What You Can Learn from REALLY Looking at Coffee

I recently spent some time taking macro images of green coffee beans, both green and roasted. Besides having fun with my new camera and lens, I am amazed at the amount of information you can get from these images and what it tells you about how the coffee will roast. The images are especially helpful in terms of judging the degree of roast – so I want to draw attention to some of the images here in Tiny Joy and talk about what I think they illustrate so well.

From the two Home Roaster’s Dream Camp sessions we have held so far, we have seen quite a bit of confusion about judging the degree of roast: when asked to bring in a specific degree of roast, about half of the participants seem to be right on, and about half were totally wrong, either over or under roasting. They think they have a City+ roast and the beans are actually beyond FC+!

From my experience, people tend to put too much emphasis on color when judging degree of roast. It is not that color is unimportant, but color can be affected by the origin, the processing of the coffee, the type of light you are using, etc. So color is only helpful when judged in combination with other factors, such as the surface texture, size of the bean, amount of chaff etc. So having these images reproduced in black and white is actually really helpful, because it draws attention to these other factors.

Looking at the two images of City+ roasts below, both are City+ roasts of a Central American bean. Notice how much variation there is in the color of the bean and in the surface texture. Texture is something that you see change a lot as the roast progresses. The crease is tight with a lot of chaff remaining. The cracks at the end of the crease are sharply defined. Between the two beans, there are more cracks on one than the other, and the crease on one appears different from the other. In both cases the beans are compact, there is not much expansion, and edges of the bean are sharp.

The profile picture below shows those sharp edges and also how flat the flat side of the bean remains. This is a City+ roast.

In contrast, see the profile picture of the Full City bean below. Here, the flat side of the bean is puffed out, and the edges of the bean are no longer sharp. Notice too that the crease is now more open, with less chaff remaining. The surface is more even in color and texture, less pock-marked. The cracks in the surface too are softer looking, less sharp. This is still before the beginning of second crack too – but there is a big difference in the appearance of the bean.
I think that these cross section images to the right – from a light roast on the top, to full city + in the middle, to a dark, dark roast at the bottom – reveal a lot about what is happening inside the bean during the roast in terms of expansion. They also show why the results you get grinding a light roast and a dark roast are so different, i.e. the structure of the bean is more fragile with dark roasts and crumbles more readily.

You can see the crease expand in cross section very well. As the structure of the bean breaks down and the bean becomes less dense, oils start to migrate to the surface. Overall size of the bean expands as well, with noticeable air pockets in the bean, and less chaff clinging to the bean.

These images won’t tell you how the beans taste, but I think that they shed light on the changes that the coffee bean undergoes as it roasts, so you can help determine the degree of roast more exactly. Looking at surface texture, bean size, appearance of the bean crease – these are all clues in addition to the color and sound of the roast. There is also the issue of smell; at first there is smoke but only a light fragrance. As the roast proceeds and the beans carbonize, there is more woody particulate in the smoke so it smells heavier, more like a wood fire. These images and more are in full color on this page http://www.sweetmarias.com/Macro_Coffee_Images09/macro_coffee_images.php - Tom

**Them Holidays, They Are A-Coming’**

As usual, we are getting ready for the holidays around here at Sweet Maria’s and that means trying to stock up and streamline our systems so that we can handle the increase in orders and emails that the holidays bring. With the economy the way it is, we are not sure exactly what will happen, but we try to be ready.

Please keep in mind that with the volume of holiday orders, which can be 1.5x to 2x normal; it may mean that your order from the weekend will not ship Monday, but Tuesday. This is especially true over the Thanksgiving. The same is true for email; it might take a day or two longer than normal to get back to you. We will post updates on how we are doing, if we are running behind. We just ask your patience and remember that we are full-fledged humans here, not elves, robots, or other mythical creatures!

– Maria, Derek & Erica (the SM office staff)