



Coffee Plant

Overview: The coffee plant is a woody perennial evergreen dicotyledon that belongs to the Rubiaceae family. It has a main vertical trunk (orthotropic) and primary, secondary, and tertiary horizontal branches (plagiotropic). Two main species of coffee are cultivated today. *Coffea arabica* known as Arabica coffee accounts for 75-80% of the world's production. *Coffea canephora*, known as Robusta coffee, is more robust than the Arabica plants, but produces an inferior tasting beverage with a higher caffeine content. The coffee plant can grow to heights of 10 meters if not pruned, but producing countries will maintain the coffee at a height reasonable for easy harvesting.

Plant Development: Three to four years after the coffee is planted sweetly smelling flowers grow in clusters in the axils of the leaves. Fruit is produced only in the new tissue. The

Arabica species is self-pollinating, whereas the Robusta species depends on cross pollination. About 6-8 weeks after the flowers are fertilized, cell division occurs and the fruit remains as a pin head for a period that is dependent upon the climate. The ovaries will then develop into drupes in a rapid growth period that takes about 15 weeks after flowering. During this time the integument takes on the shape of the final bean. After the rapid growth period the integument and parchment are fully grown and will not increase in size. The endosperm remains small until about 12 weeks after flowering. At this time it will suppress, consume, and replace the integument. The remnants of the integument are what make up the silverskin. The endosperm will have completely filled the cavity made by the integument nineteen weeks after flowering. The endosperm is now white and moist, but will gain dry matter during the next several months. During this time the endosperm attracts more than seventy percent of the total photosynthates produced by the tree. The mesocarps will expand to form the sweet pulp that surrounds the bean. The cherry will change color from green to red about thirty to thirty-five weeks after flowering. See Flash movie on [Coffee Bean Development](#).

Root System: The root system can extend 20-25 km in total length ([Malavolta, 195](#)) and the absorbing surface of a tree ranges from 400 to 500 m² ([Nutman](#)). There are main vertical roots, tap roots, and lateral roots which grow parallel to the ground. The tap roots extend no further than 30-45 cm below the soil surface. Four to eight axial roots may be encountered which often originate horizontally but point downward. The lateral roots can extend 2 m from the trunk. About 80-90% of the feeder root is in the first 20 cm of soil and is 60-90 cm away from the trunk of the tree (Mavolta, 195-196). However, [Nutman](#) states that the greatest root concentration is in the 30 to 60 cm depth. The roots systems are heavily affected by the type of soil and the mineral content of the soil. To be thick and strong the root system needs an extensive supply of nitrogen, calcium and magnesium. During planting the main vertical roots are often clipped to promote growth of the the horizontal roots, which then have better access to water and added nutrients in the top soil.

Leaves: The elliptical leaves of the coffee tree are shiny, dark green, and waxy. The leaf area index is between 7 and 8 for a high-yielding coffee ([Malavolta, 195](#)). The coffee plant has become a

major source of oxygen in much of the world. Each hectare of coffee produces 86 lbs of oxygen per day, which is about half the production of the same area in a rain forest (source: Anacafe).

The coffee 'tree' is actually a variety of tropical evergreen shrub. The coffee tree does not begin to produce its full yield until its sixth year and will continue *prime production* for about ten years, however Coffee plants may live on for 60 years. The tree, if left alone will grow to a height of between 16 and 40 feet. In most coffee plantations the trees are kept at a manageable six feet to get the best yield and to make it easier to harvest.

The best growing conditions are in a temperature range of 65 degrees Fahrenheit to 75 degrees Fahrenheit. Rainfall should be plentiful and the weather should switch between heavy rainfall and sunshine to bring the berries to full maturity. The type of soil is not too important but good drainage is a must.

Coffee plants are fairly easy to grow in the home as a potted specimen, which should be moved outdoors for the summer if possible.

They do best in filtered sunlight, with night temperatures in the lower to mid 60s and day temperatures of 70F or higher. Plant them in any good commercial, fast draining potting soil . The soil should be kept on the moist side, but never soggy.

Coffee plants will produce fruit without any fertilizing whatsoever, but for best results and maximum yield, they should be fed every 2 weeks from March to October, and then monthly from November through February. Use a soluble, all purpose (10-10-10) fertilizer.

Coffea arabica are easily [propagated from seeds](#).

You can find seeds for coffea and other rare and unusual plants online from [The Whatcom Seed Company](#)

The plants will grow to about 10 feet if given ample root room, but can be pruned if this is too big for the allotted space. Pruning may involve simple pinching to produce a bushier plant, or you may go as far as cutting it way back... Right down to where only two branches near the bottom are left on it.

The fruit are red when they ripen in the fall, with a sweet pulp surrounding the bean. Each coffee berry has two beans. The coffee tree's fruit does not all ripen at one time. In fact it will have blossoms and berries in various stages of ripening. Only the ripe berries can be picked. The berries cannot be picked when green since they will not ripen once picked.

Once you have harvested sufficient beans to brew your first pot of 'home grown' coffee, you will have to roast them. There are many 'home type' roasters available on the market, which do an excellent job of *evenly* roasting your beans. Whether you are willing to go to the expense of purchasing one of these is up to you.

It is possible to roast your own beans in the oven. This method will tend to smoke up the house a bit, and the smell of the burned off chaff will tend to linger in the house for quite some time. The amount and size of beans, as well as your altitude will make a difference in the roasting process, so this is a 'live and learn process.

The beans should be placed in some form of perforated container, such as a steel strainer or vegetable steamer. Place them in a pre-heated, 250 degree F. oven for about seven minutes. Then increase the oven temperature to 450 degrees. In about ten minutes the beans should begin to crackle. (*This timing will depend on the temperature, heat capacity of the oven, and the beans; so keep an eye on them.*)

When the beans start crackling, mix them up, to promote an even roast. Check their color every two minutes until they have achieved a color slightly lighter than the end color which you desire. (*As the beans cool, they will continue roasting*). When they have completely cooled, store them in an air tight container in the refrigerator..... or grind em, brew em and drink it up!