

# Cheaper, richer, tastier coffee: How to roast your beans at home

For many, coffee isn't just a luxury, but a habit that adds structure and satisfaction to the daily routine.

With states mandating you to stay inside most of the day and even Starbucks stores closing to foot traffic, chances are you're making more coffee yourself. Now's the chance to uplevel your skills and consider roasting your own coffee right at home.

Raw coffee lasts for years on the shelf, yet still retains its flavor. It's only when you introduce intense heat through the roasting process that the powerful coffee essence unlocks, and then begins to slowly fade. But if you roast your own beans, you can stock up in bulk on raw product and roast only as much as you need in the short term. In some ways, it's the perfect quarantine staple.



Plus, freshly roasted coffee is outrageously delicious compared with the standard store-bought variety that's typically months old, even the whole roasted beans.

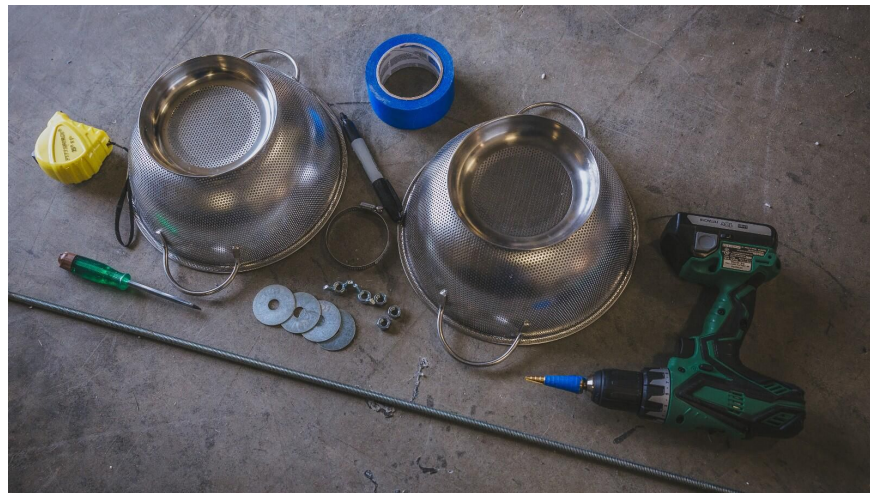
Unroasted, or green, coffee costs less, too, so you'll save money in the long run. In fact, you can get your hands on green coffee for as little as \$4 to \$5 a pound. Sure, the idea of home roasting might sound intimidating at first, but the payoffs are huge. Here's how to get started.



## From raw to roasted coffee

With enough heat energy applied to green coffee, the hard structure of a bean breaks down to release its complex mixture of contents. This cocktail includes everything from water to sugars, proteins, fats and, yes, caffeine.

The high temperature of roasting chemically alters many of these compounds (such as by caramelizing sugars and oxidizing lipids, proteins and starches), and ultimately creates what we expect to see, smell and taste in freshly roasted coffee.



## Build a backyard roaster

You can build a coffee roaster easily from inexpensive items you can buy at a hardware or kitchen supply store. Here's a list of the parts I used.

1. 2 steel mesh colanders (5 quart)
2. 1 three-eighths-inch threaded steel rod (36 inches long)
3. 6 three-eighths-inch wing nuts
4. 4 half-inch washers

5. 1 steel adjustable hose clamp
6. 1 cordless drill
7. 1 three-eighths-inch drill bit
8. 1 propane grill

To begin, drill a hole through the center of the base of each colander with a three-eighths-inch metal drill bit. Next, spin one nut and one wing nut onto one end of the threaded rod (go about halfway) and from the opposite side, slide one washer down the rod. Then, slide one of the colanders onto the rod through its drilled hole, next to the washer, with the open side up. Follow with another washer and two regular nuts, and tighten all nuts so the colander stays fixed in place.

In the same way, attach the other colander to the rod so that the rims of the bowls face each other. Leave a 6-inch gap between the two vessels, hold the rod vertically and add your green coffee to the lower colander. It's a 5 quart model with plenty of room for the 1 pound batches I suggest you roast. Finish by slipping the second colander down to close the gap and securely tighten the nuts.



## Prepare your barbecue

I suggest using a gas grill to roast coffee. These grills have responsive burners powered by propane. That makes their internal temperature easier to control compared with charcoal grills. Begin by removing your grill grates, heat diffuser (bars or pan) and warming rack. If your grill has a slot for a rotisserie accessory, use this opening to place the threaded rod across the burners. If not, lay the rod across the hood's sides with the hood open. (Many grill hoods have sections cut out of their sides to make room for accessory mounts when closed. Line the rod up to match these gaps.)

Your roaster should now be suspended and centered over the barbecue's burners. To spin the apparatus, connect an electric drill to one end of the roaster's rod as if it were a drill bit and tighten the drill's chuck jaws around it.



An adjustable hose clamp wrapped around the drill's trigger is a simple way to apply steady pressure and spin the roaster drum at a constant rate. Aim for 120 rpm (I count revolutions for 30 seconds and then double the number).

That's quick for a rotisserie motor (10 to 55 rpm) but easy for a power drill (600 to 1,500 rpm). The goal is to mix the beans quickly enough so heat hits them evenly, yet slowly enough to minimize stress on the drill and avoid loosening any nuts and washers.



## **Roast, baby, roast**

How long any given roasting session will take can vary greatly depending on factors like the coffee variety, how hot your roaster gets and whether you'd like a light, medium or dark roast. As a general guide, expect a small batch of beans (1 pound or less) to take about 10 minutes.



Start by firing up the grill and turning the burners up to maximum. Close the hood to let the grill cavity warm up and when the grill thermometer hits 400 degrees Fahrenheit, turn the burners down to medium. Next, add green coffee to the drum, tighten the two colander halves together, carefully set the rod in place and start spinning.

Now you're ready to close the hood while keeping your ears, nose and eyes peeled to monitor what's going on inside. It's OK to take a few quick peeks, but open the hood too many times and you risk losing vital heat. Ideally, you want to keep temperatures in the roaster consistently between 400 and 500 degrees Fahrenheit. Since it's difficult to mount a heat sensor inside a spinning roaster, just use your grill's built-in thermometer instead.



## **Listen out for the pop and don't burn your beans**

The first change happens visibly when the beans shift from a muddled green to yellow to a darker golden hue. As the beans' internal temperature approaches and exceeds the boiling point of water, steam forms and trapped water vapor fights to escape.

When it finally does, the coffee beans begin to snap with an audible pop. In what's known as the "first crack," the beans split open down their middle and swell in size. At this point your beans are technically roasted, but they'll have a bright acidity on the edge of sourness. Drinking coffee from this roast level is perfectly fine, but to

develop a traditional coffee flavor, you must go a little further.



As the temperature climbs higher (435 to 445 Fahrenheit) fats, sugars and proteins break down. The beans are now roasting in earnest. Be careful at this stage because the pace of these reactions will speed up. If you're not paying close attention, you'll end up with burnt beans in no time.

As gases including CO<sub>2</sub> (carbon dioxide) form, they cause another round of sustained snaps called the "second crack." The beans will then release oils giving them a shiny, glossy look. Roast longer and the beans will darken further to dark brown, even bordering on black. This creates dark roasts such as French roast.



## Cool things down

Once you've reached your desired roast level, turn off the grill and gas and quickly transfer the roasted coffee beans from the roaster to a metal oven sheet pan. Remember to use heat-resistant gloves or oven mitts to handle the apparatus.

Set the pan and contents aside for 24 hours to let the beans cool. As long as they're not smoking you can do this inside. Technically you can brew coffee from these beans. However, it's best to hold off for another 24 hours.

Freshly roasted coffee typically gives off CO2 gas that can create funky flavors. Finally, preserve your roast by storing it in an airtight container, a special valve bag or at least a zip-closure pouch.

## **Brew, sip and tweak**

Congratulations! You've turned raw green coffee into the essential ingredient for brewing a uniquely delicious beverage. Of course, you'll need a quality brewer and grinder to harness all that coffee flavor. And if the joe you've made isn't to your liking, there are a ton of ways to tweak the roasting process for an outcome more to your tastes.

Even with the same coffee variety, changing the roast level will greatly alter the flavors that ultimately land in your cup. And just wait until you start experimenting with beans and blends sourced from exotic locales. Better hold onto your mug.

For more tips to brew better coffee at home or fun projects to help pass the time while in self-quarantine, check out how to make wine in your Instant Pot, how to keep bread from going stale and cleaning your oven without harsh chemicals.

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