



Fertilizers for Fruit Trees in the Home Garden

Fertilizers are used to supplement the soil's supply of nutrients for plants. For the most efficient use of applied fertilizers, the pH of the soil should be in the proper range for the crop, there should be adequate organic matter and moisture and good aeration, and the soil should have good tilth.

What to apply

Fertilizers and soil amendments should be applied to meet the needs of the particular fruit tree. The amount of fertilizer needed should be determined by a soil test. For home gardens it is usually satisfactory to use the "standard" rate and analysis of fertilizer for each type of fruit tree. However, an observant gardener can often tell if a plant is receiving enough fertilizer by observing its color, growth, and vigor.

Banana

Apply $\frac{1}{2}$ lb triple superphosphate (0-46-0) in each hole at planting time. Mix the fertilizer with soil in the hole before planting.

After the plant is established, fertilize with a 2-1-4 or 3-1-5 ratio of nitrogen (N), available phosphoric acid (P_2O_5), and water-soluble potash (K_2O), such as 10-5-20 or 15-5-25, every 4 months. Apply 1–2 lb per plant until about 9 months old; then apply 3–4 lb per mat every 3–4 months. On soils with low pH (below pH 6), field experience has shown that lime should be applied at a rate of up to 3–4 lb crushed coral (agricultural lime) or dolomite per mat every 4 months.

Papaya

Apply $\frac{1}{4}$ to $\frac{1}{2}$ lb triple superphosphate per plant in each hole or hill before planting or transplanting; mix the fertilizer thoroughly with the soil before planting.

After the plant is established, apply a 1-1-1 ratio fertilizer, such as 15-15-15, 20-20-20, or similar analysis. Repeat the fertilizer application every 28–30 days. During the first 3 months, apply $\frac{1}{4}$ lb per plant per month. During the next 3 months, apply $\frac{1}{2}$ lb per plant per month. Thereafter, apply 1 lb per tree per month as long as harvesting continues.

Woody trees

Trees such as avocado, citrus, lychee, and mango should receive 1– $\frac{1}{2}$ lb triple superphosphate, mixed with the soil in the hole at the time of planting.

After the trees are established, they should be fertilized with 1 lb of fertilizer each year for each inch of tree trunk diameter at breast height (about 4 $\frac{1}{2}$ –5 ft). The fertilizer should be applied just before each flush of growth. For young trees, apply 1–2 lb per tree per year. The yearly amount should be divided into two to four applications. One application should be made after the crop is harvested. A small application may be made at the end of flowering and when fruits are just beginning to develop (caution should be used with this application; excessive use of nitrogen at this stage may result in premature fruit drop). The rest of the fertilizer may be applied after heavy or prolonged rains, when nutrients in the soil may have been leached away. In most soils, the use of 10-30-10, 10-20-10, 10-5-20, 10-5-8, or similar analysis fertilizer is appropriate.

How to apply fertilizers

The best method for applying fertilizer to tree crops is to place it in a series of holes varying in depth from 6 to 18 inches, placed at random locations within an area beginning 6 inches from the base of the plant and extending out to the leaf-drip line, or the outer edge of the

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plant. Holes may be made with a soil sampling tube, pipe, or similar tool. Each hole should receive an equal amount of fertilizer. After placing the fertilizer in the hole, cover it by filling with soil. Applying the fertilizer in this manner places it within the root zone of the plant, with minimum damage to the roots. This helps stimulate deep root growth in the soil and reduces moisture stress in times of drought; it also reduces damage from fertilizer burn and excessive loss of fertilizers due to erosion and leaching. The tree will be more firmly rooted in the soil and less likely to suffer wind damage.

The fertilizer also may be placed in a trench just within or outside of the leaf-drip line. The trench should be 6–12 inches deep. The trench method is less effective than placing holes at random. It also results in more root damage, because roots that extend into the trench area may be cut. Because root damage encourages phytophthora infection, this method may not be satisfactory for avocado. The trench method may involve less labor, however, and, like the hole method, it encourages deeper root systems.

Another method of application is to spread (“broadcast”) the fertilizer on the soil surface in the zone 6 inches from the base of the plant to the leaf-drip line. This method is easier and requires the least labor, but it is the least effective. The fertilizer effect is diluted because it covers a greater area of soil. Also, it causes plant roots

to develop at the surface or just below the surface, making them more susceptible to moisture stress and fertilizer burn and more in need of frequent irrigation to maintain plant growth. Furthermore, a plant whose roots are at the soil surface is more easily blown over. Broadcast fertilizers should be watered into the soil to promote more efficient use of the fertilizer and reduce the danger of burning.

Fertilizers also may be applied in the irrigation water (“fertigation”). Use only soluble materials compatible with each other; flush the irrigation lines to remove all fertilizer residue to prevent damage to the lines and incorrect amounts of fertilizer at the next application. Make sure no residues remain on the plant, as they may damage plant tissue.

The fertilizer also may be applied as a dilute spray (foliar application) to the leaves of the plants. All plant nutrients may be absorbed through the leaves. The amounts of nitrogen, phosphorus, and potassium needed by plants are so great, however, that leaf feeding is not considered an economical means of applying these nutrients. This is true also of calcium, magnesium, and sulfur. The micronutrients (iron, zinc, copper, manganese, boron, and molybdenum) may be applied economically and effectively as sprays. Use only soluble materials according to directions. Leaves are easily burned if the spray solution contains too much fertilizer.

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