



UConn Soil Nutrient Analysis Laboratory

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Suggested Fertilizer Practices For Vegetables and Herbs

The enclosed soil test report provides the pH and available nutrient levels present in your soil at the time of sample collection. Based on these results, limestone and fertilizer recommendations are made for the vegetable crops you listed. Soil tests are unable to identify problems associated with poor cultural practices, damage from insects, disease or environmental stress, or injuries caused by the misuse of pesticides. Contact the UConn Home and Garden Education Center at 877-486-6271 or through their website: homegarden.cahn.uconn.edu for assistance with these problems.

Soil pH and Limestone

The pH measures the acidity or alkalinity of a soil. The majority of vegetables prefer a slightly acidic soil with a pH ranging from 6.0 to 6.8. **Ground limestone** is generally used to correct acidic soil conditions, although some gardeners prefer the less dusty **pelletized limestone**. Cost is the major difference between the two forms; application rates and reactions times are similar.

Most widely available is **dolomitic limestone**, containing both calcium and magnesium carbonates. If reported magnesium levels are above optimum and the addition of limestone is recommended to raise the pH, a **calcitic limestone** which contains only calcium carbonates would be your best choice.

Note: One cup limestone weighs about 3/4 lb.

Hydrated lime (calcium hydroxide) is not recommended because it is caustic to humans, plants and soil organisms. More recently **soluble forms** of calcium (like Solu-Cal and MAG-I-CAL) have become commercially available. These products do increase the amount of soluble calcium in the soil for plant uptake but to date, studies indicate that they do not increase the pH appreciably faster than ground or pelletized limestone products. They may be useful in preventing blossom end rot in tomatoes if soil tests indicate a need for calcium. Always follow the label directions if applying these products.

Wood ashes can be used as a substitute for limestone. Apply at approximately 1.5 times the recommended rate of limestone. For example, 7.5 pounds of wood ashes could be substituted for 5 pounds of limestone. Do not apply wood ashes if the pH is over 6.8.

Note: One cup wood ashes equal about 1/3 lb.

Fertilizers

Fertilizer recommendations are based on soil test results and the kinds of vegetables 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 the fertilizer bag. These numbers represent the percent of total nitrogen (N), available phosphate (P_2O_5) and water soluble potassium or potash (K_2O) contained in the fertilizer. They will always be listed in this exact order. A fertilizer with the analysis 5-10-10 would contain 5% N, 10% P_2O_5 , and 10% K_2O .

Recommendations for most vegetable gardens are for a complete fertilizer meaning that it 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 fertilizer is recommended. Examples would be superphosphate (0-20-0) or bloodmeal (12-0-0).

Fertilizers other than those recommended, including various natural organic fertilizers, can be used provided they supply nutrients in about the same amounts and ratios as the recommended fertilizer. For example, a 10-20-20 could be used in place of a 5-10-10, but since it is twice as concentrated you would only use one-half as much. Fertilizers formulated for vegetable gardens generally contain amounts of nitrogen less than or equal to the amount of phosphorus (i.e. 5-10-5 or 10-10-10). This is because phosphorus promotes flowering and fruiting. Too much nitrogen will stimulate green leafy growth at the expense of vegetable production.

Note: If your results state that both phosphorus and potassium levels are above optimum, only a nitrogen recommendation will be provided. For each pound of nitrogen recommended per 1000 sq. ft. you may use your choice of 8.3 lbs. of bloodmeal (12-0-0), 11 lbs. of corn gluten (9-0-0), or 2.2 lbs. of urea (46-0-0).

Applying Fertilizers

Fertilizer recommendations are given in increments of 1000 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 25 feet long and 10 feet wide equals 250 sq. ft. If the recommendation given is for 8 pounds of 5-10-10 per 1000 sq. ft., you would only use one quarter as much, or 2 pounds in your 250 square foot garden.

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

Fertilizers are spread over the garden area before planting in the spring. A spade or rototiller can be used to mix the fertilizer into the top 4 to 6 inches of soil. Long season crops like sweet corn and tomatoes, and vine crops such as pumpkins and melons, may benefit from a side dressing of fertilizer during the growing season. Apply the recommended rate in a band along rows. Do this by placing fertilizer 6 inches on each side of a row of crops. Scratch in lightly to avoid root damage and water thoroughly.

Note:

10 lbs. of 10-10-10 will supply plants with 1 lb. of Nitrogen (N), 1 lb. of Phosphate (P₂O₅) and 1 lb. of Potash (K₂O) 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 (P₂O₅) and 1 lb. of Potash (K₂O) per 1000 sq. ft.

10 lbs. of 5-10-5 will supply plants with ½ lb. of Nitrogen (N), 1 lb. of Phosphate (P₂O₅) and ½ lb. of Potash (K₂O) 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 2023

Associate Extension Educators

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