Anyone who has ever savored Bird Rock Coffee Roasters’ Burundi Kirimiro Teka (2012) or Kuma Coffee’s Mukashyaka from Rwanda (2015) may find it hard to believe how desperately downtrodden the coffee sectors in these countries were just a few short years ago, but as recently as 2002, researchers were discussing problems such as 80 percent of Rwandan coffee being depulped in rusty containers using rocks.

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The term “specialty coffee” has grown and changed over the past several decades. Today, when a buyer considers the options for purchasing coffee, he or she probably takes a variety of things into account: quality, cost, social and/or environmental impact, and more. As a specialty coffee professional, what is your definition?

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DO YOU USE THE SCAA’S GREEN ARABICA COFFEE CLASSIFICATION SYSTEM?

By Beth Ann Caspersen
Photos courtesy of Equal Exchange
Do You Use the SCAA’s Green Arabica Coffee Classification System? (continued)

The Specialty Coffee Association of America (SCAA) has created standards for a number of activities over the years—including the Green Arabica Coffee Classification System (GACCS) discussed in this article—all aimed at producing a quality product. Today, the SCAA defines specialty coffee based on whether specific physical and sensorial attributes—in other words, how the coffee looks and tastes—meet clearly defined standards.

The physical attributes include size, weight, number of defects and moisture content of green coffee, and the number of quakers (immature beans that do not darken when roasted) in a roasted sample. The sensory evaluation scores roasted coffee in 10 categories encompassing all aspects of flavor, from acidity to cleanliness; a coffee must achieve a score of 80 points or higher to be considered specialty. To eliminate any variables other than the coffee itself, the SCAA has established protocols for evaluating the sensory attributes of roasted coffee (cupping protocols).

Farmers in Uganda learn about the importance of harvesting ripe cherries.

Beth Ann Caspersen of Equal Exchange (right) and the quality team from the Gumutindo co-op in Uganda introduce farmers to the SCAA green coffee defect system.
organizations in producing countries, like the Brazilian and Colombian coffee federations, and the "C" contract. According to Ted Lingle, executive director of the SCAA at the time the standards were developed and a key architect in the process, the GACCS was created in 2001 as a follow-up to the SCAA cupping protocol and form. From there, green defects were displayed on a poster with defect names and pictures.

In 2001, when I became coffee quality manager at Equal Exchange, I implemented a rigorous set of standards for the coffee we were importing. At the time, it was common to describe European Preparation (EP) in coffee contracts (and still is, in many cases). I discovered that EP meant clean coffee, but lacked a detailed definition. The GACCS had just been published in poster form, so I began with that. It was a good way to start conversations in our supply chain, but I wanted more definition to fully adopt the SCAA standards as our own.

Fortunately, in 2004, the SCAA Technical Standards Committee published a booklet to accompany the defect poster. It was a welcome and necessary addendum to the poster. The booklet provided a tool to support the SCAA and the Coffee Quality Institute (CQI) in developing what would become the Q Grader program.

USING THE GACCS

The GACCS is a detailed approach to identifying and grading green coffee, often referred to as the physical analysis of coffee. A 350-gram sample of green coffee is put through a series of tests to analyze the moisture content, bean size and imperfections, which are categorized into two groups: category 1 and category 2 defects. One full category 1 defect typically eliminates a sample from receiving specialty status. A cumulative score of five full category 2 defects does the same. (See chart on pg. 40 for more details.)

The defect assignment is based on appearance and categorized according to how the defect affects flavor. Once the coffee is roasted, there is an additional step to count the number of

GREEN COFFEE STANDARDS

There are dozens of green coffee grading systems around the world. Most countries that produce coffee have their own internal systems to evaluate their exportable crop, and many are detailed and provide clear guidance to evaluate the physical attributes of green coffee (size, defects, moisture) and the flavor of roasted coffee, as well as altitude and regional characteristics. They use terms like fancy, extra AA, SBC (strictly high grown) and SHB (strictly hard bean), among others, to describe levels of quality. Each country is different, but all appear to have a shared goal of grading quality. With so many green-grading systems available, why did the SCAA create its own?

In 1998, I began learning about different types of defects and their causes from my first mentor in the industry, George Howell, one of the pioneers of specialty coffee in the United States. We looked at pulper damage, blacks, trianglos, insect damage and the elusive foxy. We didn’t have a list or chart to reference, but Howell shared his knowledge about where the defects might have come from and what they were called.

At the time, while many green coffee standards existed, they were geared toward commercial grades. Specialty coffee was gaining traction, but it did not have a clear set of standards that differentiated it from commodity grade. Without a system, how could you identify great coffee? Clearly, there were cuppers and buyers who already knew the difference, but the SCAA worked to develop a definition and provide a clear way forward, to create a common vocabulary and define the parameters for extraordinary coffee.

In the 1990s, the SCAA introduced the first Coffee Tasters’ Flavor Wheel, and we saw the development of the cupping form and a green grading system—one that would evaluate the physical characteristics of green coffee and set standards for specialty grade. It appears there were a variety of influencers, including...
The language of coffee that was not just a lot of education still was needed. We defect, as well as the possible cause, remedy includes pictures and descriptions for each available in colorful poster form. The poster Defect Handbook quakers. This system is detailed in the SCAA standard, the theoretical, it was intended to be a universal unit of measure for quality. I’m fairly certain my jaw dropped to the floor. Shouldn’t a standard be a firm set of rules that guides business decisions? In order to build and maintain a common vocabulary, shouldn’t we as importers and masters be holistic in our approach to analysis? In theory, the defect count affects the cup flavor—or does it?

The Creation of the GACCS

There’s a lot of overlap throughout the world of green coffee grading systems, with different equivalency tables and defects that are country-specific. The SCAA set out to develop a universal system, one that could work for many countries while differentiating specialty coffee from commercial grades. So how did the association choose the specific defects included in its system? “The idea was to identify the most common defects that occur during processing,” says Stevens Díaz, commercial and quality director for Expocafe—an exporter for coffee grower cooperatives in Colombia—and a member of the SCAA Technical Standards Committee at the time the standards were developed. “From a scientific perspective,” adds Joseph Rivera, a coffee scientist with coffeechemistry.com and the SCAA coffee science manager at the time the system was developed, “those defects that are currently considered category 1 defects are typically those with objectionable compounds—dimethyl sulfide, butyric acid, acetic acid, etc.—and extremely low sensory thresholds.”

Insect damage can be particularly mysterious. The GACCS divides it into two classifications: severe and slight. Severe insect damage is defined as three or more perforations in a single bean. Five beans with severe insect damage in one sample equals one full category 1 defect. If a bean has fewer than three perforations, it is considered to have slight insect damage. Ten beans with slight insect damage equals one full category 1 defect.

Why are insect-damaged beans divided into two categories? Aside from their appearance, what is it about severe-insect-damaged beans that places them as a category 1 defect while many other systems place them in category 2? “Severe-insect-damaged beans carry adults, larvae and, most likely, mold within the bean that affect cup quality,” Diaz says. “Slight-insect-damaged beans are usually in the initial stages of attack.”

Flavor Blame

If a coffee tastes bad, shouldn’t there be a green defect that correlates to that flavor? The vast majority of defects can have more than one cause, and to make matters more complex, many defects can produce multiple defective flavors in the cup. For example, a full-black coffee bean (a category 1 defect) could produce any of the following defective flavors in the cup: ferment, stinker, dirty, moldy, sour or phenolic. However, an insect-damaged bean also could produce dirty, sour, moldy or rancid flavors. How do we know these defects produce these flavors? Is there science to support our assertions? Most of the flavor descriptors for these defects are based on deep and difficult to access. Many coffee professionals have done their own testing—spiking cups and roasting specific defects to observe the taste attributes. Experiments in my own lab over the past 10 years have yielded inconclusive results. Interestingly, one cannot assume that because you taste a defect in the cup, it will correlate to a defective bean. For example, I have cupped samples with phenolic flavors from green samples that were perfectly clean—no trace of black, fungus or hulls as the system might suggest. It’s clear we still have a lot to learn and share about the correlation between green coffee defects and their impacts on cup quality, but this in itself provides a strong argument for counting defects and scoring sensory attributes of every coffee one is evaluating.
WHO USES THE GACCS?

I have long believed in the power of a common vocabulary, so it made sense to me to adopt the GACCS, but I wondered if others use it consistently for contracts or purchasing decisions. “When both the seller and buyer agree to a green coffee classification system, as well as the allowable defects for a green coffee contract, both sides of the transaction are fully aware of the quantitative measurement to define quality,” says Spencer Turer, chair of the SCAA Technical Standards Committee and vice president at Coffee Analysts in Burlington, Vermont. “The system, or any system that is agreed to, removes any guessing and misunderstanding for the acceptable quality to execute a green coffee contract. Without a measurable standard or classification schedule, quality rating would be vague and ambiguous, quality could not be controlled, and consistency to the consumer would be impacted.”

CONTINUED ON PAGE 34

A FOCUS ON FLAWS (CONTINUED)

Overripe cherries on a coffee tree.

A sample of coffee drying on raised beds in Uganda.
At Equal Exchange, as an importer and roaster, we include “SCAA preparation” in our green contracts, which includes the physical and sensorial evaluations. We analyze both pre-shipment and arrival samples based on the GACCS and write detailed reports about our findings. Our goal is to be transparent and fair with our analysis, and to hold our suppliers accountable.

For years, I have thought this is what specialty coffee professionals are supposed to do—if it’s considered specialty, it should adhere to these standards—but time and again I hear colleagues emphasize cup quality, sometimes without even analyzing green coffee defects. After numerous conversations with our suppliers about a holistic approach to specialty coffee quality, meaning both physical and sensorial, I wondered if my experience reflected the reality in the market. I was astounded by what I learned.

While I did not do a widespread industry survey, I did speak with about a dozen industry professionals, including exporters, importers and roasters. None of these professionals includes SCAA specifications in green coffee contracts, though all say they include quality scores, sometimes noted as SCAA points. One importer told me, “Nobody grades specialty coffee (in the U.S.).”

Continued on page 36.
I was baffled to learn that specialty quality for many people is one-sided, focusing only on cup quality. A few told me defects aren’t a problem in their purchases because they buy such high-grade coffees, but they also admitted they never grade their coffee. The standards are in place to provide clear guidance based on data and evaluation. Sorting coffee to specialty standard costs more—how much more depends on the quality of the cherry or parchment that arrives at the buying station. If the coffee is especially clean before it is put through the dry mill process, the cost may be minimal. Several professionals who sort based on the GACCS estimate it can cost from 5 to 30 cents more per pound to do so. If given the choice, are you willing to pay for it?

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DID YOU USE THE SCAAA’S GREEN ARABICA COFFEE CLASSIFICATION SYSTEM?

A FOCUS ON FLAWS | Do You Use the SCAA’s Green Arabica Coffee Classification System? (continued)
WHAT’S NEXT?

A lot has happened since the GACCS was established, and some wonder if the system needs to be updated. How will climate change affect the level and intensity of defects? Is this system truly universal for washed arabicas?

Diaz hopes for an expanded version of the defect booklet, “with more description of the defects and their variations,” he says, and “more technical and detailed information of the causes and occurrences during processing.”

Rivera would like to see a system developed for alternatively processed coffees, such as naturals, pulped naturals, semi-washed, double-fermented and others.

But as Turer notes, “Any changes to the SCAA quality classification system for cup or grade will impact the determination of specialty quality and Q certification, and will financially impact the stakeholders of the green coffee supply chain. Changes of this magnitude are very serious, and are not being considered by the Technical Standards Committee.”

While I would like to see the system updated to reflect the science currently available, first I would encourage industry professionals to use the existing system consistently.

If you don’t use it, why not?

BETH ANN CASPERSEN is coffee quality control manager at the Equal Exchange Cooperative in West Bridgewater, Massachusetts. Equal Exchange is a specialty food cooperative that sources coffee, chocolate, tea and other products from small farmer cooperatives all over the world. She is a specialized instructor for the SCAA, a member of the Coffee Tasters Pathway Committee, a Q instructor, co-founder of Java Jog for a Cause and an advocate for women’s rights. Contact her at bacaspersen@equalexchange.coop.
### Category 1 Defects

<table>
<thead>
<tr>
<th>Defect Name</th>
<th># of Beans Equal to 1 Full Defect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Black</td>
<td>1</td>
<td>Opaque in color.</td>
</tr>
<tr>
<td>Full Sour</td>
<td>1</td>
<td>Yellowish or yellowish-brown to reddish-brown in color. The embryo inside the bean (see photo, pg. 37) is typically dark or black. If the bean is cut or scratched, a sour or vinegar-like smell is released.</td>
</tr>
<tr>
<td>Dried Cherry/Pod</td>
<td>1</td>
<td>The dried pulp usually covers part or all of the parchment, sometimes with the presence of white spots or powdery residue.</td>
</tr>
<tr>
<td>Fungus Damaged</td>
<td>1</td>
<td>Yellow to reddish-brown powdery spots (spores), which can cover parts or all of the bean.</td>
</tr>
<tr>
<td>Foreign Matter</td>
<td>1</td>
<td>All non-coffee items such as sticks, stones, nails, etc.</td>
</tr>
<tr>
<td>Severe Insect Damage</td>
<td>5</td>
<td>Broca beans, as they are commonly called, are distinguished by small (0.3 to 1.5 millimeters in diameter), dark holes, often on opposite sides of the bean. Three or more perforations = severe damage; five or more severe damaged beans = one full category 1 defect.</td>
</tr>
</tbody>
</table>

### Category 2 Defects

<table>
<thead>
<tr>
<th>Defect Name</th>
<th># of Beans Equal to 1 Full Defect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Black</td>
<td>3</td>
<td>Less than half of the bean is opaque. (See &quot;Full Black&quot; under category 1 for description.)</td>
</tr>
<tr>
<td>Partial Sour</td>
<td>3</td>
<td>Less than half of the bean appears sour. (See &quot;Full Sour&quot; under category 1 for description.)</td>
</tr>
<tr>
<td>Parchment/ Pergamino</td>
<td>5</td>
<td>Partially or fully enclosed in a thick, papery, white or tan husk.</td>
</tr>
<tr>
<td>Floater</td>
<td>5</td>
<td>Distinctively white and faded, giving the sample a mottled appearance. Will float when placed in water.</td>
</tr>
<tr>
<td>Immature/Unripe</td>
<td>5</td>
<td>Pale, yellow-greenish color of the silver skin. The silver skin is tightly attached to the bean. Often smaller than normal beans, curved inward in a concave shape with sharp edges.</td>
</tr>
<tr>
<td>Slight Insect Damage</td>
<td>10</td>
<td>See description under category 1, above. Fewer than three perforations = slight damage; 10 or more slight damaged beans = one full category 2 defect.</td>
</tr>
<tr>
<td>Shell</td>
<td>5</td>
<td>Malformed beans consisting of an inner or outer part. One or both may be flue. In some cases they will still be together. The outer section has a seashell shape. The inner section can be conical or cylindrical.</td>
</tr>
<tr>
<td>Broken/Chipped/Cut</td>
<td>5</td>
<td>Usually dark reddish in color due to the oxidation of the area where the cut/chip took place during pulping.</td>
</tr>
<tr>
<td>Hull/Husk</td>
<td>5</td>
<td>Shows fragments of the dried pulp with a dark red color.</td>
</tr>
<tr>
<td>Withered</td>
<td>5</td>
<td>Usually smaller than normal beans and malformed, with wrinkles that resemble those of a raisin.</td>
</tr>
</tbody>
</table>