

A Beginner's Guide
to
Coffee



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Introduction

I came to coffee very late in life. Up until my mid-40s, diet Coke had been my caffeinated drink of choice. Seeking to quit my unhealthy pop habit, I tried Earl Grey tea, which I enjoy, but it didn't seem to have quite the same caffeine kick. Then one day I eyed up my husband's coffee supply and thought, why not give it a try? I had always loved the aroma of freshly brewed coffee, if not the taste. But I am also someone who listens very carefully to what my body is telling me. I had been on a real kick with bitter foods and drinks and thought the time might be right for me to try coffee again. I hate sweet drinks (aspartame-laced diet Coke notwithstanding) so I tried a cup of coffee straight up--no cream, no sugar--and I loved it.

Since then I've been experimenting with different types of coffee, finding I prefer darker roasts. I asked for, and received, a coffee grinder this past Christmas and set out to buy beans to grind myself to just the right level of coarseness for our coffee maker. (I will note here that before writing this book, I was no coffee purist. I used the house method established by my husband--a Keurig with refillable filters that work better with a specific coarseness of grind.)

It was during the bean-buying process that I encountered many questions about coffee. What is arabica? How does roasting change the flavour of coffee? What is single estate? And, with the emphasis on fair trade, is there still reason to be concerned about the human and environmental impacts of coffee farming, harvesting, and processing?

Assuming I am not the only one with these questions, I set out to find the answers. Here they are, in a quick-read format that you can enjoy along with your morning cup of joe.

Chapter One: Jumpy Goats, Red Berries, and a Monastery Fire: The Story of Coffee's Origins

How was coffee discovered? Around 700 AD, an Ethiopian goatherd named Kaldi (sometimes known as Khalid) was out and about with his animals when he noticed them acting strangely. Rather than passively munching on plants, they were jumping around and behaving in a very ungoatly manner. He approached them and saw that they had been eating the red berries of an unfamiliar tree. Kaldi decided to try the berries himself and found that he, too, felt more energetic and awake. Kaldi brought the beans to a nearby monastery. The suspicious monks showed their disapproval of the beans' stimulating effects by tossing them into a fire. Intrigued by the resulting aroma, they decided to give the beans another chance. They added water to the roasted beans to make a drink, and the rest is history.

It's a great story, but it's more fiction than fact. Kaldi and his goats may have gotten a caffeine high that day in the Ethiopian plains, but they were not the first. According to [Mental Floss](#) and [National Geographic](#), the people of northern Africa had long used coffee beans as a stimulant, grinding the beans with animal fat to preserve and snack on during long journeys, or making wine from the pulp of coffee berries.



As the Kaldi story implies, the coffee plant did, indeed, originate in Ethiopia, but it was a little journey across the Red Sea that really put coffee on the map. Around 1,000 AD, visitors from Yemen brought the coffee plant home, where they began roasting the beans and brewing a hot beverage with them. The drink was extremely popular. It was especially appreciated by devout Muslims who used it to stay awake so they could continue their prayers longer into the night. The drink also had secular appeal and, by the 13th century, had become an everyday beverage for people in the Arabian peninsula. By the 14th century, Arabic countries began cultivating the bean and developing a healthy trade market for it.

Coffee followed Islam as it spread, moving to Egypt, Persia (Iran), and then to Constantinople (now Istanbul), the site of the world's first coffee house. Knowing the value of the humble bean, Arab coffee traders would render them infertile before exporting them, lest anyone else decide to cultivate the coffee plant. Try as they might, Arab traders could not stop the export of their precious crop. Legend has it that an

Indian man named Baba Budan smuggled fertile coffee beans out of Mecca and planted the first coffee tree to exist outside of Africa or Arabia. India was the first expansion of coffee cultivation, but not the last. Here are some other milestones--legendary or otherwise--on coffee's journey toward world domination:

- In 1616, a Dutch man smuggled coffee from the port of Mocha in Yemen to Amsterdam. By 1696, the Dutch were operating the first European-owned coffee estate in Java.
- When coffee reached Italy, Catholic priests feared the stimulating brew, calling it a drink from the devil. They asked the Pope to ban it, but upon tasting it, the pontiff decided all was good and gave the drink his blessing.
- Captain John Smith (famous for his connection to Pocahontas) may have introduced coffee to the United States in 1606.
- Whether or not Smith brought it, by 1668 coffee had replaced beer as the most popular breakfast beverage in New York.
- In the UK, coffee was a more fashionable beverage than tea for a time. In fact, 17th-century coffee houses were considered the places to be in London. They were so popular that in 1647 King Charles II had them banned, fearing insurrection would emerge from idle people holding political discussions over endless cups of coffee. Ironically, his ban caused so much unrest that he rescinded it after only 11 days.
- Iconic insurance firm Lloyd's of London began as Lloyd's, a coffee house where sailors, shipowners, and merchants would meet to discuss business, including insurance. One thing led to another, and the business was born.
- It was in Vienna that people first began adding milk and sugar to coffee.
- Like the Dutch--and because of them--the French also brought coffee to their colonies. In the 1700s the Dutch began giving coffee trees to European aristocrats. French King Louis XIV had his gift planted in the Royal Botanical Garden in 1714. A bit of a tortured history follows, as the king denied the request of a naval officer for a clipping of the plant that could be taken to Martinique. The naval officer broke into the royal gardens under the cover of night and stole a clipping. Further obstacles met him on his journey (read more [here](#)) but he did get his plant established in Martinique. Within 50 years, some 18 million coffee plants were growing in the country. They would eventually supply coffee growers across Latin America.
- There was more intrigue in Brazil as an army officer used an affair with the wife of French Guiana's governor to obtain coffee seedlings. He smuggled them home so his country could get in on the coffee business. Brazil is now the biggest coffee producing country in the world.

Chapter Two: Arabica vs. Robusta

Given what we know about coffee's origins, it is no surprise that the word "arabica" appears regularly in descriptions of the many types of coffee available now. The "100% arabica" label sounds like a mark of distinction, a special club to which only some coffees have gained entry.

In reality, about 75% of the world's coffee is arabica so it is really not the mark of quality that some people might assume. "Arabica" simply refers to the type of coffee plant, and there are only two in the world cultivated for the coffee drinking market. The other, which makes up the remaining 25% of global coffee production, is called "robusta."



Robusta, as its name implies, is a hardy plant that is easier to grow than arabica. Robusta can be planted at lower altitudes and produces higher yields at a faster rate than arabica, making it far cheaper. With twice the caffeine of arabica, robusta is also less vulnerable to pests. That extra jolt serves as a natural insecticide, paralyzing and killing insects that try to attack the plant. But all that caffeine also imbues the beans with a harsh, bitter flavour compared to arabica, which is blessed with a higher concentration of sugars and lipids (fats or oils), and, consequently, a softer, sweeter taste.

With its less palatable flavour profile, robusta has developed a bit of a bad reputation. It is now mostly relegated to the role of low-cost filler in coffee blends and is the bean of choice for freeze-dried and instant coffee. In truth, high-quality robusta can equal or surpass a low-quality arabica, but robusta is rarely sold on its own. It is, however, often an ingredient in espresso because it helps create a good crema (the foam that forms on the top of the coffee.)

In his [World Atlas of Coffee](#), James Hoffman notes that robusta is not an "ugly sister" to arabica, as many people have assumed. Rather, it is a parent, having crossed with another variety of coffee plant to create what is now known as arabica. The close relationship between the two and the fact that they are the only coffee varieties

currently cultivated is cause for concern. The lack of genetic diversity puts all plants at high risk. As Hoffman says, a disease that can attack one plant can attack them all. There are 129 species of coffee plant known to exist in the world, and scientists may soon start looking at the commercial potential of other plants to help expand the gene pool of this very important crop.

Varieties, Cultivars, and Terroir

After a trip down the coffee aisle, you might be wondering about some of the other names out there, like Sumatra, Java, and Kenya AA, or Jamaican Blue Mountain and Kona. Or maybe you've seen references to Bourbon, Caturra, SL28, and Pacamara. Are they not types of coffee too? The short answer is: not exactly.

All of these coffees have descended from the arabica plant. Some, like Bourbon, Caturra, SL28 and Pacamara, are varieties or cultivars of arabica. In layperson's terms, they are hybrids. Hybridization can occur naturally but some, like SL28, is engineered by humans. The end result is a different flavour.

Names like Sumatra, Java and the others mentioned above indicate the place of origin of a coffee or, to use a term often associated with wine, its terroir. There is a school of thought that local soil and water have an impact on flavour. Processing methods can also be distinct to certain coffee-growing areas. Together, the terroir and processing may contribute some degree of regional commonality in flavour. Using the examples above, here's what the experts have to say:

- Sumatra: heavy-bodied, low acid, sweet coffee with earthy, mushroomy flavours
- Java: synonymous with coffee, very low acid, very heavy-bodied classic cup
- Kenya AA: citrus, black currant, spice, sweetness, and wineyness
- Jamaican Blue Mountain: quintessential classic cup, mellow and sweet
- Kona: fruit and vanilla flavours, sweet

The list of varieties and locales is very long. To read it, visit [CoffeeCuppers.com](https://www.coffeecuppers.com). To dig deep into the various types and results of coffee hybridizations, you can visit this [page](#). And if you're wondering how coffee can taste like mushrooms, citrus, or vanilla, the next chapter will explain.

Chapter Three: Chocolate, Caramel, Wine: The Flavours and Aromas of Coffee

When shopping for coffee, you've probably encountered descriptions like these: "A premium selection of 100% Arabica beans from Central and South America, expertly crafted to create a well-balanced and full-bodied coffee, with a fruity aroma, floral notes and the distinctive finish of bittersweet chocolate." (Lavazza)

Fruity, floral, chocolate? It's hard to believe we're still talking about coffee, but those terms are very much a part of coffee jargon. And those flavours are, indeed, "expertly crafted." Roasters have a lot of control over how a coffee tastes, so before we look at the work they do, it's important to talk about the many elements in the flavour of coffee.

Blend

Most coffees that we know are blends of multiple beans, a "selection" made by the roaster. Roasters and coffee shops want to increase the complexity and depth of the coffees they sell, and they do that by mixing beans with different characteristics. Australia's [Coffee Academy](#) gives an example: "A coffee with good mouthfeel (eg Brazil) is no good without aroma (add some Papuan New Guinea) or aftertaste (add some Mexican Altura)."

Acidity & Body

In coffee, acidity is usually a good thing. In the right amount, it adds crispness, depth, and vibrancy. Too much acidity and a coffee can taste sour; too little and it can taste flat. For professional coffee tasters, high acidity is typically associated with "interesting" flavours, like fruit notes, although these flavours are not always popular with consumers. (Hoffman)

Body, or mouthfeel, refers to the feel of the coffee on the tongue. Coffees with a heavy body feel rich and creamy. A light-bodied coffee may feel more tea-like or, if it is poor quality, may even have a watery consistency.

Sweetness

Sweetness is a very desirable quality in coffee and is something professional tasters look for. Sugar content is affected by roasting.

Balance

With all of the possible flavours in coffee, balance is essential to a good cup. A well-balanced coffee has a good ratio of sweetness to bitterness, although the definition of “good” balance is not easy to define and mostly comes down to personal preference.

Flavour & Aroma

Flavour and aroma work together to provide the full taste experience of any food or drink, coffee included. The website [Coffee & Health](#) defines the terms with examples. Aroma might include floral, nutty, or caramely, while flavours range from mellow to winey, sour, sharp, and pungent. Each of those categories can be subdivided even further, enabling coffee enthusiasts to describe their brew with pinpoint accuracy, as seen in this diagram:



Although overwhelming, this diagram does show how much the taste and fragrance of coffee can vary. Its source is one reason for the variety, but harvesting and roasting also play an important role.

Chapter Four: Getting the Beans from Tree to Cup

How do the bright red cherries of the arabica tree become the small brown beans we grind for our morning brew? Here is a quick overview of a process that is, in reality, quite long and laborious.

Harvesting

Harvesting can be done by machine or by hand. Because coffee cherries ripen at different times, even on the same tree, machine harvesting can result in many unripe cherries being picked. The harvesting is faster, but the quality is poorer. For that reason--and the fact that many coffee trees grow at high altitudes on steep slopes where machines cannot be used-- hand-picking is the preferred method of harvesting. Pickers carefully select ripe cherries to ensure the best quality beans: too green and the beans may have a sour taste; too ripe and the bean may be past its prime and even close to rotting.

On average, a coffee tree produces about 2.2-4.4 kg (1-2 pounds) of roasted coffee beans annually. **Kicking Horse Coffee** presents the numbers in a more relatable way: a 2-cup-a-day coffee drinker consumes the annual harvest of 18 coffee trees.

Each coffee cherry contains only two beans. (The anomalies that contain only one bean are called "peaberries.") According to Kicking Horse, it takes 2,000 cherries (11 kg/5 lbs) to make 2.2 kg (1 lb) of roasted coffee, and a "good" picker can pick between 220-880 kg (100 and 400 lbs) per day. After picking, beans must be sorted by hand or, if a grower's budget allows, a flotation tank. (Ripe beans sink to the bottom making for faster sorting.)

The bottom line? Coffee harvesting is exacting and difficult work.

Extracting the Bean

Coffee cherries consist of several layers: outer skin, mucilage, parchment skin, silver skin and, finally, the two beans. Getting to the beans is not exactly easy. Once the fruit is removed, the beans must be dried to a moisture content of about 11-12%. There are two main types of processing involved in removing the fruit from the bean: wet and dry.

- **Wet or Washed:** The beans are soaked in water so the pulp of the cherry will ferment and fall away. The pulp-free beans are then washed and laid in the sun or placed in a kiln to dry, before the final step of machine husking. The end result is cleaner, more acidic, and lighter-bodied coffee.
- **Dry or Natural:** Cherries are laid out in the sun for about two to three weeks until the fruit shrivels up. The dried husks are then removed mechanically. The coffee

must be turned regularly to ensure it does not rot. The coffee that emerges from these beans tend to be heavier-bodied and sweeter, with fruity flavours.

- **Semi-washed:** In this mechanized process, water is used to wash away the skin and pulp. The beans are then dried in the sun or in kilns. Semi-washed coffees have lower acidity and more body, with some intense flavours. Indonesian semi-washed coffees, in particular, may have woody, earthy, or spicy flavours.

The green beans that emerge from this process are then shipped to roasters for completion.

Roasting

When coffee beans leave the farm, they don't have the rich, brown colour we all know and love. They are green, as shown here. Green coffee beans have virtually no aroma and a bitter taste.



Roasting transforms the green beans, infusing them with their highly recognizable aroma and various flavours. Generally, lighter roasts preserve the acidity along with the herb and fruit notes, while darker roasts have more smoky flavours and lower acidity. (Coffee & Health) Roasting also changes the colour of the beans and brings out some of the natural oils. You can parse the list of roasts in many ways--[Coffee Cuppers](#) has nine categories on its site--but the basic divisions are light, medium, and dark. Each roast has typical characteristics:

- **Light:** A tan or cinnamon colour, fruity taste, and low acidity. These beans are dry, compared to darker roasts, which have visible oil. Light roasts work well for mild, creamy coffees because of their subtle flavour.
- **Medium:** Light brown and balanced between sweetness and acidity. Well-suited for a cup of strong, black coffee. Medium-dark roasts tend toward a more bittersweet flavour.
- **Dark:** Almost black in colour with an oily appearance and strong, bitter flavour. Dark roasts are good for lattes. Among the darkest of the dark are French, Italian, and Spanish roasts, which have a burnt flavour and aroma.

My recent purchases show the differences in roasts. The Guatemalan beans on the left have a light colour and virtually no oil, while the Indonesian beans on the right are significantly darker and oilier.



As with any food that is cooked, the roasting process causes a number of chemical reactions in coffee beans. There are five main stages, outlined in *The World Atlas of Coffee*:

- **Drying:** Coffee beans cannot turn brown if there is water present (nor can any food). In the first stage of roasting, water evaporates from the beans. There is virtually no aroma and no colour change at this stage.
- **Yellowing:** With the water gone, the beans begin to change colour and start emitting an aroma that smells like basmati rice or freshly baked bread.
- **First Crack:** As the roasting process continues, gases and water vapour build up inside the bean, causing it to pop and crack. At this point the coffee flavour starts to develop.
- **Roast Development:** The length of this stage will determine the final flavour and aroma of the coffee beans. The longer the roast continues, the lower the acid and the higher the level of bitterness.
- **Second Crack:** The second crack is not as dramatic as the first, but it is here that the oils in a bean start to surface. Going beyond the second crack is risky since the beans can catch fire. Coffees that reach this stage tend to have a heavily roasted or burned taste, like French or Italian roasts.

After roasting, the beans are quenched, or cooled, to ensure the roasting process is abruptly stopped. Without this step, the heat within the beans could continue to “cook” them, potentially changing the flavour and aroma and imbuing the coffee with an off-taste.

The roasting process can result in the creation of over 800 volatile aromatic compounds—more than are found in wine. Each cup of coffee will have only a small number of these compounds, but they still pack a punch. As James Hoffman notes, “...the smell of

freshly roasted coffee is so complex that all attempts to manufacture a realistic, synthetic version of this smell have failed.”

Further Viewing. For an interesting view of the roasting process, watch [Roasted](#), a short video that places a camera inside a coffee roaster. (FYI: The video also promotes GoPro cameras.)

Chapter Five: Creating the Perfect Cup

Raised on automated drip coffee makers and inundated with images of hipster baristas creating flawless cappuccinos, many of us have grown to believe the perfect cup of coffee is beyond our capabilities. We either live with substandard coffee-maker coffee or make daily trips to our local coffee shop to get our fix. But it doesn't have to be this way. You can make perfect coffee at home if you follow a few golden rules:

- start with good quality coffee, preferably beans you grind yourself;
- use the correct ratio of beans to water;
- allow the beans to stay in contact with the water long enough to bring out the coffee's rich flavour.

As for the brewing method, I found three that are universally recommended and one that is more tepidly endorsed. Unsurprisingly, electric coffee makers, including the pod-based ones, are not on anyone's list. Nor is instant, the "intolerable impostor." (The Story of Coffee) The preferred methods are:

- French press or cafetiere. The French press consists of a glass beaker and sieve. It works through steeping. Add coffee and water, let it steep, then press the mesh sieve into the coffee to filter out the grounds. I love the coffee this produces but must admit it is a bit messy to clean up.
- Drip-filter or pour-over filter. With this method you place a ceramic or glass cone on top of a cup or other container, add a filter, then coffee and water. The liquid drips through, leaving the grounds behind in the filter.
- Aeropress. Highly recommended although I haven't tried this one myself. It involves steeping the coffee, as with a French press, then pressing it through a filter, like a drip method.
- Moka pot or percolator. This is a traditional Italian coffee maker. According to James Hoffman, it is not user-friendly and often results in a very strong, bitter coffee. I'm including it here because it is popular with some coffee enthusiasts, but few of the "experts" I consulted recommend it.

Follow the Golden Rules for Perfect Flavour

The whole point of brewing coffee is to extract the flavour from the beans. Under-extraction makes a weak cup that may taste sour or even metallic, while over-extraction can lead to a harsh, bitter flavour. To ensure the right level of extraction, no matter which brewing method you use, follow the golden rules: good coffee in the right amount steeped for the correct amount of time.

Good Coffee

Ideally, you should start with freshly ground beans. Coffee gets stale quickly and its flavour diminishes the longer it sits. Whole beans are available at grocery stores and specialty coffee retailers. Burr grinders are recommended over blade grinders. The latter does not grind consistently and leaves large pieces of coffee bean in the mix. (I know because I have a blade grinder.) Uneven size can mean uneven extraction, which is why the grinder is so important. In fact, author Geoff Woodley says a good burr grinder is the only tool you need to ensure a great cup of coffee. (Woodley)

The coarseness of the grind depends on your brewing method. Consult your coffee brewer's instructions to see which grind is best.

Shortcut: Although coffee professionals say it's best to grind the beans just before brewing, you can buy small quantities of ground coffee and keep them in an airtight container in a cool, dry place.

Ratio of Beans to Water

Because measurements by volume are less accurate than those based on mass, you should weigh your coffee and water. Yes, it sounds a little over-the-top, but measuring makes a huge difference in flavour and it really doesn't take that long. I have an inexpensive digital kitchen scale. When I use my French press, I just place it on my scale, dump in my 15g of coffee, then pour the water until it reaches the correct weight.

As for that all-important ratio, the general guideline is to use 60 grams of ground coffee per litre of water. (Hoffman) A millilitre of water weighs one gram, so a litre of water will weigh 1,000 grams.

Note on Measurements: Everyone seems to use the metric system for the coffee/water ratio so I haven't converted it. Most kitchen scales switch between metric and Imperial so this measurement shouldn't be a problem, even for people unfamiliar with the metric system. The added bonus with the metric system--and the reason I love it so much--is that it makes calculating smaller cup sizes very easy. For example, to make a single 250mL (8oz) cup of coffee, I divide the amounts above by four to arrive at 15g of coffee and 250g of water.

Water

Purists will check water hardness and even chlorine and mineral content, but unless you live in an area with very hard water, tap water is usually fine for coffee. If, however, you are concerned that your water will impart an off-taste, you can use filtered or bottled water. The water should be very hot but not quite boiling, around 90° to 96°C (195° to 205°F).

Shortcut: Instead of measuring water temperature, let the kettle start boiling then allow it to sit for 30-45 seconds to cool a bit.

Steeping

Steeping time depends on the coffee brewer you have chosen. An Aeropress can have coffee ready in about 90 seconds, while a drip-filter or French press takes about 5 minutes.

Further Reading: Jamie Oliver has written a brief how-to for each method [here](#). The [Guardian](#) also has a good summary for all but the moka pot. (We're talking small batches of non-espresso coffee here--about two cups maximum. For a large gathering, you may want to have an automatic coffee maker on hand, or be prepared to make each cup individually.)

Milk & Sugar?

How do you take your coffee? If you're like **68%** of coffee drinkers in the US, you add a little milk, cream, or sugar to your brew. I am not in that number and my choice of black coffee never ceases to elicit reactions from people. One friend even told me my choice of unadorned coffee was "sophisticated." I'm not so sure about that, but, according to James Hoffman, there is some degree of snobbery when the subject of coffee add-ins comes up.

Coffee professionals (a.k.a. black coffee drinkers) consider it an egregious sin to add milk and sugar to a cup of coffee and may look down on anyone who commits such an affront to good taste. Hoffman takes a more sympathetic view, acknowledging that people began adding milk and sugar to mask the unpleasant taste of poorly roasted "cheap commodity coffee." They got used to it and now never think to try coffee without those two additions.

In the assessment of most coffee connoisseurs, "good coffee" tastes just fine on its own. Milk and sugar may even mask the complex flavours of the coffee, so the experts recommend trying it black and adjusting it with sugary add-ins only if needed.

So how do you know if the coffee you are buying is of decent quality? Read on.

Chapter Six: Buying and Storing Coffee

Coffee is available just about everywhere that food is sold, from sellers of high-end organic products to the average grocery store. Specialty coffee retailers provide another option, as do chains like Tim Horton's and Starbucks.

So where should you buy? Before making that decision, consider the shelf life of coffee. Contrary to what you might think as you gaze upon row after row of packaged coffee at the grocery store, coffee does not stay fresh for very long. Remember those volatile aromatic compounds released by the roasting process? They are called "volatile" for a reason. They are intense and they dissipate quickly, so the longer coffee sits, the more flavour it loses. For that reason, coffee experts recommend that you buy only enough fresh roasted coffee to last two weeks.

Where to Buy

Specialty coffee retailers are the gold standard, but in my limited experience, I find grocers who roast their own beans are another good source. Since the coffee is typically roasted daily, you are ensured freshness, and these stores tend to have a decent selection as well. Specialty stores and grocers-who-roast also allow you to buy the precise quantity you want, so you never have to buy more than you can drink in that all-important two-week timeframe.

If you are really concerned about freshness, you can check for a roasting date with your preferred retailer.

Storing Coffee

No matter where you decide to buy, you need to store your coffee properly. Some retailers of freshly roasted beans offer wax-lined paper bags but they will not keep your coffee fresh for very long. Vacuum-packed foil bags, like you find on grocery store shelves, offer decent protection, but you have to be sure to reseal them tightly to keep the coffee fresh. (This is not always easy to do since the wire fastener does not seem to last very long.)

Your best bet is to invest in the right type of container and take special care about where you store your coffee:

- Because coffee is so sensitive, you need to be picky about the container. Glass, ceramic, or non-reactive metal is best.
- Oxygen and moisture are the enemies of coffee. Ensure your coffee container is airtight.
- Heat is another potential problem for coffee, so make sure you store it in a cool, dry place; that is, nowhere near the oven and away from direct sunlight.

- Never store coffee in the refrigerator. It is far too moist and odorous an environment. The scent of a leftover onion or spicy chicken dish could be absorbed into a bag of coffee beans and impart an off-taste to your brew.

If you find you have more coffee than you can use within two weeks, the freezer is an option but you must use an airtight container or you'll run into the same problems you do with refrigeration: seepage of oxygen, moisture, and flavours into the coffee. Freeze whole beans in small portions if possible. Digging into a large container of frozen beans exposes the entire lot to the surrounding environment and may lead to freezer burn. Only thaw the amount you need at any given time and never re-freeze thawed coffee.

Chapter Seven: How Much Jolt is in Your Java?

Coffee drinkers recognize the kick that caffeine gives them, but just how much is in each cup? The answer is important because the higher the daily dose of caffeine, the greater the effects on mood and sleep. The “right” dose of caffeine can make you feel more alert and energetic. Too much, however, can lead to anxiety, irritability, and sleeplessness. Very high doses can even lead to increased heart rates and panic attacks.

So what is the “right” amount? **Health Canada** recommends that healthy adults consume no more than 400 mg of caffeine per day, or about three 237-mL (8 oz) cups of coffee. Pregnant women should stay under 300 mg per day.

That sounds easy in theory. In practice it may be more difficult because the caffeine content in a cup can vary greatly.

First, there is the question of serving size. Health Canada’s guidelines are based on a 237-mL cup but for some people, a “cup” might contain a much larger amount. For example, a “tall” at **Starbucks** --which is technically a cup--contains 354 mL of coffee. A “grande” is 473 mL, or 2 cups by Health Canada’s standards. By comparison, a Tim Horton’s small is 286 mL, and a large is 563 mL or nearly 2½ Health Canada cups.

Even if you control for serving size, it is very hard to gauge the actual amount of caffeine in a cup of coffee. Several factors affect the level of caffeine:

- The coffee plant itself. Variations in growing conditions can affect the amount of caffeine in a coffee tree and, therefore, the beans.
- The variety of coffee. Cheap “diner coffee,” made from robusta, has twice the caffeine of arabica.
- The roast. I always assumed that darker roasts have more caffeine, but the opposite is true. Longer roasting times burn off some of the caffeine, so lighter roasts tend to have more of it.
- The coffee/water ratio. Again, this all-important ratio has an impact. The more ground coffee you use to prepare your cup, the more caffeine it will have. (Carpenter)
- The brewing method. This factor is acknowledged in Health Canada’s guide to **caffeine in foods** which states that brewed coffee contains 135 mg per serving, percolated 118 mg, and filter drip 179 mg.

The wild variations in caffeine content were reported in a 2003 study in the *Journal of Analytical Toxicology*. Among brewed specialty coffees served in 473-mL (16 oz) cups, the researchers found a low of 143 mg of caffeine in Dunkin’ Donuts regular coffee and a high of 259 mg in Starbucks regular coffee. Even more interesting, the researchers ordered the same size and variety of coffee from the same

Starbucks outlet for six days in row and found the caffeine content ranged from 259 mg to 564 mg, depending on the day! (McCusker et al.) Caffeine is also present in other beverages--pop, energy drinks, tea--so exceeding the recommended daily dose is not difficult. Fortunately, it is usually easy to tell when you've gone too far. If you feel increased irritability and agitation or have trouble sleeping, you may want to change your daily order from grande to short.

Chapter Eight: The Coffee Trade

The words “complex” and “volatile” apply not only to the flavour and aroma of coffee, but also to the trade of this highly valued commodity. Coffee has experienced wild price fluctuations in recent years that affect the producers most acutely. At the same time, a movement known as “third wave” has sought to attach to coffee the status of artisanal beverage, on par with wine and craft beer.

For third wavers, the source of the coffee--the particular farm, the characteristics of its soil, its altitude, its degree of shade, and the way it is harvested and processed--have become essential knowledge. Even mainstream retailers like grocery stores trumpet the shade-grown, single-estate-sourced “organicness” of their beans.

As much as I loved learning about the history and production of coffee, the nuances of its flavour, and how to brew it, what I really wanted to gain from writing this book was an understanding of the claims made by coffee sellers. I wanted to know exactly what it means when my grocer tells me their freshly roasted coffee is single-estate grown, or a bag of beans features the Fair Trade or Rainforest Alliance label. Are these terms just marketing jargon, or is there substance behind those claims?

I quickly learned that when it comes to the coffee trade, there are no easy answers. The supply chain is long, with many players seeking their portion of the profits. In this long line, farmers are always bringing up the rear. With the purest of intentions, the fair trade movement has sought to correct inequalities for coffee producers, but there are questions about the efficacy and benefits of the program. Direct trade, which is far less regulated than fair trade, has also been subject to scrutiny, as have the other designations frequently seen in stores.

Concerned consumers are right to be confused. Although there is not enough space here for a detailed discussion of the ins and outs of the coffee trade and various certifications used by retailers, I can provide something of an overview. If you want to read more, the References section at the end of this book will point you in the right direction.

The C-Price & Supply Chain

The coffee supply chain is very complex. For clarity, I’ve reduced it to a simple point-form list.

- The “C-price” is the global price for commodity coffee. It is considered the minimum value a producer will accept. At the time of writing, it was about \$1.41 (USD) per pound. ([index.mundi](#))

- The C-price treats all coffees the same, and does not account for specialty types, countries of origin, or production costs. If a farmer's production costs increase but the C-price does not--a common occurrence--the farmer stands to lose money.
- Production costs include: labour, fertilizers, inspections, certifications like fair trade or organic, transportation of green beans, and membership fees if farmers are part of a cooperative. (Specialty Coffee Association) All can fluctuate and take away from the farmer's bottom line if the C-price stagnates.
- The journey along the supply chain begins when the green beans leave the farm and head to the processors--the people who use the wet or dry techniques we looked at earlier.
- Processors factor in their costs and create a price for exporters, who then sell to importers, who use distributors to sell to roasters.
- Roasters have to consider their costs before setting a price for retailers. In addition to labour, equipment, and packaging, they have to factor in shrinkage. Roasting reduces the weight of the coffee beans by about 18%, so the roaster who started with a pound of green beans ends up with .82 pounds of roasted coffee. (SCA) That loss of weight is added into their selling price.
- Coffee shops and retailers obtain coffee from roasters. Like everyone else in this supply chain, they tack their costs onto the final price charged to consumers, ensuring they leave room for a profit of their own.

In the end, the coffee for which a farmer receives less than \$2.00 per pound can cost consumers anywhere between \$10.00 and \$17.00 per pound (based on my unscientific survey of fairly generic coffees on store shelves). Specialty and fair trade coffees can run much higher.

The concern for many shoppers is that very little of this markup goes to farmers. In the event of higher costs, everyone else in the supply chain can adjust their markups to ensure a profit. Farmers, who are pretty much stuck with the C-price regardless of their production costs, cannot.

Concern for farmers and the long-term sustainability of their operations are the motivation behind the many certifications now applied to coffee. I'll look at some of the most commonly used certifications here.

Fair Trade

Fair trade organizations work with cooperatives of coffee growers. They set a stable coffee price that covers the costs of production and provides a living wage. In exchange, farmers must undergo a certification process and follow standards set out by Fairtrade International. These include regulations that promote sustainability,

biodiversity, waste reduction, and good working conditions for all workers. (Fairtrade International) Farmers also receive a premium to invest in their communities or operations, following Fairtrade guidelines. In the case of Fairtrade Canada, at least 25% of that premium must be used to “enhance productivity and quality.”

Costs to the producer include a one-time application fee and annual certification fees. (Fairtrade Canada charges \$600 for applications and \$600 for each annual certification.)

Fair trade has benefited many but it does have its detractors. A report on the coffee industry in Honduras outlined some of their criticisms:

- The costs of certification can be too high for some producers.
- The guaranteed price per pound may motivate some producers to stay in the business even though they are not profitable, adding to the overall supply and reducing the base coffee price for farmers who are not certified. (Without this “artificial price floor,” participants who were not making money would exit the market and supply would drop down to a more viable amount.)
- Some studies have shown that while farmers may get higher prices under a fair trade model, there is “no evidence” their workers receive higher wages or any other benefits.

Still other sources say that the coffee produced under fair trade may be inferior, since the price paid is the same regardless of the quality of the beans. (2degrees)

So, is fair trade good for producers? It depends on whom you ask. On the plus side, fair trade guarantees a price for coffee. It also promotes sustainable agricultural practices and investment in communities. On the other hand, it does not help independent producers who are unable or unwilling to pay the certification fees, and it may even hurt them by increasing supply and causing the C-price to drop. Being aware of the two sides of this story will help you decide between fair trade and other coffees.

Direct Trade

Roasters who engage in “direct trade” work with individual farmers or cooperatives of farmers. The idea here is that the roasters get to know real-life growers and can have more direct control over the quality of the coffee.

The downside to claims of direct trade? There is no certification and no third-party verification that roasters are paying the price they say they are. Nor is there necessarily any effort to promote labour standards or sound environmental practices.

As the website ethicalcoffee.net states, “...the consumer must believe in the company. If you trust the company to stick to its own standards, without third-party certification (and if you agree with their standards), then all's well.”

Rainforest Alliance

To be Rainforest Alliance Certified, a farm must adhere to a rigid set of standards set by the Sustainable Agriculture Network. Farms are audited regularly to gauge their efforts to improve biodiversity and use natural resources wisely. The Alliance also claims to require member farms to improve “livelihoods and human wellbeing.” ([Rainforest Alliance](#))

While the Alliance has been praised for teaching farmers how to farm more sustainably, there have been some high-profile incidents that cast doubts on the “human wellbeing” requirement and the auditing processes of the Alliance. A 2015 story by the [BBC](#) showed a number of very serious problems with certified tea growers in India--unsanitary and dangerous living conditions for workers, malnutrition, child labour, and lack of protective equipment causing exposure to pesticides. Other studies have shown problems with Rainforest Alliance banana and pineapple farms in Latin American countries. ([Violence of Development](#))

Contrasts to fair trade have led to other criticisms of the Alliance, namely that it does not offer a guaranteed minimum price for coffee and allows its label to be used on products with as little as 30% certified content. ([Ethical Consumer](#)) For these reasons, some critics have expressed skepticism about the Rainforest Alliance label, believing it may promise more than it delivers and, more importantly, that consumers take those claims at face value.

Further Reading. In a report about the role of discount grocers, [Banana Link](#) talks about the misleading use of the Rainforest Alliance label on low-cost produce which creates the illusion “that sustainability can be provided ‘on the cheap’ or, far worse, that sustainability actually is being provided on the cheap...and somehow living wages will be paid and the costs of environmental protection spirited out of thin air.”

Single Origin and Estate

As we saw earlier, most coffees are blends of beans from a variety of regions. It used to be that only coffee purists concerned themselves with designations like “single origin”, but even the average coffee consumer is starting to care more about where their coffee comes from. In the effort to distinguish a brand and create the idea of a personal relationship with the farmer, marketing terms were developed to define the source of coffee:

- **Single Origin.** The opposite of a blend is “single origin” which means, quite clearly, coffee beans from the same place. That place could be an entire country, meaning the designation may not be quite as exclusive as it seems. Consider that the number of suppliers in, say, Brazil is huge. A “single origin” coffee from Brazil doesn’t mean it is all from the same farmer or even the same exact region.

- Single Estate. A term that sounds similar to “single origin,” but has a different meaning. In the case of “single estate,” the coffee comes from the same farm, cooperative, or mill. [Perfect Daily Grind](#) and [Serious Eats](#) each have some fairly comprehensive articles that explain the nuances of single estate and single origin.

What’s the Answer for Consumers?

As consumers, we are conditioned to believe that paying more for something means it is better somehow, whether in quality or the ethics of its production. We assume that higher prices will result in higher wage for workers and investment in sustainable agriculture.

Like everything with coffee, the reality is much more complex. High prices do not necessarily mean an ethical coffee. In the end, the onus is on consumers to educate themselves and decide which labels they can trust.

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