet. Apply 20 lbs 10-10-10 or equivalent water-soluble fertilizer to the surface and rake in just before planting.

## Lawn and Garden Plants

PK Index Value	Nutrient Recommendation
5,6	Apply 40 lbs 5-10-10 or equivalent water-soluble fertilizer per 1000 square feet. Apply 2/3 of the recommended fertilizer and work in by spading, plowing or rototilling. Apply the other 1/3 to the surface and rake in just before planting.
7,8	Apply and work in by spading, plowing or rototilling 3 lbs muriate of potash (0-0-60) per 1000 square feet. Apply 20 lbs 10-10-10 or equivalent water-soluble fertilizer to the surface and rake in just before planting.
9,10	Apply 40 lbs 5-10-5 or equivalent water-soluble fertilizer per 1000 square feet. Apply 2/3 of the recommended fertilizer and work in by spading, plowing or rototilling. Apply the other 1/3 to the surface and rake in just before planting.
11,12	Apply 20 lbs 10-10-10 or equivalent water-soluble fertilizer per 1000 square feet. Apply 2/3 of the recommended fertilizer and work in by spading, plowing or rototilling. Apply the other 1/3 to the surface and rake in just before seeding.
13,14	Apply and work in by spading, plowing or rototilling 8 lbs triple superphosphate (0-46-0) per 1000 square feet. Apply 20 lbs 10-6-4 or equivalent water-soluble fertilizer to the surface and rake in just before planting.
15	Apply 20 lbs 10-6-4 or equivalent water-soluble fertilizer per 1000 square feet. Apply 2/3 of the recommended fertilizer and work in by spading, plowing or rototilling. Apply the other 1/3 to the surface and rake in just before planting.
16	Apply 3 lbs ammonium nitrate (34-0-0) or urea (46-0-0) per 1000 square feet and work in by spading, plowing or rototilling. Apply another 3 lbs ammonium nitrate or urea per 1000 square feet to the surface and rake in just before planting.

### *Maintenance Programs*

*Maintenance programs* are designed to meet the annual nutrient needs of the planting while maintaining an optimum level of soil fertility. Unless problems develop, these guidelines can be followed for 2-3 years before a new soil test is required. *Maintenance programs* for annual and perennial plantings are described in Table 3.

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Table 3. Maintenance programs for flowerbeds by plant type.

Plant Type	Nutrient Recommendation
<p><b>Perennial Plants</b></p>	<p>Any good garden fertilizer is acceptable (e.g., 5-10-10, 5-10-5, 10-10-10). For soils with a soil test P and soil test K values of 100 FIVs or more, ammonium nitrate or urea can be substituted in the following treatments at a rate of 1 tablespoon in place of ½ cup and ½ tablespoon in place of ¼ cup.</p> <p>In early spring before plant growth resumes, apply ½ cup of fertilizer per square yard of bed (approximately 4 oz.).</p> <p>In June, apply an additional ¼ cup of fertilizer per square yard of bed (approximately 2 oz.).</p> <p>For chrysanthemums, the June application should be repeated in July and August, as well, to encourage fall flowering.</p> <p><i>NOTE: As a general practice, enriching the soil of perennial flowerbeds with organic materials such as composts, manure, humus or peat moss will be very beneficial. Not only do these materials improve soil properties such as soil tilth and water-holding capacity; they will also provide nutrients to the plants as the materials decompose over time.</i></p>
<p><b>Annual Plants</b></p>	<p>Any good garden fertilizer is acceptable (e.g., 5-10-10, 5-10-5, 10-10-10).</p> <p>Apply 1 cup of fertilizer per square yard of bed as the ground is being worked up prior to planting in the spring. Six weeks later or when the first flowering cycle is complete, apply 1-2 tablespoons additional fertilizer around each plant.</p>

#### Additional Information

See Soil Test Notes 1 and 13 (Appendix APP-7) Extension Bulletin #154: *The Care of Ornamental Plants -- Delaware Home Gardeners Manual* for additional information about nutrient management of flowerbeds.