

# COFFEE FACTS

## 1. BOTANY

The coffee tree is a tropical shrub than tree, usually two to three meters tall depending on the variety. Coffee fruit is typically called a coffee “cherry” even though it is not actually a cherry but botanically classified as a drupe. Drupes are seeds that are incased in an internal shell, as is a peach or plum. This so called cherry is about the size of a cranberry and likewise it turns red when ripe, so “cherry” it is. Coffees “beans” on the other hand, are obviously seeds, not beans. Real beans grow on vines; also coffee beans are not edible. There are two seeds (beans) in each cherry which are individually encased in a cellulose shell we call “parchment.” Processing separates the beans from the cherry and parchment covering.

## 2. ORIGIN

Coffee trees originated in tropical Africa, and are still found growing wild in forests across the continent. Coffee is native to no other continent. A considerable number of the natural varieties have been collected and cataloged from the Gold Coast region in West Africa, across the Congo and throughout the Horn of Africa in the east of the continent.

There are few historic documents describing the early use of coffee by native Africans even though it had probably been used from time immemorial. The most quoted observation was by Sir Richard Burton from about 1858. He was one of the first westerners in this part of Africa exploring the source of the Nile. Burton encountered a tribe who were accustomed to preparing a trail mix that included the peels or skins of the coffee fruit in deference to the seeds we relish today.

Apparently this concoction has some nutritional value but I suspect they were not particularly impressed with the taste of this delicacy as it is used it mainly for the caffeine content inherent in the fruit. Caffeine is found in all parts of the coffee tree, equally in the fruit skins, the leaves and the seeds. When Arabs discovered a use for coffee, they also used only the fruit skins to make a tisane beverage, known as “qishr” which is still popularly consumed in Yemen today.

## 3. HISTORY

“In time immemorial, a magical plant was discovered in the highland forests of Abyssinia. Its fruit could alleviate hunger, give extra energy and make you more alert, improve mental acuity and most importantly, stave off the overpowering need for sleep.”

Circa 1000AD, Ethiopian coffee trees find a new home in Arabian gardens

About a thousand years ago, Arabs, from what is now modern day Yemen became aware of reports of this magical plant being used in nearby Abyssinia, a popular trade destination just sixty miles across the Red Sea.

In lush tropical forests of what is now called Ethiopia, the highland tribes collected the seeds of this special shrub, pounded them into a mush and mixed them with other nutritional ingredients to produce a kind of trail mix food to sustain them on long hunting forays.

Arab sailors and traders were fascinated to hear about the effects of this unique product but were dissuaded by the idea of eating such a disgusting and smelly gorp. However, somehow seeds of this jungle shrub found their way to Yemen; probably by traders or African slaves and the coffee tree found a new home in Arabian gardens. It was most likely first used only as a medicinal plant.

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In those days, medicinal teas were commonplace in Arab pharmacopeias and experimentation in making a tea from the various parts of the coffee tree proved that the “medicinal ingredient” was present in the leaves, the fruit and in the seeds. It was also obvious that that a tea made from the fruit skins with its sweet, dried pulp residue was more appetizing than that made from the leaves or the crushed seeds. Coffee-peel fruit tea, with its stimulating effect became a popular beverage throughout Arabia Felix. Today it is still popular and now called qishr.

It became customary to dry the ripe fruit on rooftops and then carefully separate the dried husks for the tea and discard the seeds, which begs the question, where and when did the idea of roasting the seeds originate?

Two likely scenarios come to mind. One possibility is that someone too impatient to properly dry the fruit in the sun before removing the husks; tried drying them quickly on a stovetop or other heated surface, accidentally toasting them by leaving them on heat too long or maybe forgetting them altogether.

Should this have been the case, the hapless Arab would have had the good fortune of being the first person to roast coffee beans. The toasted skins would not have been easily separated from the baked seeds because the fragile coffee beans would fracture in the process of hulling, so the tea would have been made from skins and broken seeds alike. It would have been a revelation to taste fresh roasted coffee, brewed for the first time.

Crushing the seeds by mortar and pestle would yield an even stronger brew. Toasting them longer made for better aroma and an even stronger taste.

A second idea comes from the fact that it has long been commonplace for homemakers to toast seeds and grains to make them more savoury and digestible. Sesame seeds, peanuts and sunflower seeds are good examples. So it is just as likely that someone would try the obvious with coffee seeds and discovered the unique aroma development. After one bowl of toasted coffee consommé, the stimulating effects would have been obvious and recognizably invigorating.

Toasting and pounding the roasted coffee seeds into a powder became the Arabian method of coffee preparation around 1300AD, long before the fashion made its way to Turkey, even though we still refer to the Arabian method of brewing as “Turkish Coffee.”

Ottoman Empire 1299 - 1918, lasted for 600 years.

Figuratively speaking, coffee became a Turkish delight following the Ottoman conquest of Arabia in 1517. Yemen was Turkish for four hundred years, 1517 to 1922.

Europeans referred to coffee as the “Turks Drink” mainly because they associated it with Constantinople where they may have first encountered it as a beverage.

When Europeans discovered that raw coffee beans actually came from the port of Mocha in Yemen, coffee beans became an international commodity.

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## 4. COFFEE AS COMMODITY

Coffee was first discovered in Equatorial East Africa (also referred to as the Horn of Africa) and native to no other continent in the world. Many commercial 'varieties' have been discovered in Ethiopia and other 'species' have been found throughout the Congo region all the way to tropical West Africa.

The sweetest and most flavorful variety of coffee we appreciate today, *Coffea arabica*, originated in the highland forests of Ethiopia. About a thousand years ago seeds or seedlings of this variety found their way across the Red Sea and were cultivated in the hills of southwest Arabia for use as a coffee tea.

It is likely that Arabs, in what is now called Yemen, were the first to discover coffee beans could be roasted, pounded into a powder and boiled to produce an aromatic and stimulating beverage.

About a century after coffee gained popularity in Arabia it became an article of trade throughout the Near East. In the seventeenth century commercial cultivation was limited to the terraced slopes of Wadies in the verdant highlands of western Yemen.

As much as Yemen tried to protect its coffee monopoly, it was to no avail. When coffee reached the Western world and gained favor, it became of interest as an international trade commodity and the common business practice then as now, was to cut out the middleman.

Smugglers procured viable seeds for plantings in India, Ceylon, Indonesia and on an island in the Indian Ocean once called Bourbon (East of Madagascar).

During the "Age of Discovery" and the subsequent "Period of Colonization," the five major powers of the day engaged in fierce competition for dominance in a number of new trade commodities including Coffee, Tea, Spices and Sugar.

A French military officer was the first to successfully transport a coffee seedling to the French colony of Martinique in the Caribbean. Progeny of this tree would seed many of the New World, Caribbean islands including Jamaica, Puerto Rico, Cuba and Hispaniola (Haiti / Santo Domingo)

Of course coffee would be coveted by mainland colonies of South and Central America, so it was inevitable that seeds found their way to Colombia, the three Guianas and to Mesoamerican colonies of what is now called Central America.

Some introductions of coffee orchards were at the behest of missionaries. They would grow coffee for their own use and as an item of trade. Such was the enthusiasm for the new business of cultivation and processing coffee, that it was planted everywhere in the world it was thought to grow successfully. Obviously many of these first efforts failed for various reasons but some thrived. These early attempts were for the most part trial and error efforts until a 'coffee culture' developed after a couple of generations.

It was only a matter of time that coffee would arrive in Portuguese, Brazil. There it would spread across America's largest suitable landscape for coffee cultivation and Brazilian Santos would become the most popular coffee in the world. It is still the mainstay for institutional and commercial markets today.

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In time, Java and Colombian coffee would rise to prominence. Jamaican coffee has become the industry darling and Hawaiian Kona from the Sandwich Islands would find a loyal following.

Today coffee is grown in at least seventy countries around the world.

### 5. COFFEE CULTIVATION

Coffee and tea require the same climate. Both are planted in rows as plantation. Obviously with tea we pick the fresh leaves and with coffee we pick the ripe fruit.

The highest quality in coffee is determined by the variety of tree, soil and climate conditions, and cultivation technique, care in the harvesting of only ripe cherries and an expertise in processing.

Terroir (terr-wa) is a term commonly used in the wine industry. It can be loosely defined as “the taste of place.” Many agricultural products will develop flavors unique to the soil and climate conditions from where it is grown. This is illustrated by the popularity of wines from Bordeaux and Burgundy. The same varieties of grape grown elsewhere don’t produce exactly the same taste. Coffee quality has a similar response to growing conditions. The same variety of coffee tree growing in different regions of the same country will also give a different taste to the beverage.

*Coffea arabica* otherwise known as Typica thrives in the higher elevations of the tropics where it is naturally cooler. Five to seven thousand feet is common. Some shade is required with Typica as it is an under-story variety typical of those found in the highland forests of Ethiopia.

We are told that volcanic soil is particularly good for coffee because of its high mineral content, yet application of composted humus is helpful with yields and vigor. Appropriately spaced rainfall is critical as is the number and spacing of sunny days. Such conditions are blessings of nature and common to only a few places in the world. As with the better-known wine regions, these coffee regions have earned great acclaim.

Coffee will grow and survive quite well outside of the ideal condition but yield and cup characteristics can suffer and fail to give the stellar results hoped for. Irrigation will sustain crops in arid conditions but it really doesn’t replace natural rainfall that comes with overcast skies and naturally cooler temperatures.

Today there are some hundreds of hybrid varieties under cultivation around the world yet even under the best growing conditions they generally produce an average tasting cup. Hybrid coffees are essentially developed for some practical purpose, such as higher yield, earlier maturity, root-rot resistance, drought resistance, fungus resistance and direct sun tolerance but never for the ideal or improved flavor.

As with most fruit, the coffee cherry should be fully ripe before picking. Most unripe or under ripe fruit is often bitter, sour tasting and highly astringent. Persimmons are a classic example and coffee is no exception. Even though it is the seed of the coffee cherry we are concerned with and not the flesh, the same ripening processes are taking place in the bean. It’s mostly about sugars and amino acids.

Under-ripe coffee beans will yield a sour tasting beverage. If you have seen trade journal articles about coffee production, there are often photographs of harvesters sporting full baskets of freshly picked coffee cherries. On close examination you will often see green, pink and red ripe cherries mixed in the basket. Why would pickers not be more selective?

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Coffee harvesting is labor intensive. Coffee fruit does not ripen all at the same time so multiple passes are required over several weeks to properly harvest only ripe cherries. There is temptation to pick the almost ripe fruit along with the fully ripe, possibly the grower is thinking the almost ripe could be overripe before the next pass. Alternatively the picker may think that almost ripe is actually almost as good as fully ripe cherries. Some coffee pickers do not realize the under ripe fruit are severely deleterious to the coffee cup quality and should be avoided at all costs.

### **6. PROCESSING**

“Dry Curing” is the more primitive method of processing freshly harvested coffee cherries and is still used for more than three fifths of the world’s production.

We in the trade also refer to it as natural processed coffee. The coffee cherries are spread to dry on open patios in direct sunshine and raked to turn and re-spread them several times a day for even and quick drying. Each night they are raked into piles and covered for protection against moisture and rewetting. In two to three weeks the fruit is completely dry throughout and ready to be transported to a mill for hulling and grading. This process requires a dependable dry climate after the harvest.

Washed coffee otherwise called Wet Processed coffee was a development of the Dutch probably in Indonesia around 1740. It serves to reduce the spoilage of coffee cherries that can be easily damaged by mold. Wet processed coffee is produced in climates where humidity is extremely high and it is not suitable for proper drying. Places that have unpredictable showers that can rewet the dried coffee and promote damage by mold.

The Wet Process is more mechanized and dependent of a sufficient quantity of clean water. First the fresh ripe cherries are de-pulped to separate the fruit skin from the two encased seeds inside. The wet and sticky seeds are then sequestered for a day or so to facilitate an enzymatic breakdown and loosening of any remnant of residual fruit sticking to the seeds. The seeds, which are still encased in a paper-thin parchment shell, are then soaked, rinsed and sluiced to wash away the fermented dregs and dross. Hence the synonym ‘washed process.’

From this point the coffee beans follow the same steps as the “natural process” of drying, milling and grading.

Coffee professionals can discern a difference in cup characteristics depending on the process used.

### **7. ARABICA AND ROBUSTA**

Tropical Africa was the source of all coffee species. There are only two main species of coffee being cultivated today. Arabica is the high altitude species and Robusta is happily growing in hot steamy climates near sea level usually on the coasts.

“Arabica” constitutes 80% of the world’s coffee production.

“Robusta” coincidentally is often 20% of an espresso blend. Robusta is unique in taste and generally less desirable as a pure beverage but it adds a special character to a blend and as for the tree itself, it is more hardy and disease resistant therefore desirable in creating interspecies hybrids.

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The terms *Coffea* and Arabica were honorary titles adopted by botanists in recognition that Arabs were the first to take it under cultivation. It was Arabs that first made coffee as a beverage, a medicine, a sacrament and a symbol of hospitality. They also made coffee a commodity and simultaneously created the institution of the coffeehouse.

There are a number of forms of Arabica varieties resulting from purposeful breeding and spontaneous mutations in the fields. Of the many forms cultivated today, only two are considered the "Original" and are distinguished by classification as heirloom varieties. They being, *Coffea arabica arabica* (Typica) and *Coffea arabica bourbon* (Bourbon).

Coffee genetics is such that natural mutations are not uncommon but generally require recognition and intervention by growers to be selected for addition cultivation and testing for any advantageous characteristics. Caturra is a "dwarf mutant" that was selected for its convenient size. Maragogype is a tall and large bean variety that was also found in Brazil. Mocha is a small bean variety that was selected in Yemen.

Hybrids are usually crosses of traditional varieties and mutant varieties. Today they number in the hundreds. There are even crosses of the two species, Arabica and Robusta. One is called Arabusta.