

Vegetables

Soil Preparation for Vegetable Gardens

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The first step in preparing vegetable gardens for planting is cleaning the site. Remove boards, rocks, old plant supports and general debris. Cut or chop weeds and crop residue. If the residue is free of disease and mature weed seed, the material may be worked into the soil or composted. Otherwise, it should be discarded. Bulky plant material, like corn stalks, will need to be chopped before it is incorporated into the soil.

If initiating a new garden into a sodded area, it is beneficial to plow the sod in the late fall or winter. The heavy root system of the sod will require several months to decompose. The excess root mass makes tillage and planting difficult. As soil organisms begin to decompose large amounts of organic matter, they utilize available nitrogen. As the process continues, nitrogen is released that can be used by the plants. However, it is often 45 to 60 days before the nitrogen becomes available for the plant to use.

Soil Sampling

One of the best ways to insure the garden will be successful is to have a soil test performed. A soil test is the only accurate way to determine how much lime and fertilizer to apply to the garden. However, if the soil test information is to be accurate, the sample must be collected correctly. Use a small trowel or spade to collect samples. Collect samples from eight to 10 locations throughout the garden. The soil should be dry, or at least free of excess moisture. Collect vertical slices of the top 4 to 6 inches

of soil. Place the soil in a clean plastic bucket and mix thoroughly. Metal containers or those contaminated with detergents or other foreign material may cause invalid recommendations.

Avoid irregular areas in the garden when collecting a soil sample. Do not collect soil samples from areas where water stands, heavy amounts of ashes have been dumped or where debris has laid. For the most reliable results, collect the samples from the areas most representative of the garden.

Soil samples should be taken the same general time each year. Remember, the trends observed may be more important than the absolute values. Sampling during the fall one year and the spring the next will not allow you to observe the trends. If the soil test results report a consistent decrease in phosphorus and potassium levels, then you are not fertilizing enough. If the results show large increases in the phosphorus and potassium levels, then you are over-fertilizing. The goal of proper soil fertilization is to gradually increase the nutrient levels of the soil and then maintain them at a medium or high test result.

Soil Testing

Obtain a soil sample box and information sheet from a county Agricultural Extension office. Fill the box about three-fourths full of the thoroughly mixed soil. Carefully fill out the information sheet. Request the basic test, which includes water pH, buffer pH (if needed), as well as



phosphorus and potassium levels. The test results supplies recommendations for lime, nitrogen, phosphate and potash. Send your soil sample to: Soil Testing Laboratory, 5201 Marchant Drive, Nashville, TN 37211. Return the information sheet separately to the above address with a check, not cash, for \$6. Allow two weeks to receive the results of the test.

Liming

Lime should be applied to the garden according to soil test recommendations. Proper liming should adjust the soil pH to the correct range (6.0 to 6.5 for most vegetables). The proper soil pH promotes root development, optimizes nutrient availability, reduces the incidence of certain physiological disorders (blossom end rot) and reduces incidences of certain diseases (Fusarium wilt). Do not over-apply lime, as high soil pH reduces nutrient availability and causes nutrient imbalances.

A soil test report recommends the pounds of ground limestone to apply per 1,000 square feet of garden area. If hydrated lime is used, it should be applied at three-fourths the recommended rate of ground limestone. Hydrated lime reacts more quickly with the soil. However, it is more expensive and much more difficult to spread.

Ground limestone will be most effective if applied several weeks before the garden is planted. If you soil sample in the fall, lime can be applied prior to the establishment of the cover crop. A fall application gives the lime several months to react with the soil prior to planting. However, if a lime application is recommended, it is better to apply lime just prior to planting than not to apply it at all.

Broadcast lime evenly over the garden area, and work it into the top 6 inches of soil. Depending on the soil type, fertilizer practices and environmental conditions, a lime application should not be required more than every two to five years. Do not apply heavy concentrations of lime around the base of plants or sprinkle it over plants in an attempt to control insects. This practice can raise the pH above the desired level and result in reduced production.

Preplant Fertilization

Apply fertilizer to garden sites in accordance with the soil test recommendations. In the absence of a soil test, use two to three pounds of 6-12-12 fertilizer or its equivalent per 100 square feet of garden area. Broadcast the fertilizer evenly over the soil surface and incorporate it into the top 6 inches of soil.

Soil Preparation

Be careful not to work garden soils when they are too wet. If water can be squeezed from a handful of soil or if the squeezed lump of soil does not break apart when dropped, it is too wet to work. Working wet soil forms clods that become extremely hard as they dry and are entirely unsuitable for a seedbed. Clods significantly reduce soil-to-seed contact, which can severely reduce germination of vegetable crops, especially small-seeded species.

It may be difficult to work some soils early enough in the spring to plant cool-season crops by the recommended planting date. Sometimes these soils may be improved by establishment of drainage ditches, tiling, addition of sand or incorporation of organic material. Perhaps a part of the garden area that is higher than the rest may be used for the earliest planting.

Fall Soil Preparation and Ridging

Another solution is to work a portion of the garden in the fall, and to make 6- to 8-inch tall ridges in the area. Due to the increased surface area and improved drainage, the ridges will warm up and dry out earlier than the remainder of the garden. However, keep in mind that the ridges will stay dryer throughout the season; therefore, irrigation may need to be used later in the growing season.

If fertilizer is applied in the fall, these ridges can often be used for the earliest planting without further tillage or preparation. Nitrogen will be lost when using this system. However, it can be easily replaced with timely sidedress applications. Please refer to the factsheet in this series entitled *Care of the Vegetable Garden (SP 291-D)* for information concerning sidedressing.

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