

# Know Your Soil

## Applying Fertilizers on Home Gardens

Bulletin #2287

**P**lants in farm fields and home gardens often need fertilizers to supplement nutrients in the soil. This can be difficult for people with small home gardens or lawns. Often, the nutrients in the fertilizer may not match the soil test recommendation. You can be sure to get the right amounts if you know a little about nutrients and fertilizers.

### Changing Fertilizer Grades

Fertilizer grades show the percentage of nitrogen (nutrients), phosphate ( $P_2O_5$ ) and potash ( $K_2O$ ) in the mixture. These percentages are listed in the order of N –  $P_2O_5$  –  $K_2O$ . For example, an 80-pound bag of 5-10-15 fertilizer contains:

4 pounds nitrogen (80 pounds x 5 percent)

8 pounds phosphate (80 pounds x 10 percent)

12 pounds potash (80 pounds x 15 percent)

*Using fertilizers correctly at home is as important as on a farm field. This fact sheet will help you use these materials safely.*

It is common for nitrogen to be the nutrient that most limits plant growth. However, applying too much nitrogen can damage seeds and seedlings. You can use the percentage of nitrogen in a fertilizer (the first number in the grade) to decide how much you apply.

Let's say your soil test includes a recommendation for the number of pounds of nitrogen fertilizer per 1,000 square feet, for a specific grade of fertilizer, for example, 40 pounds of 5-10-10 fertilizer. What if you are using a fertilizer that is 8 percent nitrogen instead of five percent? How much of this fertilizer should you apply? A simple calculation will give you the answer.

% of N in recommended fertilizer x lbs. of recommended fertilizer.

\_\_\_\_\_  
%N in your fertilizer

For the example above:

$$\frac{5\% \text{ N} \times 40 \text{ lbs.}}{8\% \text{ N fertilizer}} = \frac{200}{8} = 25 \text{ lbs. Of } 8\% \text{ N}$$

### Weight and Volume Measures

Most lime and fertilizer recommendations are given in terms of *pounds of material per 1,000 square feet* (or  $ft^2$ ) for gardens or *pounds of material per 100  $ft^2$*  for ornamentals. What if you want to measure your lime or fertilizer by volume instead — using a coffee can or measuring cup, for example? Table 1 contains some common conversions for going from weight to volume measures.

TABLE 1

Fertilizer material	Weight	Equivalent Volume
Common fertilizer (i.e. 5-20-10) and superphosphate	1 lb.	1 pint <sup>1</sup>
Ammonium nitrate and urea	1 lb.	1 1/3 pint
Agricultural limestone	1 lb.	3/4 pint
Manure (packed)	30 lbs.	1 bushel <sup>2</sup>

<sup>1</sup> 1 pint = 2 cups = 32 tablespoons = 96 teaspoons  
<sup>2</sup> 1 bushel = 9.3 gallons = 1.25 cubic feet

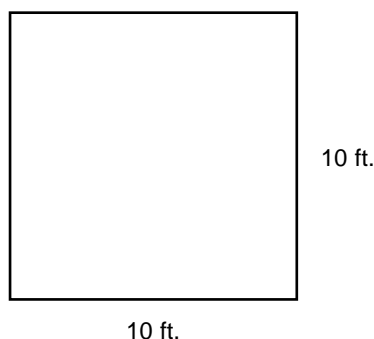
## Fertilizing Small Areas

Above, we said that fertilizer recommendations are given in pounds per 1,000 ft<sup>2</sup>. Chances are, your garden or lawn is not exactly 1,000 ft<sup>2</sup>, or you may be fertilizing a single row or a single plant. You need to calculate the area to apply fertilizer at the recommended rate. This is done in the following way, using a recommendation of 25 pounds of 5-10-5 per 1,000 ft.<sup>2</sup>

### 1. Square plot

Area = 10 feet x 10 feet = 100 ft<sup>2</sup>

Apply: 25 lbs. X 100 ft<sup>2</sup>/1,000ft<sup>2</sup> =  
 25 lbs. X 1/10 =  
 2.5 lbs. Of 5-10-5



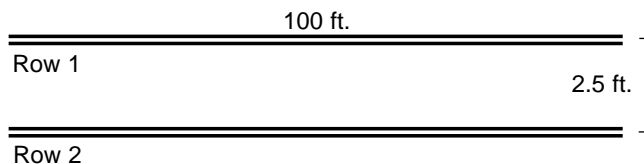
### 2. Single row (30-inch spacing)

Area = 100 feet x 2.5 feet = 250 ft<sup>2</sup>

Apply: 25 lbs. X 250 ft<sup>2</sup>/1,000ft<sup>2</sup>

25 lbs. X 1/4

6.1 lbs. Of 5-10-5



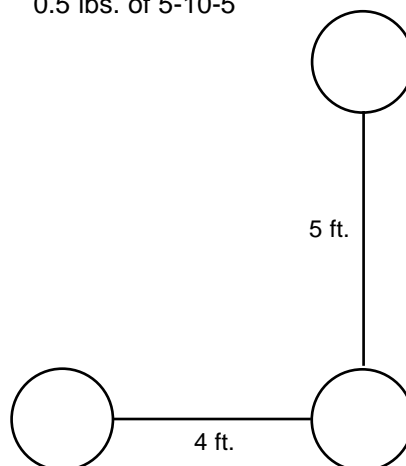
### 3. Single plant

Area = 4 feet x 5 feet = 20 ft<sup>2</sup>

Apply: 25 lbs. X 20 ft<sup>2</sup>/1,000ft<sup>2</sup> =

25 lbs. X 1/50

0.5 lbs. of 5-10-5



*Prepared by Tim Griffin, Extension sustainable agriculture specialist*