

# Berries

## Fertilizing Strawberries Grown in Home Gardens

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**Why fertilize?** Best production and growth of strawberry foliage and fruit occur when plants receive adequate, but not excessive, amounts of certain essential nutrients. The essential nutrients most commonly and frequently applied are nitrogen (N), phosphorus (P) and potassium (K). Calcium or lime is the other most used but less frequently applied nutrient.

Adequate levels of nitrogen are important for providing green foliage, stimulating new runner development and increasing the size of flowering buds and fruit. Foliage that is green and fully developed is necessary for development of the desired size fruit. High rates of nitrogen applied at the wrong time, however, result in excessive foliage and low fruit yields or very soft fruit that deteriorates rapidly when it begins to ripen.

Phosphorus is normally applied as  $P_2O_5$  or phosphate. It is necessary for the development of a healthy and active root system of both the original mother plant and the new runners. New runners must develop to maintain a healthy, productive planting of matted-row berries over a two- or three-year period. Phosphorus aids in the development of roots on new runners.

Potassium is usually applied as  $K_2O$  or potash. Its major function is to contribute to color development in the fruit.

The above three nutrients can usually be purchased at almost any local garden or farm supply store. Each nutrient is usually provided in the same bag with the concentration of each stated on the bag. Examples include 10-10-10, 15-15-15, 6-12-12 and many others. The respective numbers refer to the percentage each of N,  $P_2O_5$  and  $K_2O$  or number of pounds per 100 pounds of the fertilizer.

Calcium is important because of its effect on the availability of the above nutrients. It is usually supplied as lime in either the calcitic (calcium) or dolomitic (magnesium) form. It has a major effect on soil pH, so is used to raise the soil pH when it drops too low. Strawberries generally prefer a pH of 5.5 to 6.5. The soil pH greatly influences the availability of the other nutrients for plant uptake. If pH is not in the desired range, optimum uptake of the other nutrients does not occur. This results in a lack of vigorous growth of plants, assuming that other necessary growth factors are adequate. In addition, calcium functions in the cell wall to provide firmness and improve shelf life of the fruit. Calcium can usually be purchased in 50-pound bags as either agricultural or hydrated lime.

**Determining the rates to apply:** Obtaining a soil sample of the site is the best method to determine how much of each fertilizer nutrient to apply. Contact your local Exten-



sion office for copies of the instruction sheets and sample boxes for taking soil samples. Collect samples as directed on the sheets and forward them to the Soil Testing Laboratory at the address provided. The analysis will provide you a report that gives a measure of the acidity (pH) and test levels of phosphate and potash. Recommendations will be given for application of needed levels of N, P and K and also lime, if needed. Recommendations for nitrogen use are based upon research information obtained in small plots and upon long-term observations. *In completing the instruction sheet, be sure to indicate that the analysis is for strawberries in the home garden.* Otherwise, you are likely to receive a commercial strawberry fertilization recommendation that is not applicable to most homeowners.

**How frequently should soil testing be done?** A soil sample should be taken one to six months before every new planting. Strawberries grown in matted-row systems will usually last for two to four fruiting years, depending on the care provided. However, established strawberries will need to be renovated and fertilized annually. For instructions on renovation, refer to Extension factsheet SP 284B, “**Renovating Strawberries in the Home Garden**,” available at your county Extension office. If a planting lasts longer than three years, it is advisable to obtain a soil test prior to renovation after the second fruiting year. Be sure to specify on the sample that you desire a renovation fertilizer recommendation. If an established planting is to be abandoned after a couple of years due to the condition of the plants, sample only the new planting area. If production on plastic is to occur, it may be advisable to sample every year prior to preparing the land, since plants grown on plastic are not normally allowed to fruit more than one year. In addition, it is highly advisable to rotate the growing area when this occurs.

**Applying fertilizer:** There are basically three times to apply fertilizer to strawberries grown in a matted-row system. One is to apply prior to transplanting a new crop. A second is to apply added nitrogen as a topdressing to encourage new runner growth the first year of a new planting and at renovation of an established planting. A third is to apply a nitrogen topdressing in the late summer (August to early September) when the new fruit buds are being initiated.

When a new planting is begun, whether matted-row or plasticulture is being used for production, apply the fertilizer to the soil surface and work it into the soil prior to transplanting. Some of the nutrients do not move downward well when they are applied directly to the surface. Mechanically working them into the soil assures that they will be present in the root zone and available for plant

uptake. If an application is being made at renovation time of an established matted-row planting, make it before cultivating so it can be mechanically worked into the root zone during the cultivation process. If production is to occur on plastic, work all of the necessary fertilizer into the soil before the ridges on which plastic will be installed are formed.

If production is to occur on plastic and the Chandler variety is used, it may be necessary to apply a trickle irrigation system under the plastic and apply water-soluble fertilizers at specific times in the fall as well as the following spring through the irrigation system. If such is planned, be sure to indicate on the fertilizer instruction sheet that will be sent to the Soil Testing Laboratory so appropriate instructions can be provided.

**What is a nitrogen topdressing?** It is the mechanical broadcasting of a nitrogen fertilizer over the top of strawberry plants at specific times during the growing stage. Be sure that all the foliage is thoroughly dry or that the foliage is brushed to remove any fertilizer granules that remain on the foliage. This greatly reduces the potential for fertilizer burn.

**Organic fertilizers:** Many organic fertilizers, if properly used, are satisfactory for home gardens. Dried blood (12 - 14 percent nitrogen) is organic and immediately available for plant use. Bone meal contains 20 - 24 percent phosphoric acid (a phosphorus source) and slowly becomes available for uptake by plants. Steamed bone meal provides a P source that becomes available more quickly. Wood ashes may also be satisfactorily used for potash and several of the minor nutrients when they are uniformly spread over the area rather than dumping them in piles at one location.

**Summary:** Fertility levels of soil vary greatly among locations and among the various fertilizer nutrients. With the help of your county Extension office and the Soil Testing Laboratory, it is possible to either improve or maintain fertility levels necessary for good production of strawberries. Keep in mind that it is important to soil test to determine the nutrient levels required, that there are different times and reasons to apply fertilizer and that the method of application can have a major impact on your success or failure. Also, keep in mind that a good fertility program will not substitute for other practices such as good insect, disease and weed control and a good renovation program.

For other information on strawberry production, refer to the following University of Tennessee publications available at your county Extension office:

**PB 902: Producing Small Fruits in the Home Garden**  
**SP 284-B: Renovating Strawberries in the Home Garden**  
**PB 1061: Soil Testing**  
**PB 1096: Liming Acid Soils in Tennessee**  
**PB 1141: Fertilizer Facts**

SP284F-3.5M-2/99(Rev) E12-2015-00-047-99

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Agricultural Extension Service

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