



**Landscape & Vegetable Garden Test**

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**LIME AND FERTILIZER RECOMMENDATIONS**

Crop:	Vegetable Garden
Lime:	0.0 lbs per 100 sq. ft. (1 Ton = 2000 Lbs)
Nitrogen:	0.20 lbs per 100 sq. ft.
Phosphorus: (P Q) <sub>5</sub>	0 lbs per 100 sq. ft.
Potassium: (K Q) <sub>2</sub>	0 lbs per 100 sq. ft.
Magnesium: (Mg)	0 lbs per acre

Footnotes are printed wherever applicable. These footnotes are an integral part of fertilization recommendations. Please read them carefully.

See Footnote(s): 1

**Foot Notes**

1/12/2009

Note #	Description
1	Soil test values noted with a ">" sign exceeded the normal working range of our extraction method and are interpreted as high or very high for P, K, or Mg. No positive plant response to addition of the nutrient is likely. In some circumstances, addition of this nutrient to the soil could be detrimental to plant performance or to the environment.

This data report has been issued on the authority of Dr. Rao Mylavarapu, Laboratory Director, and Mr. Pete Straub, QA Officer, in support of Florida Cooperative Extension Services.

## THE IFAS SOIL TEST REPORT AND THE VEGETABLE GARDENER

This publication is intended to help the home gardener understand fertilizer recommendations and particularly the Standard Fertilizer Recommendation received from the IFAS Extension Soil Testing Laboratory.

### A Word About Fertilizers

A “fertilizer” is any material that provides plants with one or more essential nutrient elements. In this publication we will deal principally with fertilizers that supply the soil (and thus the plants) with the three following “macronutrients”: nitrogen (N), phosphorus (P), or potassium (K). The macronutrients are used by plants in large (macro) quantities and these are more likely to be deficient in the soil than those nutrients that are used in much smaller quantities.

A “complete” fertilizer is defined as one, which contains appreciable amounts of all three macronutrients. For example, a 6-8-8 is a complete fertilizer because it contains 6% nitrogen, 8% P<sub>2</sub>O<sub>5</sub>, and 8% K<sub>2</sub>O. The term “complete” is somewhat unfortunate because it implies: (1) the fertilizer has all elements required by plants and (2) other fertilizers are less desirable because they are “incomplete”. Neither of these implications is correct because (1) other essential elements are often needed to complete the fertility requirements and (2) it is not generally desirable to apply elements that are not needed, as frequently happens when complete fertilizers are used.

The term “fertilizer material” will be used in this publication to describe all fertilizers other than complete fertilizers. Examples of fertilizer materials are ammonium nitrate, which contains nitrogen, ordinary super phosphate, which contains phosphorus and sulfur, diammonium phosphate, which contains nitrogen and phosphorus, and potassium magnesium sulfate, which contains potassium, magnesium, and sulfur. Complete fertilizers are formulated by combining appropriate quantities of various fertilizer materials. These are listed in the “Derived from” section of the Florida fertilizer label.

### Soil Testing

A soil test is a guideline to fertilizing your vegetable garden. Its practical value is the fertilizer recommendation that accompanies it.

Soil tests help to determine how much phosphorus and potassium the soil can supply to growing plants. The amount of phosphorus and potassium recommended by the IFAS Vegetable Crops Department and provided through the Extension Soil Testing Laboratory is the amount needed to supplement the soil’s supply. Soil nitrogen chemistry is such that nitrogen availability is not tested in Florida. The nitrogen recommendation, determined by experimentation, assures optimum plant nutrition for the majority of the vegetables in the garden.

## Using Your Soil Test Report

When your soil is tested at the IFAS Extension Soil Testing Laboratory the results are returned in a computer-processed report entitled "Soil Test Report and Standard Fertilizer Recommendations." The report gives the amount of fertilizer needed in pounds per acres (LB/A) of nitrogen (N), phosphorus (P<sub>2</sub>O<sub>5</sub>), and potassium (K<sub>2</sub>O).

To determine the kind and amount of actual fertilizer you need to add to your garden, use the tables in this fact sheet. The materials suggested are commonly available. Others could just as well be used, but the amount would vary with the nutrient content.

## Adjusting Soil pH Where Needed

Most vegetables grow best in the pH range of 5.5 to 6.5. If your soil has a pH greater than 6.5, micronutrient deficiencies may occur and it is advisable to:

- Apply one ounce of a micronutrient mixture per 100 sq. ft. or use a complete fertilizer which contains micronutrients, and
- Apply one pound of sulfur/100 sq. ft. of garden to reduce the soil pH.

Lime may be recommended if your soil pH is below 6.0, the liming rate depending on a separate soil test performed by the Lab. One ton per acre translates into 4.6 pounds per 100 square feet of garden. Based on your soil test, a footnote indicates if dolomite or calcitic lime is preferred. Avoid over-liming by applying lime only when the soil test indicates that lime is needed, and at the recommended rate.

## The Fertilizer Material Option

Refer to Table 1 if fertilizer materials are to be used. Find your recommendation in the first column and read across to determine pounds of each fertilizer material you need per 100 square feet of garden. Using this approach you add only what is needed, thus ensuring full benefit from the soil test and associated fertilizer recommendation.

If more than one fertilizer material is needed, you may apply them separately or mixed together. For recommendations on how to prepare the soil and apply the fertilizer, refer to the Extension Circular 104, "Vegetable Gardening Guide," or Extension Fact Sheet VC-5, "Fertilizing the Garden".

Because of the small quantities of fertilizer required for short rows and small plots, it is easy to apply too much fertilizer. Always measure or weigh chemical fertilizers accurately to avoid root injury or nutritional disorders that might result from over-fertilization.

Table 1. Converting fertilizer recommendation to rates of fertilizer materials

Recommendation as shown on Soil test report			Name and Grade Of three fertilizer materials				Total Weight of Fertilizer to use at Planting <u>2/</u>		
N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Ammonium Nitrate	Ordinary <u>1/</u> Superphosphate	Muriate of potash				
----- lbs/acre -----			----- lbs to use /100 sq. ft. -----						
100	140	140	0.7	+	1.6	+	0.5	=	2.8
100	140	70	0.7	+	1.6	+	0.3	=	2.8
100	140	0	0.7	+	1.6	+	0	=	2.8
100	70	140	0.7	+	0.8	+	0.5	=	2.8
100	70	70	0.7	+	0.8	+	0.3	=	2.8
100	70	0	0.7	+	0.8	+	0	=	2.8
100	0	140	0.7	+	0	+	0.5	=	2.8
100	0	70	0.7	+	0	+	0.3	=	2.8
100	0	0	0.7	+	0	+	0	=	2.8

1/ Apply half as much if concentrated superphosphate (0-46-0) is used.

2/ In addition, apply 3 or 4 side dressings of N and K during the growing season (see Extension Fact Sheet VC-5 for details).

If it is more convenient to measure the material than to weigh it, one pint of complete fertilizer (such as 6-8-8), super phosphate, or muriate of potash weighs roughly one pound. (One pint equals 2 kitchen measuring cups or 32 tablespoons.) Ammonium nitrate is lighter, so allow 2 ½ cups per pound.

Some inconveniences may be encountered with the use of fertilizer materials; a little more time and effort is involved in their application, and leftover materials need to be handled carefully to prevent hardening or uptake of moisture. However, the fertilizer materials can be purchased in assorted size containers just as complete fertilizers. Ask your dealer. You may be surprised at what he has in stock, or what he can get for you if you just ask for it!

### The Complete Fertilizer Option

Should you prefer a complete fertilizer, Table 2 shows how much 6-8-8 fertilizer to use for the various recommendations based on the soil tests. You will note that in all cases the rate is 4 pounds per 100 sq. feet. This is necessary to provide the nitrogen that is required for optimum growth of young seedlings and transplants.

Table 2 demonstrates how much excess fertilizer is applied when a complete fertilizer is used. Although it leads to some over-fertilization, ease of application, product familiarity, and general fertilizer recommendations made without soil test.

Table 2. Using a complete fertilizer (6-8-8) based on your soil test.

Recommendation as shown on Soil test report			Rate of 6-8-8 fertilizer to use at planting <sup>1/</sup>	Excess fertilizer applied	
N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O		Phosphorus As P <sub>2</sub> O <sub>5</sub>	Potassium as K <sub>2</sub> O
----- lbs/acre -----			----- lbs /100 sq. ft -----	----- lbs/acre -----	
100	140	140	4.0	0	8
100	140	70	4.0	0	78
100	140	0	4.0	0	148
100	70	140	4.0	70	8
100	70	70	4.0	70	78
100	70	0	4.0	70	148
100	0	140	4.0	140	8
100	0	70	4.0	140	78
100	0	0	4.0	140	148

*1/ In addition, 3 or 4 side dressings will be needed during the growing season (see Extension Fact Sheet VC-5 for details).*

### In Summary

Use of fertilizer materials rather than complete fertilizers will allow you to make better use of the information derived from the Routine Soil Test of the IFAS Extension Soil Testing Lab. You will be able to tailor your fertilization of your garden's needs and will avoid wasteful over-fertilization. If you cannot use fertilizer materials, you probably should not ask for the Routine Soil Test (analysis Code 1; costs \$7). Instead, just ask for the "Soil pH and lime requirement" test when sending your soil sample (analysis costs \$3). You will be paying for only the information you will use.

Better yet, learn how easy it is to fertilize with fertilizer materials and tailor your fertilization to fit your garden's needs.