

Fertilizing Deciduous Fruit Trees and Citrus

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When, How Much, What Type, and How to fertilize fruit trees

– **When:**

- There is a little disagreement here, but for the most part it is generally a good idea to fertilize in the spring, just prior to bud-break. This fertilization is in line with the first irrigation. Fertilization should be done starting with the second growing season. There is also a school of thought that says the most important time to fertilize your fruit trees is just after Labor Day in early September. Fertilizing Citrus time frames are a little different, so take a look at the chart on the last page.

– **How Much:**

Fruit	Amount of actual nitrogen to apply per inch of trunk diameter or tree age in years	
Apple	.10 lb	up to 1.0 lb per tree
Pear	.05 lb	up to .5 lb per tree
Peach	.10 lb	up to 1.0 per tree
Apricot	.10 lb	up to 1.5 lb per tree
Plum	.10 lb	up to 1.0lb per tree
Cherry	.10 lb	up to 1.0 lb per tree

- You can use a kitchen scale to calibrate weight to volume. To do this, weigh an empty cup, then fill it with the fertilizer and weigh it again. The difference is the weight per cup. If the calculations are giving you grief, then Table 1 shows a few cookbook fertilizer recommendations. You can over-fertilize, so if you are still in doubt simply purchase a fertilizer with recommendations on the container.
- The simplest method to determine how much fertilizer to use is to read the application rate recommended on the product label. If your tree is not listed above, follow the guidelines on the package. You can also use the guidelines recommended in the table above for the fruits listed. Keep in mind that the main nutrient that fruit needs is Nitrogen. So the application rate in this table is based on percent of nitrogen. For example, if you are fertilizing a 2 inch trunk diameter

apple tree with **16-16-16** fertilizer, you would calculate the amount of fertilizer needed as follows:

- Apple trees require .10 lb up to 1.0 lb of actual nitrogen per tree (see table above) – so if you’re using 16-16-16 fertilizer, that means you are using 16% nitrogen per pound of fertilizer, or **.16**.
- So if you are fertilizing your apple tree that has a 2 inch trunk diameter, then you would multiply **2** x .10 = **.2** lbs of nitrogen that your tree actually needs.
- Then, divide **.2 / .16 = 1.25**. You would therefore apply 1 lb of fertilizer to your tree.

Fruit Tree Nitrogen Calculator	
Example Only	
Age of Tree or Trunk Diameter in Inches	2
Nitrogen Percentage of your Fertilizer	16 or .16
Pounds of Fertilizer to Apply	1.25 or 1

- Here’s another way to do a step by step calculation for fertilizing the same two-inch apple tree using the same general purpose (16-16-16) fertilizer as a nitrogen source.
 - Calculate the amount of nitrogen needed by the two-inch apple tree by multiplying the rate times the diameter (0.1 lb. N x 2" trunk = 0.2 lb. N).
 - Calculate a conversion ratio by dividing 100 by the N% in 16-16-16 the fertilizer (100/16 = 6.25). This ratio is the reciprocal of the N%.
 - Multiply the first number (N/tree) times the second number (conversion ratio) to get the amount of 16–16-16 fertilizer per 2" tree (0.2 lb N/tree x 6.25 = **1.25** lbs. of 16–16-16 / 2" tree).
- There are more detailed calculation methods, but using the table above, or reading the label recommendations is the simplest for the home gardener.
- Below is an example of fruit tree fertilization calculations taken from one of Dr. Glenn Wright’s presentations.



Fertilizing Fruit trees

- **Example:** An apple tree has a 2-inch trunk diameter, so it needs 0.2 lbs. of actual nitrogen. Ammonium phosphate (16-20-0) contains 16% actual nitrogen; i.e., there are 16 lbs. of actual nitrogen in 100 lbs. fertilizer. $0.2 \text{ lbs} \div 16\% = 1.25 \text{ lbs}$. You need to apply 1.25 lbs. of ammonium phosphate to supply 0.2 lbs. of actual nitrogen to the tree.

Not to worry; if you don't like to do math, I have attached a simple spreadsheet that will do the calculations for you. All you have to do is:

- **Enter your tree trunk diameter in inches or years**
 - ✓ **To Determine Trunk Diameter use a tree measuring caliper or divide the circumference by 3.14. For example a tree with a circumference of 10" would be $10/3.14=3.18$ (ok to round to 3")**
 - **Enter the nitrogen (N) as in N-P-K rate in the fertilizer you are using**
 - **Enter the recommended percent of actual nitrogen according to the tree you have (from the chart)**
 - **Viola! You have the answer to how much fertilizer to use.**
- **What type:**
- Some experts say that fruit trees mainly need Nitrogen. In that case a good fertilizer to use would be something like Ammonium Sulphate which is 21-0-0. Others say a general complete fertilizer (Has all three numbers) should be used. Something like 10-10-10 or 16-16-16. The 16-16-16 can generally be purchased locally. I've had luck with both types.
- **How:**
- Spread the fertilizer evenly on the soil surface (do not band) under the tree to the drip line and lightly rake into the soil. Incorporate in the soil by generously watering in.

- If you live in an area that allows you to grow citrus, review the chart below and the instructions for calculating how much fertilizer to use contained within.

ANNUAL FERTILIZER REQUIREMENTS IN POUNDS FOR CITRUS TREES									
All citrus except grapefruit ¹	Years after planting	Pounds of actual nitrogen required each year ²	Percentage nitrogen contained in various fertilizers ³						
			5 Blood Meal	10	15	21 Ammonium Sulfate	25	33 Ammonium Nitrate	46 Urea
Newly planted ⁴	0 - 1	0 - 0.12	0 - 2.5	0 - 1.25	0 - .75	0 - .5	0 - .5	0 - .33	0 - .25
Young	1 - 2	0.25	5.0	2.5	1.75	1.25	1.0	0.75	0.5
Small, young	2 - 3	0.50	10.0	5.0	3.33	2.5	2.0	1.5	1.0
Mid-size young	3 - 4	0.75	15.0	7.5	5.0	3.75	3.0	2.25	1.5
Small adult or adult dwarf	4 - 5	1.0	20.0	10.0	6.75	5.0	4.0	3.0	2.0
Mid-size adult or fully grown adult, trimmed	5 - 6	1.25	25.0	12.5	8.33	6.25	5.0	3.75	2.5
Large, fully grown adult, untrimmed	6 +	1.5	30.0	15.0	10.0	7.5	6.0	4.5	3.0

¹ Grapefruit trees five or more years after planting: use half of amounts shown.

² Pounds of fertilizer are rounded to the nearest quarter- or third-pound for ease of calculation.

³ Fertilizer products have three numbers on the package, e.g., 15-30-15. The first number is nitrogen content.

⁴ Newly planted trees usually require no fertilizer; however, you may apply small amounts of nitrogen after tree is established and new growth has emerged.

HOW TO USE THE FERTILIZER TABLE

1. In the left column of the table, find a description of the tree you plan to fertilize. The total pounds of actual nitrogen recommended for this tree for one year is indicated in a column to the right. Since no fertilizer is 100 percent nitrogen, use the chart to determine the amount of a specific type of fertilizer to use.

2. Look at the top edge of the table for the percent nitrogen that your fertilizer contains. By regulation, every container of fertilizer must have 3 numbers written on it. The first number indicates the percent nitrogen, the second the percent phosphorus, and the third the percent potassium. (For example: 21-0-0 has 21 percent nitrogen, no phosphorus and no potassium.)

3. The intersection of the row describing your tree and the column indicating percent nitrogen in your fertilizer is the number of pounds of that product to use during the entire year for that tree.

4. Give one-third of the yearly total of fertilizer during January-February, one-third during April-May, and one-third during August-September. (This is to prevent loss of nitrogen from the root zone and environmental concerns regarding the leaching of nitrates into groundwater.)

EXAMPLE 1: You have a young tree, planted one year ago and a bag of ammonium sulfate (21-0-0) that has 21 percent nitrogen. Find the row for a young tree. Find the column for 21 percent nitrogen. They meet at the number 1.25 lbs. Therefore, apply 1.25 lbs. ammonium sulfate during the year. Apply one-third of that amount (about 0.4 lbs.) during Jan-Feb, one-third in Apr-May, and one-third in Aug-Sep.

EXAMPLE 2: You have a mid-sized adult grapefruit tree, planted 5 years ago and “citrus food” fertilizer with 10 percent nitrogen. The row for this tree and the column for 10 percent nitrogen intersect at 12.5 lbs. Note that mature grapefruit trees require only half of the amounts listed. Therefore, the year’s total will be 6.25 lbs. of your “citrus food.” Weigh the fertilizer to obtain 2 lbs. Apply one-third (about 2 lbs.) during Jan-Feb, Apr-May, and Aug-Sep.