Cacao quality evaluation: lessons from social science and producer-centric approaches

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The cocoa market lacks:

- an industry definition of specialty/craft/fine chocolate,
- standards for defining cacao quality, or specialty or fine cacao,
- differentiation from or within the so-called premium chocolate sector,
- data collection and verifiability on most of the above,
- transparency into cacao and chocolate production size and specialty pricing at the level of individual companies, and
- institutional resources to support collecting and publishing most of these statistics.
Key questions

• What would a producer-centric approach to cacao quality look like?
• What benefits might full cacao producer engagement in discussions on quality bring to overall global cocoa sector sustainability?
Major finding

• A differentiated education and communication strategy with full cacao producer engagement (as opposed to solely involvement or non-engagement) is essential, but attention to this is still lacking in most discourse on cacao quality.
Ixtutz cacao

ho’ kab’ “five honeys”, the name for Ixtutz
Vision for cacao quality grading

Producers → Exporters → Importers → Chocolate makers and retailers → Consumers

Problems with the current system:
- Nonstandard link between fine distinction and quality
- Lack of differentiation and quality reduces earning opportunities
- Procurement is less efficient

Advantages of graded cacao:
- Improved differentiation and quality
- Increased traceability
- Increased transparency
- Improved value

Components of the fine cacao grading program:
- Fine cacao grading training
- Certification
- Market linkages
FCCI cacao grading goals

• A cross-culturally relevant communication tool for cacao quality that engages supply chain stakeholders in providing **objective feedback** to enable informed decision making and mitigate rejections and misunderstandings about quality

• Rigorous training, calibration, and (eventually) certification of cacao graders worldwide

• Instructors teach in their own countries

• Offer cacao quality grading services worldwide

• Justify price premiums

• Contribute data to research on efficacy and relevance of cacao grading standards
FCCI evaluation of cacao

Physical evaluation

• External evaluation
• Cut test

Sensory evaluation

• Organoleptic testing following fixed sampling protocols
FCCI cacao sampling protocol

• Winnow 30-50 raw beans from a sample
• Grind in coffee blade grinder to ~500 microns
• Taste 1 teaspoon and evaluate
# FCCI Cacao Grader Evaluation

## External evaluation, whole beans

### External attributes

<table>
<thead>
<tr>
<th>Basic attributes (100g beans)</th>
<th>External defects (100 beans, count)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean count</td>
<td>Black</td>
</tr>
<tr>
<td>Moisture content %</td>
<td>Severely moldy</td>
</tr>
<tr>
<td>Size (qualitative)</td>
<td>Germinated</td>
</tr>
<tr>
<td>Detritus % by weight</td>
<td>Insect damaged</td>
</tr>
<tr>
<td></td>
<td>Clumped</td>
</tr>
<tr>
<td></td>
<td>Cut</td>
</tr>
</tbody>
</table>

### Raw bean aroma

#### Positive/Neutral

- Vinegar
- Cocoa
- Nutty
- Fruity
- Spicy
- Floral

#### Defective

- Hammy
- Smoky
- Musty/Moldy
- Vegetal
- Herbal
- Floral
- Nutty
- Spicy
- Rancid/Cheesy
- Caramel/Malty/Candied
- Buttery
- Meaty
- Animal

### Cut test (100 beans, count)

#### Fermentation level

- Fully brown
- Partially brown
- Violet
- Violet unfissured

#### Defective

- Slaty
- Moldy
- Germinated
- Insect damaged
- Overfermented

### Other attributes

- Blond

## Organoleptic evaluation, shelled ground beans

### Taste

- Acidity
- Bitterness
- Astringency

### Aroma

<table>
<thead>
<tr>
<th>Positive/Neutral</th>
<th>Defective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoa</td>
<td>Hammy</td>
</tr>
<tr>
<td>Fresh fruit</td>
<td>Smoky</td>
</tr>
<tr>
<td>Dried fruit</td>
<td>Musty/Moldy</td>
</tr>
<tr>
<td>Vegetal</td>
<td>Vegetal</td>
</tr>
<tr>
<td>Herbal</td>
<td>Ammonia</td>
</tr>
<tr>
<td>Floral</td>
<td>Putrid/Garbage</td>
</tr>
<tr>
<td>Nutty</td>
<td>Rancid/Cheesy</td>
</tr>
<tr>
<td>Spicy</td>
<td>Medicinal/Phenolic</td>
</tr>
<tr>
<td>Caramel/Malty/Candied</td>
<td>Sulfurous/Rubbery</td>
</tr>
<tr>
<td>Buttery</td>
<td>Pungent</td>
</tr>
</tbody>
</table>

### Overall impression

- Overall

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FCCI cacao sampling protocol 2015-2017

• In use in 27 countries
• Adopted by >250 stakeholders, Cacao Quality Consortium
• Classes in United States (x2), Peru, Brazil, France; upcoming in Southeast Asia, Latin America
• Research studies in Brazil, and upcoming in Colombia, Ecuador, Papua New Guinea, and the United States
• Partnerships
What works?

• Advantages over evaluation of liquor or chocolate
  • Simple
  • Repeatable: few variables
  • Inexpensive: equipment costs under $50 USD
  • Highly scalable
• Grassroots social networks, modeling of use cases
• Differentiated education program
• Multi-stakeholder engagement
• Growing partnerships through policy and research
• Is the specialty market fundamentally transformative of the cacao-chocolate supply chain?
Thank you!

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