



CH. I: WHAT IS COFFEE?

Coffee Cultivation, Evaluative Selection, and Roasting

Coffee Cultivation

Coffee is the seed of the fruit that grows on coffee trees (*coffea*). Coffee trees grow near the equatorial belt, and are divided into two main categories – Arabica, and Robusta. The vast majority of specialty coffee is Arabica. Metropolis purchases only Arabica coffee.

In the Arabica category, there are many many varieties. Some of the most well-known and widely cultivated are Bourbon, Catuai, Caturra, and Typica. Coffee comes into harvest at different times in different parts of the world. Generally speaking, Central American and East African coffees are winter/spring harvest, South American coffees are late summer harvest, and Indonesian coffees are winter harvest. Once harvested, the coffee needs to be processed, dried, and evaluated before it is ready for export. It typically takes between 2 and 3 months from ‘picking’ to arrive at our roasterie in Chicago.

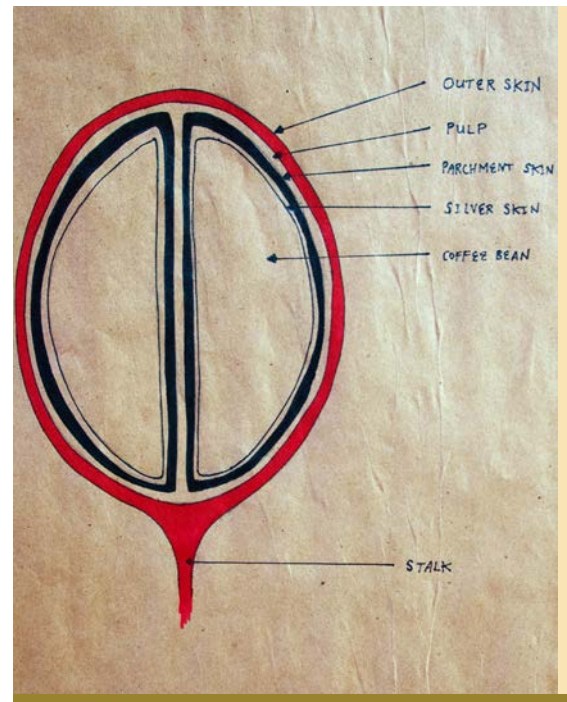
Notes:



The fruit of a coffee tree is called a 'cherry'. Coffee cherries ripen once per year per tree and are then harvested, in most cases, by hand. Coffee cherries change color, and when ripe, will take on a bright red, purple, orange, or yellow color, depending on the coffee varietal. Pickers must be skilled in selective picking in order to harvest coffee when it's ripe, as it ripens at different times on the tree. Thus, a picker will typically spend 1-3 months harvesting so that they can get all the coffee as it ripens.



The cherry has a skin on the outside. Inside the skin is a sticky, grape-like substance called pulp. Inside the pulp are two seeds (except in peaberries where there is only one). The seeds are each wrapped in a thin skin called 'silver skin', and the silver skin is wrapped in a hull called the parchment.



Notes:



In order to prep the coffee for export, the skin, pulp, parchment, and silver skin must be completely removed from the seed. The removal of these elements is called processing. Processing takes three main forms – natural, pulp-natural, and washed. Each lends itself to different cup flavor characteristics, just as different forms of wine processing lead to differences in a wine’s flavor.



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Natural Processing

In ‘natural processing’, cherries are dried in whole. They can be dried on drying patios or on raised, screened beds (see photo). While drying, under ideal circumstances, the cherries are sorted manually for ripeness and defect. Once dry, the cherries are dry milled down to the seed itself. The form of processing tends to produce coffees that are very fruit-forward, with a great deal of cup complexity.



Notes:



Pulp-Natural Processing

In 'pulp-natural' processing, the skin and a minimal amount of the pulp is removed from the cherry using a grinding disc. Once the skin is removed, the seeds are allowed to dry surrounded by the pulp, silver skin, and parchment (see photo). Once dry, the pulp-covered seeds are run through a dry mill to remove the silver skin and parchment. This form of processing tends to produce coffees that are somewhat clean, but layered and juicy.



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Washed Coffee

In 'washed coffee' the skin and the majority of the pulp are removed from the seed using a grinding disc. Once cleaned of the skin and pulp, the seeds soak in a water bath for 2-3 days, allowing the pulp to break down through a process of fermentation. In the water bath, the seeds are continually agitated to remove any remaining bits of pulp.

The washing process is unique in that, during the bath, defective seeds that are less dense rise to the top of the bath and are removed, as do pieces of pulp and foreign matter like twigs and leaves. It is a natural way to sort for defect.

Once washed, the coffee is dried in the silver skin and parchment. Washed coffee can be dried on patios, raised screened beds, or in mechanical driers. The coffee must be turned over and over to promote equal drying. Once dry, the parchment and silver skin are removed in a mill. This form of processing tends to produce coffee that is clean, acidic, and virtually free of defect.



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After Processing, Before Export

After processing and drying, coffee is often hand-sorted once more for defect before packing in plastic lined burlap sacks. Once packed, the coffee is ready for qualitative analysis.

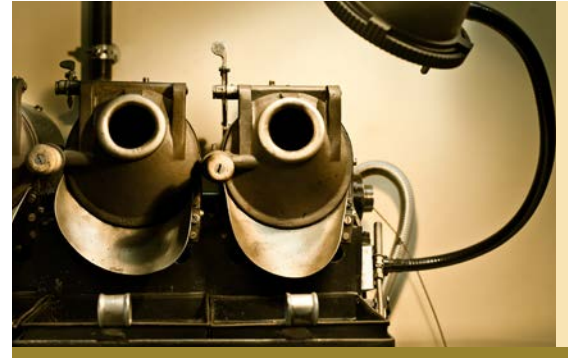


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Evaluation

Metropolis is notoriously hard on coffee during evaluation. We receive samples from farms and coffee brokers, then sample roast the coffee in our lab. Sample roasting is a specific form of roasting where we roast all coffees identically – very light – as such, the base characteristics of the coffee, both good and bad, are easily identifiable.



Once a coffee is sample roasted, we ‘cup’ (taste) it using the Specialty Coffee Association of America cupping protocol. Cupping is blind so that we are not influenced by name or label. We then score the coffee in aroma (both dry and wet), flavor, acidity, body, aftertaste, uniformity (from cup to cup), balance, cleanliness of the flavor, and sweetness. A perfect score is 100. A minimum score for a Metropolis blend component is 84. We reject as unfit more than 95% of the samples we receive.

Our evaluative criterion is first and foremost based on quality, however a delicious coffee is not enough. It must also be sustainable (both economic and ecological), interesting, seasonally vibrant, and able to hold its own place on our menu. Finally, we highly weigh relationship in each coffee – we give preferential treatment to farmers that we have a relationship with, and tend to buy these coffees season after season.



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After Evaluation

If a coffee makes it through our stringent evaluative process, we purchase as much as we think that we'll need so that we can use it all while it is still fresh (3-8 mos after harvest). Sometimes that means 2 bags (as in the case of some of the microlots that we purchase) and sometimes that means multiple shipping containers (as in some of the elements of our signature blends like Redline Espresso).

The coffee lands at various shipping ports around the US, then is stored in climate-controlled warehouses. We then bring the coffee to our roasterie as needed.

Roasting & Quality Control

The basic philosophy that underlies the Metropolitan roasting process is that we 'roast to the coffee' rather than 'roast to the roast'. Each coffee has a slightly different manner in which it wants to be roasted. That said, in general, the coffees that we buy tend to want to be roasted light to medium, as the coffees are vibrant and fresh.

However, if we go too light, we risk under-developing the coffee, leaving a sour flavor. If we go too dark, we cover up the coffee with carbon and smoke, overpowering the essence of the coffee. Too fast, and the coffee can be roasted on the outside but not the inside. Too slow, and the coffee gets 'baked', imparting a bitter flavor like paper. Different coffees have differing density, moisture content, bean size, etc. Also, the roasterie itself has varying levels of temperature, humidity, and air flow. A skilled roaster must be able to take all of the factors that influence the roast, then execute a repeatable, brilliantly delicious coffee. A Metropolitan roaster must apprentice for well over a year before being considered 'a keeper of the flame'.

During the roast, many chemical reactions occur and the roaster takes everything into account in order to reach the same end result batch after batch, each batch taking 12-15 minutes. After roasting, the coffee is bagged immediately to preserve freshness. Bagged coffee is either shipped the same day that it is roasted (for out of town accounts), or delivered the day after the roast to local accounts. Fresh coffee is better than stale coffee, so we only roast for the orders that we have received.

Here are the stages of coffee development during a regular, production roast. We end our roasts at some point during 2nd crack on a full batch of coffee (80%-90% drum capacity).

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6 Stages of Coffee Roasting

(From green to Vienna)

- 1 Green coffee: unroasted coffee (room temperature).

- 2 Yellow/orange stage: coffee is absorbing heat, losing moisture, and beginning to develop color.

- 3 Cinnamon stage: 1st crack is drawing near and many flavor-developing reactions are on the horizon. Some bean expansion is visible and the coffee begins to shed its silver skin or chaff.

- 4 1st Crack: what is known as the Maillard Reaction starts to take place – In this process, hundreds of different chemical compounds are created. This process also occurs in the cooking of many other foods, such as beef and bread. Sugars are browning, and the bean is also beginning to expand violently, creating a very audible, cracking or popping sound, referred to as 1st crack.

- 5 2nd Crack: CO₂ outgassing begins. An oily sheen begins to appear on the bean. Sugars are caramelizing, and this is when a “roasty” flavor would begin to appear in the cup. The audible “sizzling” sound that occurs during this stage is referred to as 2nd crack. The physical fracturing of the cellulose matrix of the coffee produces this cracking sound.

- 6 Vienna: The roast level eclipses the flavor character unique to the coffee’s origin. Sugars are heavily caramelized resulting in a carbon-like flavor commonly associated with dark roast coffees. Dark roast coffees tend to taste more like each other – as the differences due to distinct origins are obscured in the roasting process.

Beyond this level is French where no origin flavor is present. Beyond French is fire.

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After Roasting

After we finish roasting a batch of coffee, we perform two critical stages of quality control.

- 1** We run a 100g sample through a laser color analyzer to make sure that we have roasted the coffee thoroughly to the pre-determined level. If the coffee is not within the small range that we deem appropriate, we donate it to charity.
- 2** The day after each roast, we cup the results to make sure that we are roasting to the potential of the coffee. It is during these cuppings that we make minute changes to the way that we roast. Over time, the raw coffee may change slightly. For example, it may lose a little bit of moisture. We decide, while cupping, to approach roasting a little bit differently to accommodate the changes in the coffee.

QC is an extremely important part of our process. Hubris does not exist in our roasterie. We constantly strive to improve our process – to grow and to learn. Thankfully we are part of a long chain of growers, processors, importers, retailers, and bariste who want to do right by the coffee. It is a privilege to work among such consummate professionals!

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